

Department of Computer Technology

Syllabus

2019 – 2022 Batch

DEPARTMENT OF COMPUTER TECHNOLOGY

Syllabus

BATCH: 2019 – 2022

Faculty Members

Dr. J. Thilagavathi, M. C. A., M.Phil., Ph.D.,

Ms. C. Keerthana, M.Sc., M.Phil.,

Ms. K. S. Leelavathi, M.Sc., M.Phil., NET., SET., (Ph.D).,

Mr. R. Jayaprakash, M. C. A., M.Phil., (Ph.D).,

Ms. A. Kalaivani, M. C. A., M.Phil.,



Nallamuthu Gounder Mahalingam College

An Autonomous Institution affiliated to Bharathiar University

Re-Accredited with 'A' Grade by NAAC and ISO 9001:2015 Certified Institution

Pollachi – 642 001.

NGM College

Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

Mission

Training students to become role models in academic arena by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

Department of Computer Technology

Vision

To continue to be the Premier Department for Computer Technology and to become regionally top-ranked and nationally recognized for Academic Excellence.

Mission

To offer a broad-based education, encourage lifelong learning, foster teamwork, promote creativity, discovery and competitiveness.

To turn out highly qualified graduates into world-class professionals capable of competing in the IT Arena as well as in a research environment.

Scheme of Examination

Part	Subject Code	Subject	Ins.Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTER I								
I	19 UTL 101	TAMIL - I	6	3	25	75	100	3
	19 UHN 101	HINDI - I						
II	19 UEN 101	ENGLISH - I	5	3	25	75	100	3
III	19 UCT 101	CORE I: PROGRAMMING IN C	4	3	25	75	100	3
	19 UCT 102	CORE II: DIGITAL COMPUTER FUNDAMENTALS	4	3	25	75	100	3
	19 UCT 1A1	ALLIED I: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	5	3	25	75	100	4
	19 UCT 103	LAB - I :PROGRAMMING IN C	4	3	20	30	50	2
IV	19 UHR 101	HUMAN RIGHTS	1	2	-	50	50	2
	19 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	19 UTL 202	TAMIL - II	6	3	25	75	100	3
	19 UHN 202	HINDI - II						
II	19 UEN 202	ENGLISH - II	5	3	25	75	100	3
III	19 UCT 204	CORE III: OBJECT ORIENTED PROGRAMMING WITH 'C++'	4	3	25	75	100	3
	19 UCT 205	CORE IV: DATA STRUCTURES	4	3	25	75	100	3
	19 UCT 2A2	ALLIED II: DISCRETE MATHEMATICS	4	3	25	75	100	4
	19 UCT 206	LAB - II : PROGRAMMING IN C++ WITH DATA STRUCTURES	4	3	20	30	50	2
IV	19 EVS 201	ENVIRONMENTAL STUDIES	2	2	-	50	50	2
	19 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	19 UCT 307	CORE V: JAVA PROGRAMMING	5	3	25	75	100	4
	19 UCT 308	CORE VI: DATABASE MANAGEMENT SYSTEM	5	3	25	75	100	4
	19 UCT 309	CORE VII: OPERATING SYSTEMS	5	3	25	75	100	4
	19 UCT 3A3	ALLIED III: COMPUTER SYSTEM ARCHITECTURE	5	3	25	75	100	4
	19 UCT 310	LAB - III :JAVA PROGRAMMING	4	3	20	30	50	2
	19 UCT311	LAB - IV: DATABASE MANAGEMENT SYSTEM	4	3	20	30	50	2
IV	19 HEC 303	HUMAN EXCELLENCE - PROFESSIONAL VALUES & SKY YOGA PRACTICE - III	1	2	25	25	50	1
	19 UCT 3N1/ 19 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	19 UCT 412	CORE VIII: ADVANCED JAVA PROGRAMMING	5	3	25	75	100	4
	19 UCT 413	CORE IX: SOFTWARE ENGINEERING	5	3	25	75	100	4
	19 UCT 414	CORE X: DATA COMMUNICATION AND NETWORKS	5	3	25	75	100	4
	19 UCT 4A4	ALLIED IV: PROCESSORS	5	3	25	75	100	4
	19 UCT 415	LAB - V: ADVANCED JAVA PROGRAMMING	4	3	40	60	100	4
	19 UCT 416	LAB - VI : SOFTWARE ENGINEERING AND TESTING	4	3	40	60	100	4
IV	19 HEC 404	HUMAN EXCELLENCE - SOCIAL VALUES & SKY YOGA PRACTICE - IV	1	2	25	25	50	1
	19 UCT 4N3/ 19 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

Part	Subject Code	Subject	Ins.Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTER V								
III	19 UCT 517	CORE XI: OPEN SOURCE TECHNOLOGIES	6	3	25	75	100	4
	19 UCT 518	CORE XII: INFORMATION SECURITY	6	3	25	75	100	4
	19 UCT 5E1 / 19 UCT 5E2 / 19 UCT 5E3	ELECTIVE I	6	3	25	75	100	5
	19 UCT 519	LAB -VII: OPEN SOURCE TECHNOLOGIES	5	3	40	60	100	3
	19 UCT 520	LAB - VIII: WEB DESIGNING	5	3	40	60	100	3
IV	19 HEC 505	HUMAN EXCELLENCE - NATIONAL VALUES & SKY YOGA PRACTICE - V	1	2	25	25	50	1
	19 GKL 501	GENERAL KNOWLEDGE AND GENERAL AWARENESS	SS	2	-	50	50	2
	19 UCT 5S1/ 19 UCT 5S2	SKILL BASED MAJOR ELECTIVE I - PYTHON LAB /HTML 5 with CSS	1	2	-	50	50	2
TOTAL			30	-	205	545	650	24
SEMESTER VI								
III	19 UCT 621	CORE XIII: FRAMEWORK TECHNOLOGY	6	3	25	75	100	4
	19 UCT 6E4 / 19 UCT 6E5 / 19 UCT 6E6	ELECTIVE-II	6	3	25	75	100	4
	19 UCT 6E7 / 19 UCT 6E8 / 19 UCT 6E9	ELECTIVE-III	6	3	25	75	100	5
	19 UCT 622	LAB - IX: FRAMEWORK TECHNOLOGY	5	3	40	60	100	3
	19 UCT 623	INDUSTRY ORIENTED PRACTICALS	5	3	40	60	100	4
IV	19 HEC 606	HUMAN EXCELLENCE - GLOBAL VALUES & SKY YOGA PRACTICE - VI	1	2	25	25	50	1
	19 UCT 6S3/ 19 UCT 6S4	SKILL BASED MAJOR ELECTIVE II - DATA ANALYTICS(BIG DATA) LAB / DREAMWEAVER LAB	1	2	-	50	50	2
TOTAL			30	-	180	420	600	23
GRAND TOTAL			180	-	1095	2905	3900	140

LIST OF MAJOR ELECTIVE PAPERS

S.No	Elective	Subject Code	Subject Name
1	Elective – I (V Sem)	19UCT5E1	Cloud Computing
2		19UCT5E2	Data Mining and Analytics
3		19UCT5E3	Artificial Intelligence
4	Elective – II (VI Sem)	19UCT6E4	Embedded Systems
5		19UCT6E5	E-Commerce
6		19UCT6E6	Underwater Communication
7	Elective – III (VI Sem)	19UCT6E7	Multimedia Techniques
8		19UCT6E8	Mobile Computing
9		19UCT6E9	Internet of Things (IoT)

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT307	Title	Batch:	2019 - 22
		CORE V: JAVA PROGRAMMING	Semester	III
Hrs/Week:	05		Credits:	04

Course Objective

To provide profound coverage on classes, multithreading, exception handling, applets and file handling in Java.

Course Outcomes (CO)

K1	CO1	To remember about classes, objects, members of a class and relationships among them needed for a specific problem
K2	CO2	To comprehend the concepts of inheritance, interface and package
K3	CO3	To implement error handling techniques using exception handling
K4	CO4	To evaluate the concepts of thread, applet and files

Syllabus

Unit – I [13 Hours]

Java Evolution – History, Features, How Java differs from C and C++, Java support systems, Java environment – Overview of Java Language – Constants, Variables and Data Types - *Operators and Expressions** – Decision Making and Branching.

Unit – II [13 Hours]

Classes, Objects and Methods – Arrays, Strings and Vectors – Interfaces: Multiple Inheritances – **Packages**: Putting Classes Together.

Unit – III [13 Hours]

Multithreaded Programming: Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread

Exceptions – Thread Priority – Synchronization – **Implementing the Runnable Interface**.
Managing Errors and Exceptions: Types of Errors – **Exceptions** – Syntax of Exception Handling Code – *Multiple Catch Statements** – Using Finally Statements – Throwing our Own Exceptions – **Using Exceptions for Debugging**.

Unit – IV

[13 Hours]

Applet Programming: How Applets Differ From Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating an Executable Applet – Applet Tag – Adding Applet to HTML File – Running the Applet – More About Applet Tag – Passing Parameters to Applets – Aligning the Display– Displaying Numerical Values – Getting Input From the User. **Graphics Programming** –The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Chart.

Unit – V

[13 Hours]

Managing Input / Output Files in Java: Concept of Streams – Stream Classes – Byte Stream Classes – Serialization – Character Stream Classes – Using Streams – Other Useful I/O Classes – Using the File Class – Input / output Exceptions – Creation of Files – Reading / Writing Characters – Reading / Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output – Other Stream Classes.

Note: **Italicized* texts are for self study

Power point Presentations, Seminar, Assignment, Experience Discussion

Books for Study

1. Balagurusamy. E, (2011), “Programming With JAVA A Primer”, 2nd Edition, Tata McGraw Hill Publications, ISBN-13: 9780070141698.

Books for Reference

1. John R. Hubbard, (2007), “Programming with Java”, 2nd Edition, Schaum’s Outline Series, Tata McGraw Hill Publications, ISBN-13: 9780070589421.

2. Patrick Naughton, (1996), "Java HandBook", 2nd Edition Osborne/McGraw-Hill, ISBN-13: 978-0078821998
3. Timothy Budd, (2007), "Understanding Object Oriented Programming with Java", Pearson Education, ISBN-13: 9780201308815.
4. Deitel & Deitel, (2008), "Java TM: How to Program", 7th Edition, PHI, ISBN-13: 9780136123712.
5. iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
6. <http://www.onlineprogrammingbooks.com/learning-java-4th-edition/>
7. <https://www.javatpoint.com/serialization-in-java>
8. <https://www.journaldev.com/2452/serialization-in-java>

Mapping

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

S-Strong 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: Dr. J. Thilagavathi Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT308	Title	Batch:	2019 - 22
		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 – Denormalization – Another Example of Normalization.

Unit - II

[13 Hours]

Oracle9i – An Overview: Personal Database – **Client/Server Databases** - Oracle9i: An Introduction – The SQL *Plus Environment – SQL – Logging into SQL *Plus – SQL *Plus Commands – Oracle Errors and Online Help – Alternate Text Editors - SQL *Plus Worksheet – iSQL *Plus. **Oracle Tables – Data Definition Language:** Naming Rules and Conventions – Data Types – Constraints – Create, Display, Alter, Drop, *Rename and Truncating Oracle Table** – Table Types – Spooling – Error codes.

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 – Revisiting Substitution Variables – DEFINE Command – CASE structure. **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 – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL:** Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control Statements.

Unit - V

[13 Hours]

PL/SQL Exceptions and Composite Data Types: **Exceptions** – Types of Exceptions. Composite Data Types – PL/SQL Records – PL/SQL Records – **PL/SQL Tables** – PL/SQL Varrays. **Named Blocks:** Procedures – Functions – Packages – **Triggers** – Data Dictionary Views. 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, (2007), “Database Management Systems”, 1st Edition, TMH, ISBN-13: 9780074622391.
2. Gerald V. Post, (2006), “Database Management Systems”, 3rd Edition, TMH Publication, ISBN-13: 9780070635265.
3. Jonathan Gennick, (2005), “Oracle SQLPlus Pocket Reference”, 0th Edition, E. H. J. Pallett Publication, ISBN-13: 9788173669330
4. <http://freecomputerbooks.com/An-Introduction-to-Relational-Database-Theory.html>

Mapping

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

S-Strong 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: Ms. K. S. Leelavathi Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT309	Title	Batch:	2019 - 22
		CORE VII: OPERATING SYSTEMS	Semester	III
Hrs/Week:	05		Credits:	04

Course Objective

To gain insight on to the fundamentals of Operating Systems and explore on Process, Storage and File management of Operating Systems.

Course Outcomes (CO)

K1	CO1	To keep in mind about operating system services, process, scheduling and memory allocations
K2	CO2	To comprehend the various process management concepts including scheduling, synchronization, and deadlocks
K3	CO3	To implement CPU Scheduling algorithms for process scheduling and deploy a deep knowledge about the memory management concepts including swapping, paging and segmentation
K4	CO4	To review synchronization problems, accessing methods in Files, Disk scheduling

Syllabus

Unit - I

[13 Hours]

Operating-System Structures: Introduction of **Operating System** – Evolution of Operating System – Types of Operating System.

Unit - II

[13 Hours]

Process Management: Process Concept – Process scheduling – Operations on Process – Cooperating Processes – Inter-process Communication **CPU Scheduling :** Basic Concepts – Scheduling Criteria – **Scheduling Algorithms** – Multiple-Processor Scheduling – Real Time Scheduling – **Process Synchronization:** The Critical-Section Problem – **Semaphores** – **Classic problems of Synchronization.**

Unit - III

[13 Hours]

Deadlocks: Deadlock Characterization – **Methods for handling Deadlock** – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlock – **Memory Management:** Storage Management – Swapping – Contiguous Memory allocation – Paging – Segmentation.

Unit - IV

[13 Hours]

Storage Management: **Virtual memory** – Demand Paging –Page Replacement: FIFO Page Replacement – Optimal Page Replacement – LRU Page Replacement – File concept – *Access methods** – Directory Structure .

Unit - V

[13 Hours]

File System Structure – Allocation methods - Disk Structure – Disk Scheduling – Disk management – **Case study:** Linux, Windows XP, *Android OS (Memory management)*.*

Note: **Italicized* texts are for self study

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

Books for Study

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2011), “Operating System Concepts” 6th Edition, John Wiley and Sons, ISBN-13 9789812530554.

Books for Reference

1. Achyut.S Godbole(2002), “Operating Systems”, 1st Edition, TMH Publications, ISBN-139780070483736.
2. H. M Deitel (2003), “Operating Systems”, 2nd Edition, Pearson Education Publication.

3. D.M. Dhamdhere (2008), “Systems Programming and Operating Systems “, 2nd Revised Edition.
4. <http://www.faadooengineers.com/threads/9773-Operating-system-by-galvin-pdf-Free-Download>
5. <http://nptel.ac.in/courses/106108101/13>
6. <https://developer.android.com/topic/performance/memory-overview.html>
7. <https://www.geeksforgeeks.org/operating-system-types-operating-systems-awaiting-author/>

Mapping

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

S-Strong 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: Ms. A. Kalaivani Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT3A3	Title	Batch:	2019 - 22
		ALLIED III: COMPUTER SYSTEM ARCHITECTURE	Semester	III
Hrs/Week:	05		Credits:	04

Course Objective

To cover the various digital components used in the Organization and Hardware design of digital computers.

Course Outcomes (CO)

K1	CO1	To remember the organization and design of a basic digital computer
K2	CO2	To get the idea of general register organization of a typical CPU
K3	CO3	To execute arithmetic algorithms with digital hardware and also present the I/O organization of CPU
K4	CO4	To analyze the memory hierarchy models and memory method concepts

Syllabus

Unit – I

[13 Hours]

Basic Computer Organizations and Design: Instruction Codes – Computer Registers– Computer Instructions –Timing Control – Instruction Cycle – Memory-Reference Instructions –Input-Output and Interrupt.

Unit – II

[13 Hours]

Central Processing Unit: General Register Organization – **Stack Organization** – **Instruction Formats** – **Addressing Modes** – Data Transfer and Manipulation – Program Control – Reduced Instruction Set Computer(RISC).

Unit- III

[13 Hours]

Computer Arithmetic: Addition and Subtraction – Multiplication Algorithms – Division Algorithms – Floating-Point Arithmetic Operations: Register Configuration – Addition and Subtraction.

Unit – IV

[13 Hours]

Input-Output Organization: *Peripheral Devices** – Input-Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupt – Direct Memory Access(DMA) – Input-Output Processor(IOP).

Unit – V

[13 Hours]

Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory* – Memory Management Hardware.

Note: **Italicized* texts are for self study

Power point Presentations, Seminar and Assignment

Books for Study

1. Morris Mano. M, (1992), “Computer System Architecture”, 3rd Edition, Pearson Education, ISBN: 978-81-317-0070-9.

Books for Reference

1. John I Hennessy, “Computer Architecture”, 4th Edition, ISBN: 97831207260.
2. Saini S.P.S, (2010), “Computer System Architecture and Organization”, S.K. Kataria & Sons Publication, ISBN-13: 9788189757731.
3. Hamacher.C, Zvonko.V, Zaky.S, (2011), “Computer Organization”, 5th Edition Tata McGraw Hill Publication, ISBN-13: 9781259005275.
4. <https://imlearner.files.wordpress.com/2010/08/computer-system-architecture-3rd-ed-morris-mano-p98.pdf>

Mapping

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

S-Strong 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: Mr. R. Jayaprakash Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT 412	Title	Batch:	2019- 22
		CORE VIII: ADVANCED JAVA PROGRAMMING	Semester	IV
Hrs/Week:	05		Credits:	04

Course Objective

To aim at imparting expertise in Web Application Development using J2EE tools.

Course Outcomes (CO)

K1	CO1	To remember the swing components
K2	CO2	To understand about servlets and Server Side Includes
K3	CO3	To implement JDBC connectivity and Java Server Pages
K4	CO4	To review the various types of beans

Syllabus

Unit - I

[15 Hours]

Tour of **Swing**: JApplet- Icons and Labels – JText Fields – JButtons – JCombo Boxes - JTabbed Panes – JScroll Panes – JTrees – JTables – Exploring Swing.

Unit - II

[16 Hours]

Servlet Overview and Architecture, Movement to Server-Side Java – Java Servlet - Practical applications for Java Servlets – Java Servlet Alternatives – *Reasons to Use Java Servlets** – Java Servlet Architecture. Servlet Basics – The Life Cycle of a Servlet – A Basic Servlet – **Basic Servlet Source** – **Building and Installing the Basic Servlet** – The HTML Required to Invoke the Servlet – Dissecting the Basic Servlet.

Unit – III

[16 Hours]

JSP – Conditions – Directives – Declarations- Implicit Variables – Scriptlets – Expressions.

Servlet Sessions: Session Tracking – Working with Cookies.

Unit - IV

[16 Hours]

Enterprise Java Bean: Introduction – Enterprise Java Bean Technology - Types of Bean - Examples of EJB. Server-Side includes - Servlet chaining: Uses for Servlet chain - Invoking a Servlet Chain– A practical Example using Servlet Chaining.

Unit- V

[15 Hours]

Servlets and JDBC – Two and Three-tier Database Access Models – JDBC Driver Types – JDBC Basics – A Basic JDBC Servlet – JDBC RMI.

Note: **Italicized* texts are for self study

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

Books for Study

1. Herbert Schildt (2002), “JAVA 2: The Complete Reference”, 5th Edition, Tata-McGraw Hill, ISBN-13: 9780070495432.
2. James Goodwill, (1999), “Developing Java Servlets”, 1st Edition, Techmedia, ISBN 81-7635-325-6.
3. Rima Patel Sriganesh, Gerald Brose, Micah Silverman (2009), “Mastering Enterprise Java Beans 3.0”, Wiley India Edition, Wiley India Pvt. Ltd, ISBN: 81-265-0921-X.
(Unit V- Enterprise Java Bean)

Books for Reference

1. Subrahmanyam Allaramaju, Cedric Buest , Marc Wilcox, Sameer Tyagi ,(2001), “Professional Java Server Programming J2EE”, 1.3 Edition, WROX Press Ltd, ISBN-13: 978-1861005373.
2. Jayson Falkner and Kevin Jones, (2003), “The J2EE Technology Web Tier”, Addison-Wesley Professional, 1st Edition, ISBN-13: 978-0321136497.

3. <http://nomembershiprequired.net/j2ee-complete-reference-herbert-schildt-pdf-free-download-t9443.html>
4. https://docs.oracle.com/cd/E13222_01/wls/docs51/classdocs/JDBC_RMI.html
5. https://www.tutorialspoint.com/java_rmi/java_rmi_database_application.htm

Mapping

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

S-Strong 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: Ms. A. Kalaivani Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT 413	Title	Batch:	2019 - 22
		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 – System Modeling.

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** – Mapping Data Flow into a Software Architecture.

Unit - V

[13 Hours]

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

Testing Tactics: Black-Box and White-Box Testing - White- Box Testing - Basis path Testing – Control Structure Testing - Black-Box Testing – Functional and Non Functional 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, (2004), “Software Engineering”, 7th Edition, Addison Wesley, ISBN-13: 978-0321210265.
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	S	M
CO3	H	M	M	S	M
CO4	M	H	S	S	M

S-Strong 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: Ms. K. S. Leelavathi Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT414	Title	Batch:	2019 - 22
		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 Address – 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**.

Note: **Italicized* texts are for self study

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, (2007), “Data Communications and Networking”, 2nd Edition TataMcGraw-Hill Publishing Company Limited, ISBN-13: 9780070499355.
2. Andrew S. Tanenbaum, (2002), “Computer Networks”, 4th Edition, Prentice Hall, ISBN-13:978817781652.
3. <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
CO2	H	S	H	M	M
CO3	M	S	H	M	M
CO4	H	S	H	M	M

S-Strong 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: Ms. A. Kalaivani Signature:	Name: Dr. J. Thilagavathi Signature:	Name: Dr. M. Durairaju Signature:	Name: Dr. R. Muthukumaran Signature:

Programme Code:	B. Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	19UCT4A4	Title	Batch:	2019 - 22
		ALLIED IV: PROCESSORS	Semester	IV
Hrs/Week:	05		Credits:	04

Course Objective

To know about Intel 8086, Intel 386 and 486 microprocessors, Memory and I/O addressing and MOTOROLA microprocessors.

Course Outcomes (CO)

K1	CO1	To remember the microprocessor basic concepts, types of processors and instruction sets
K2	CO2	To get the idea of assembly language program for 8086
K3	CO3	To deploy designing of memory and I/O addressing of various microprocessors
K4	CO4	To review interfacing of A/D converter and applications

Syllabus

Unit - I

[13 Hours]

Introduction to Microprocessors: Evolution of Microprocessors – Single- chip Microcomputer – Embedded Microprocessors – Bit-Slice Processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Digital Signal Processors.

Unit - II

[13 Hours]

16-Bit Intel Microprocessors: Intel 8086 – Pin Description of Intel 8086 – Register organization of 8086 – BIU and EU – **Interrupts** – 8086 Based Computer System – **Addressing Modes** of 8086. **8086 Instruction Set** – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions.

Unit - III

[13 Hours]

Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – **Virtual Memory – Memory Management Unit** – **Interrupts and Exceptions** – Addressing Modes of 80486 – *Input devices** – Output devices.

Unit - IV

[13 Hours]

Memory and I/O Addressing – 8086 Addressing and Address Decoding: Address decoders – ROM addressing decoding - RAM address decoding. **Programmable I/O Ports: Programmable Peripheral Interface** (PPI) Intel 8255 and Intel 82C55 – Operating modes of 8255 – BSR – Control groups – Control word – **DMA Data Transfer**.

Unit - V

[13 Hours]

An **Interfacing of A/D Converter and Applications:** Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Microprocessor-based Measurement and Control of Physical Quantities. **Other Processors :** Pentium Microprocessors – Pentium Pro Microprocessor – *Comparison of core i3 vs core i5 vs core i7**.

Note: **Italicized* texts are for self study

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

Books for Study

1. Badri Ram, (2009), “Advanced Microprocessors and Interfacing”, Tata McGraw-Hill Publishing Company Limited, ISBN-13:9780070434486.

2. <https://techtimely.wordpress.com/2011/07/01/difference-between-intel-core-i3i5-i7-processors/> (Unit V - Comparison of core i3 vs core i5 vs core i7)

Books for Reference

1. Ray A.K, Bhurchandi K.M, (2007), “Advanced Microprocessors and Peripherals”, 2nd Edition, Tata McGraw-Hill Publishing Company Limited, ISBN: 13-9780070140622.
2. Douglas Hall, (2006), “Microprocessors & Interfacing”, McGraw Hill, 2nd Edition, ISBN-13:9781259006159.
3. John Uffenbeck, “The 8086/88 Family: Design, Programming & Interfacing”, 1st Edition, PHI, ISBN-13: 9788120309333.
4. http://www.nptel.ac.in/courses/Webcourse-contents/IISc-BANG/Microprocessors%20and%20Microcontrollers/pdf/Lecture_Notes/LNm1.pdf

Mapping

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

S-Strong 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: Ms. C. Keerthana	Name: Dr. J. Thilagavathi	Name: Dr. M. Durairaju	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

Department of Computer Technology

Syllabus

2020 –2023 Batch

DEPARTMENT OF COMPUTER TECHNOLOGY

Syllabus

BATCH:2020–2023

Faculty Members

Ms.C.Keerthana,M.Sc.,M.Phil.,(Ph.D).,

Ms.K.S.Leelavathi,M.Sc.,M.Phil.,NET.,SET.,(Ph.D).,

Mr.R.Jayaprakash,M.C.A.,M.Phil.,(Ph.D).,

Ms.A.Kalaivani,M.C.A.,M.Phil.,(Ph.D).,



Nallamuthu Gounder Mahalingam College

An Autonomous Institution affiliated to Bharathiar

University Re-

Accredited by NAAC and ISO 9001:2015 Certified Institution Pollachi

i-642001.

NGM College

Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

Mission

Training students to become role models in academics by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

Department of Computer Technology

Vision

To continue to be the Premier Department for Computer Technology and to become regionally top-ranked and nationally recognized for Academic Excellence.

Mission

To offer a broad-based education, encourage lifelong learning, foster teamwork, promote creativity, discovery and competitiveness.

To turn out highly qualified graduates into world-class professionals capable of competing in the IT Arena as well as in a research environment.

Scheme of Examination

Part	Subject Code	Subject	Ins.Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTERI								
I	20UTL101	TAMIL-I	6	3	30	70	100	3
	20UHN101	HINDI-I						
II	20UEN101	ENGLISH-I	5	3	30	70	100	3
III	20UCT101	COREI:PROGRAMMINGINC	4	3	30	70	100	3
	20UCT102	CORE II: DIGITAL FUNDAMENTALS ANDCOMPUTERORGANIZATION	4	3	30	70	100	3
	20UCT1A1	ALLIED I: MATHEMATICAL STRUCTURESFOR COMPUTERSCIENCE	5	3	30	70	100	4
	20UCT103	LAB-I:PROGRAMMING INC	4	3	20	30	50	2
IV	20UHR101	HUMANRIGHTS	1	2	-	50	50	2
	20HEC101	HUMAN EXCELLENCE-PERSONAL VALUES &SKY YOGAPRACTICE-I	1	2	25	25	50	1
V	EXTENSIONACTIVITIES- ANNEXUREI		-					
TOTAL			30	-	170	480	650	21
SEMESTERII								
I	20UTL202	TAMIL-II	6	3	30	70	100	3
	20UHN202	HINDI - II						
II	20UEN202	ENGLISH-II	5	3	30	70	100	3
III	20UCT204	CORE III: OBJECT ORIENTEDPROGRAMMINGW ITH'C++'	4	3	30	70	100	3
	20UCT205	COREIV: DATASTRUCTURES	4	3	30	70	100	3
	20UCT2A2	ALLIEDII:DISCRETEMATHEMATICS	4	3	30	70	100	4
	20UCT206	LAB - II : PROGRAMMINGIN C++ WITHDATA STRUCTURES	4	3	20	30	50	2
IV	20EVS201	ENVIRONMENTALSTUDIES	2	2	-	50	50	2
	20HEC202	HUMAN EXCELLENCE - FAMILY VALUES &SKY YOGAPRACTICE-II	1	2	25	25	50	1
V	EXTENSIONACTIVITIES - ANNEXUREI		-					
TOTAL			30	-	170	480	650	21

Part	SubjectCode	Subject	Ins.Hours PerWeek	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTERIII								
III	20UCT307	CORE V:JAVAPROGRAMMING	5	3	30	70	100	4
	20UCT308	COREVI:DATABASEMANAGEMENTSYSTEM	5	3	30	70	100	4
	20UCT309	COREVII:OPERATINGSYSTEMS	5	3	30	70	100	4
	20UCT3A3	ALLIED III: MICRO PROCESSOR AND ITSAPPLICATIONS	5	3	30	70	100	4
	20UCT310	LAB-III:JAVAPROGRAMMING	4	3	20	30	50	2
	20UCT311	LAB IV:DATABASEMANAGEMENTSYSTEM	4	3	20	30	50	2
IV	20HEC303	HUMAN EXCELLENCE - PROFESSIONAL VALUES&SKYYOGAPRACTICE- III	1	2	25	25	50	1
	20UCT3N1/ 20UCT3N2	SKILL BASED NON- MAJOR ELECTIVE I - HTMLLAB / MULTIMEDIA LAB	1	2	-	50	50	2
V	EXTENSIONACTIVITIES - ANNEXUREI		-					
TOTAL			30	-	165	435	600	23
SEMESTERIV								
III	20UCT412	CORE VIII:ADVANCED JAVAPROGRAMMING	5	3	30	70	100	4
	20UCT413	COREIX:SOFTWARE ENGINEERING	5	3	30	70	100	4
	20UCT414	CORE X:DATA COMMUNICATION ANDNETWORKS	5	3	30	70	100	4
	20UCT4A4	ALLIEDIV:BIGDATAANALYTICS	5	3	30	70	100	4
	20UCT415	LAB- V: ADVANCEDJAVAPROGRAMMING	4	3	40	60	100	4
	20UCT416	LAB - VI : SOFTWARE ENGINEERINGANDTESTING	4	3	40	60	100	4
IV	20HEC404	HUMAN EXCELLENCE - SOCIAL VALUES & SKYYOGAPRACTICE-IV	1	2	25	25	50	1
	20UCT4N3/ 20UCT4N4	SKILL BASED NON-MAJOR ELECTIVE II - OFFICEAUTOMATIONLAB/ CORELDRAWLAB	1	2	-	50	50	2
V	EXTENSIONACTIVITIES - ANNEXUREI		-	-	-	50	50	1
TOTAL			30	-	205	545	750	28

Part	SubjectCode	Subject	Ins.Hours PerWeek	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTERV								
III	20UCT517	COREXI:OPENSOURCETECHNOLOGIES(PHP andMYSQL)	6	3	30	70	100	4
	20UCT518	COREXII:INFORMATIONSECURITY	6	3	30	70	100	4
	20UCT5E1 / 20UCT5E2 / 20UCT5E3	ELECTIVEI	6	3	30	70	100	5
	20UCT519	LAB-VII:OPENSOURCETECHNOLOGIES	5	3	40	60	100	3
	20UCT520	LAB-VIII:WEBDESIGNING	5	3	40	60	100	3
IV	20HEC505	HUMAN EXCELLENCE - NATIONAL VALUES &SKY YOGAPRACTICE-V	1	2	25	25	50	1
	20 GKL501	GENERAL KNOWLEDGE AND GENERALAWARENESS	SS	2	-	50	50	2
	20UCT5S1/ 20UCT5S2	SKILLBASEDMAJOR ELECTIVEI- PYTHONLAB /HTML5withCSS	1	2	-	50	50	2
TOTAL			30	-	205	545	650	24
SEMESTERVI								
III	20UCT621	COREXIII:FRAMEWORK TECHNOLOGY	6	3	30	70	100	4
	20UCT6E4 / 20UCT6E5 / 20UCT6E6	ELECTIVE-II	6	3	30	70	100	4
	20UCT6E7 / 20UCT6E8 / 20UCT6E9	ELECTIVE-III	6	3	30	70	100	5
	20UCT622	LAB-IX:FRAMEWORKTECHNOLOGY	5	3	40	60	100	3
	20UCT623	INDUSTRYORIENTEDPRACTICALS	5	3	40	60	100	4
IV	20HEC606	HUMAN EXCELLENCE - GLOBAL VALUES & SKYYOGAPRACTICE-VI	1	2	25	25	50	1
	20UCT6S3/ 20UCT6S4	SKILL BASED MAJOR ELECTIVE II - DATAANALYTICS(BIGDATA)LAB/DREAMWEA VER LAB	1	2	-	50	50	2
TOTAL			30	-	180	420	600	23
GRAND TOTAL			180	-	1095	2905	3900	140

LIST OF MAJOR ELECTIVE PAPERS

S.No	Elective	Subject Code	Subject Name
1	Elective – I (V Sem)	20UCT5E1	Cloud Computing
2		20UCT5E2	Data Mining and Analytics
3		20UCT5E3	Artificial Intelligence
4	Elective – II (VI Sem)	20UCT6E4	Embedded Systems
5		20UCT6E5	E-Commerce
6		20UCT6E6	Underwater Communication
7	Elective – III (VI Sem)	20UCT6E7	Multimedia Techniques
8		20UCT6E8	Mobile Computing
9		20UCT6E9	Internet of Things (IoT)

EXTENSION ACTIVITIES- ANNEXURE I

S.No	Subject Code	Subjects
1	20UNC 401	NCC
2	20UNS402	NSS
3	20USG403	Sports and Games
4	20URO 404	Rotract Club
5	20URR405	Red Ribbon Club
6	20UYR 406	Youth Red Cross
7	20UCA407	Consumer Awareness Club
8	20UED408	Entrepreneurship Development Club
9	20UCR409	Center for Rural Development
10	20USS410	Student Guild of Service
11	20UGS411	Green Society
12	20UEO412	Equal Opportunity Cell
13	20 UFA413	Fine Arts Club
14	20	Arutchelvar Manavar Sinthanai Mandram
15	20	Vivekanandar Manavar Sinthanai Mandram

Bloom's Taxonomy Based Assessment Pattern

(K-Knowledge; U-Understanding; A-Application)

1. Theory: 70 Marks (Part I, Part II and Part III)

(i) TEST-I & II and ESE:

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer all)	10x1=10	Q.No.1–5 MCQ Q. No.6–10 Define	70
K2	B (Either or pattern)	5x4=20	Q. No. 11 – 15 Short Answers	
K3 & K4	C (Answer any 4 out of 6) Q.No.16 is Compulsory	4x10=40	Q.No.16–21 Descriptive/Detailed	

2. Theory: 50 Marks (Part IV)

Knowledge Level	Section	Marks	Description	Total
K1	A (Answer all)	10x1=10	Q.No.1–5 MCQ Q. No.6–10 Define	50
K2	B (Answer 5 out of 8)	5x8=40	Q.No.11–18 Descriptive/Detailed	

3. Practical Examinations:

KnowledgeLevel	Section	Marks	Total
K3	Practicals& Recordwork	60/30	100/50
K4		40/20	
K5			

Components of Continuous Assessment

Components		Calculation	CIATotal
Test 1	70	210/7	30
Test 2	70		
Assignment	20		
Seminar/Tutorial	20		
Knowledge Enhancement	20		
Information Acquisition	10		

Programme Outcomes

PO1. To apply the knowledge of current computing techniques, skills, and tools necessary for solving real-world problems with attention to teamwork, effective communication, critical thinking and problem solving skills.

PO2. To recognize the importance of professional development by pursuing postgraduate studies or face competitive examinations that offer challenging and rewarding careers in computing.

Programme Specific Outcomes

PSO1 Ability to apply knowledge in mathematical and computer fundamentals.

PSO2 To develop and work with a range of software and hardware technologies thereby to build technical skills in various application areas.

PSO3 To ensure students in performing intensive practical training to solve computer oriented problems.

PSO4 To effectively communicate computing concepts and solutions to bridge the gap between computing industry experts and business leaders to create and initiate innovation.

PSO5 To understand the professional, ethical, legal, security and social issues and responsibilities.

HOD

CDC

COE

Ms. C. Keerthana

Mr. K. Srinivasan

Dr. R. Muthukumaran

[20UCT101]

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT101	Title COREI: PROGRAMMING IN C	Batch:	2020-23
			Semester	I
Hrs/Week:	04		Credits:	03

Course Objective

To focus on the language and syntax of C programming concepts.

Course Outcomes (CO)

K1	CO1	To remember data types, identifier, arrays, strings and pointers
K2	CO2	To understand how to write and use control statements and functions in C
K3	CO3	To implement the concept of pointers, structure and union
K4	CO4	To evaluate string functions and file operations in C programming for a given application

Syllabus

Unit I

[10 Hours]

Introduction: Need of Languages – Categories of Languages* – Why C Language – History of C Language - Structure of a C Program. What is C character set – Identifier – Rules for Identifier or word – Variable – Constant – Data types – Declaration of a variable – Expressions – Operators – Evaluation of an Expression and precedence of operators – sizeof() Operator – Type casting. **Statements:** Input and Output Statements – Escape sequence Characters - Unformatted I/O Statements – Library Functions.

Unit II

[10 Hours]

Control Statements: Unconditional Control statements – Conditional Control statements – Looping Statements – break statement – continue Statement. **Arrays:** Introduction – Declaration – Refer the values of the Array Variable – Assigning Data for Array –

[20UCT101]

Multi-Dimensional Array – Two-Dimensional Array – How to process Elements in Two – DimensionalArray–ArrayIndexOutOfBounds.

UnitIII

[10Hours]

Strings:Introduction–AssigningValues–Readingastring–**LibraryFunctions***.**Functions:**

Introduction –Parameter / Argument – return statement – Types of Functions –Calling with Expression–Passing Array to the Function–Recursive Function.

UnitIV

[11Hours]

Pointers: Introduction–Pointer–Operators in Pointer–Declaration–Pointer and Expressions – **Pointers and Arrays** – Pointers and Strings – Pointers and Functions – Call by Value – Call by Reference – Passing Array to the Function – Passing String to the Function –Array of Pointers – Calling functions using pointers. **Structure and Unions:** Structure –Declaration–**Referring Data in Structure**–**Assigning values–Array of Structures**–Structure and pointer – Structure and Functions. **Union:** Difference between structure andunion-typedef–Enumerateddatatype.

UnitV

[11Hours]

Files: Introduction–Declaring File Type Variable–Open/Close operations of File–**Reading / Writing character in a File** – Check end of File – Read/Write –Line of Characters – Read/Write Record in theFile–**Random File Operations**–fseek(),ftell(),rewind().**Preprocessor:**Introduction–#define,#include– Command LineArguments.

Note:**Italicized texts are for self study*

Powerpoint Presentations, Seminar, Quiz, Assignment

BooksforStudy

1.Karthikeyan.E,(2008),“ATextBookonC– Fundamentals,DataStructuresandProblemSolving”,Prentice-Hall,ISBN:978-81-203-3424-3.

BooksforReference

1. AshokNKamthane,(2009),“ProgrammingandDataStructures”–
PearsonEducation,FirstEdition,ISBN:978-8131724224.
2. YashavantKanetkar,(2012),“LetUsC”,13thEdition,BPBPublishings,ISBN-
13:9788183331630.
3. PradipDey,ManasGhosh,(2013),“ComputerFundamentalsandProgramminginC”,OxfordUn
iversityPress,2nd Edition,ISBN:978-0198084563.
4. <https://www.syncfusion.com/resources/techportal/ebooks/objective-c>

Mapping

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

H-High;M-Medium;L-Low

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Ms.C.Keerthana	Name: Ms.C.Keerthana	Name: Mr.K.Srinivasan	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT102	Title CORE II: DIGITAL FUNDAMENTALS AND COMPUTER ORGANIZATION	Batch:	2020-23
			Semester	I
Hrs/Week:	04		Credits:	03

Course Objective

To convey the knowledge on digital circuits, logic gates and about interfacing of various components.

To cover the various digital components used in the Organization and Hardware design of digital computers.

Course Outcomes (CO)

K1	CO1	To collect number system, Binary Codes concepts
K2	CO2	To understand the concepts of Boolean laws, logic gates, Karnaugh map for Minimization of POS and SOP form of Boolean expressions.
K3	CO3	To apply arithmetic and logic circuits, different sequential circuits with flip flops, registers.
K4	CO4	To analyze the concept of Register Organization, Data Transfer and Manipulation, registers and Memory Organization.

Syllabus

Unit I

[10 Hours]

Number Systems and Binary Codes: Digital Electronics – Integrated circuits or Chip
 Decimal System - Binary system – Octal System – Hexadecimal System – Binary addition –
 Binary Multiplication and Division – 1's Complement of a binary Number* –

-9's Complement-10's Complement-BCD-Gray Code-Excess-3 Code—Alphanumeric codes—Parity method for error detection and correction.

Unit II

[11 Hours]

Boolean Algebra-Logic Gates– Karnaugh Map and Minimization: Boolean Algebra – Gates – Inverter or NOT Gate – OR Gate – AND Gate – NOR Gate – NAND Gate – DeMorgan's Theorems–Exclusive OR Gate–Exclusive NOR Gate–Karnaugh Map–Canonical Form I – Karnaugh Map - Construction and Properties – Minimization of SOP form using Karnaugh map–Minimization of POS form using Karnaugh map.

Unit III

[10 Hours]

Arithmetic and Logic circuits: Arithmetic and Logic circuits – Half Adder – Full Adder – Half-Subtractor – Full-Subtractor - **Sequential Circuits, Flip-Flops:** Flip-Flops- R-S Flip-Flops- Positive Edge Triggered J-K Flip-Flop- **Registers:** Register – Decoder – Encoder – Multiplexer–Demultiplexer.

Unit IV

[11 Hours]

Central Processing Unit: General **Register Organization – Stack Organization** – Instruction Formats – Data Transfer and Manipulation – **Reduced Instruction Set Computer (RISC).**

Unit V

[10 Hours]

Memory Organization: Memory Hierarchy–Main Memory–Auxiliary Memory–Associative Memory–Cache Memory–Virtual Memory*.

Books for Study

1. Puri. V.K., (2011), "Digital Electronics Circuits and Systems", 22nd Reprint, TATA Mc-Graw Hill Publications, ISBN-10:0-07-463317-1. (Unit–I, II, III)
2. Morris Mano. M., (2013), "Computer System Architecture", 3rd Edition, Pearson Education, ISBN: 978-81-317-0070-9. (Unit–IV, V)

Books for Reference

1. Donald P. Leach, Albert Paul Malvino, Gautam Saha, (2010), "Digital Principles and Applications", 7th Edition, TATA McGraw-Hill Publications.
2. Mandal S.K., (2017), "Digital Electronics: Principles and Applications", 1st Edition, ISBN-13: 978-0070153820.
3. Saini S.P.S., (2015), "Computer System Architecture and Organization", S.K. Kataria & Sons Publication, ISBN-13: 978-8189757731.
4. Hamacher C., Zvonko V., Zaky S., (2017), "Computer Organization", 5th Edition Tata McGraw Hill Publication, ISBN-13: 9781259005275.
5. <https://electronicscoach.com/decimal-number-system.html>

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	H	H	M	M
CO2	H	H	L	M	M
CO3	M	H	M	H	M
CO4	M	M	L	H	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. K. S. Leelavathi	Name: Ms. C. Keerthana	Name: Mr. K. Srinivasan	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

[20UCT1A1]

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT1A1	Title	Batch:	2020-23
		ALLIED I: MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	Semester	I
Hrs/Week:	05		Credits:	04

Course Objective

To gain knowledge of the concepts of matrices, algebraic equations, numerical differentiation, integration and correlation for computer applications.

Course Outcomes (CO)

K1	CO1	To remember an in-depth knowledge in Matrices, Determinants, Inverse of a matrix, Rank of a Matrix and Eigenvalue Problems
K2	CO2	To understand the concepts of numerical differentiation and integration
K3	CO3	To apply an appropriate numerical method for solving algebraic or transcendental equation
K4	CO4	To figure out the concept of Mean, Median, Mode, Measures of dispersion and the law relating to Correlation and Regression

Syllabus

Unit I

[13 Hours]

Matrices–Introduction–Determinants–Inverse of a matrix–**Rank of a Matrix**–Eigenvalue Problems.

Unit II**[13Hours]**

System of Simultaneous Linear algebraic Equation: Gauss elimination, Gauss Jordan, Gauss Seidel methods. **The solution of Numerical Algebraic and Transcendental equation**–Bisection method–Newton Raphson method–False position method.

Unit III**[13Hours]**

Numerical Differentiation: Newton's forward Difference-Backward Difference–

Startling formula Numerical Integration: Trapezoidal Rule and Simpson's rule–

Numerical solution of ordinary differential equations: Taylor method & Runge-kutta method.

Unit IV**[13Hours]**

Measures of central tendency: Mean (Individual Series), Median (Discrete Series) and Mode (Continuous Series)–Relationship among mean, median and mode. *Case study: Calculate mean, median and mode for students mark list**. **Measures of dispersion:** Range, quartile deviation, mean deviation and Standard deviation.

Unit V**[13Hours]**

Correlation: Karl Pearson's coefficient of correlation–**Rank correlation regression:**

Regression Equations – *Difference between Correlation and Regression**.

Books for Study

1. Dr. Venkataraman. M. K, (2001), "Engineering Mathematics" Volume II, Third Edition, NPC –(Unit I).
2. Kandasamy. P, Thilagavathi. K, Gunavathi. K, (2006), "Numerical Methods", Revised Edition, New Delhi, S. Chand and Company Ltd, ISBN-13: 9788121914383. (Unit II & III).
3. Pillai. R.S.N, Bagavathi. V, (2005), "Statistical Methods", New Delhi, Sultan Chand and Sons Company Limited, (Unit IV & V).

Books for Reference

1. N.P.Bali.,Dr.ManishGoyal.,(2010),”AtextbookofEngineeringMathematicsI”,vol1,
,9thedition, UniversitysciencePress, NewDelhi.ISBN- 9788131808320.
2. Gupta.S.C, Kapoor.V.K,(2018), “FundamentalofMathematicalStatistics”,
SultanChandandSons -Tb,ISBN-13:9788180549687.
3. <https://www.scribd.com/doc/205496933/Mathematical-Structures-for-Computer-Science>

Mapping

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

H-H igh;M-Medium;L-Low

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Mr. R.Jayaprakash	Name: Ms.C.Keerthana	Name: Mr.K.Srinivasan	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT103	Title	Batch:	2020-23
		LAB-I- PROGRAMMING IN C	Semester	I
Hrs/Week:	04		Credits:	02

Course Objective

On successful completion of this subject the students will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

Course Outcomes (CO)

K3	CO1	To remember the concept of data types, decision making and looping control statements
K4	CO2	To get the idea of array, strings and functions in C
K5	CO3	To access the file information through open/close and reading/writing operations in a file

Sample Programs

1. Write a C program to check whether the given number is Armstrong or not (Using if condition)
2. Write a C program to find maximum or minimum in an array (Using Single Dimensional array, Switch Case).
3. Write a C program to find the factorial of a given number (Using for loop).
4. Write a C program to generate Fibonacci series. (Using For loop)
5. Write a C program to generate N prime numbers. (Using For loop)
6. Write a C program to find whether the number is palindrome or not (Using String Functions).
7. Write a C program to check whether the given year is leap year or not (Using if – else condition).

8. Write a C program to generate a Pascal triangle. (Using For loop)
9. Write a C program to check whether a person is eligible for voting or not. (Using if-else condition).
10. Write a C program to perform linear search in a given array. (Using For loop)
11. Write a C program to display transpose matrix of a given number. (Using Two Dimensional Array)
12. Write a C program for matrix multiplication. (Using Two Dimensional Array)
13. Write a C program to perform string concatenation. (Using String Functions)
14. Write a C program for sorting a string using user-defined function. (Using String Functions)
15. Write a C program to convert uppercase to lowercase and vice versa. (Using String Functions)
16. Write a C program to insert or delete an element in an array. (Using Single Dimensional Array)
17. Write a C program to arrange the array of numbers in ascending or descending order. (Using Two Dimensional Array)
18. Write a C program to find GCD of two numbers. (Using recursion)
19. Write a C program for dynamic memory allocation. (Using Pointers)
20. Write a C program to merge two files. (Using Files)
21. Write a C program to read and write to the file using fread() and fwrite() functions. (Using Files)
22. Write a C program to create a file and store the information about a person. (Using Files)
23. Write a C program to count numbers of words, blank spaces, special symbols, vowels in a given text using pointers.
24. Write a C program to display a character along with its location in a file using ftell().

Powerpoint Presentations, Experience Discussion, Case Study

Mapping

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

H-High;M-Medium;L-Low

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Ms.C.Keerthana	Name: Ms.C.Keerthana	Name: Mr.K.Srinivasan	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT204	Title	Batch:	2020-23
		CORE III: OBJECT ORIENTED PROGRAMMING WITH C++	Semester	II
Hrs/Week:	04		Credits:	03

Course Objective

To provide in-depth coverage of object-oriented programming principles and techniques in C++.

Course Outcomes(CO)

K1	CO1	To collect keywords, tokens, data types, oops concepts and control structures in C++
K2	CO2	To understand the design issues involved with variable allocation and binding, functions, classes and objects
K3	CO3	To apply features of object-oriented programming to solve real-world problems using constructors, destructors and operator overloading concepts
K4	CO4	To interpret the concepts of pointers, managing console I/O operators and file operations in C++

Syllabus

Unit-I

[11Hours]

Principles of Object-Oriented Programming: Procedure-Oriented Programming – Object Oriented Programming Paradigm – **Basic Concepts of OOP** – **Benefits of OOP***.

Beginning with C++: Structure of C++ Program. **Tokens, Expressions and Control Structures:**

Tokens–Keywords–Identifiers–Datatypes–Declaration of Variables–**Dynamic Initialization of Variables** – Reference Variables – Operators – Scope Resolution Operator – Expressions – Operator Precedence–Control Structures.

Unit-II

[11Hours]

Functions in C++: The Main () Function – Function Prototype – Call by Reference – Return by Reference - Inline Functions – Default Arguments – Function Overloading – Friend and Virtual Functions. **Classes and Objects:** Specifying Class – Defining Member Functions – Private Member Functions – Array with a Class – Static Data Members – Static Member Functions – Array of Objects – Objects as Function Arguments – Returning Objects – Const Member Functions.

Unit-III

[10Hours]

Constructors and Destructors: Constructors–Parameterized Constructors–Multiple Constructors in a class – Copy Constructors - Dynamic Constructors – Destructors. **Operator Overloading and Type Conversion:** Defining Operator Overloading Function–Overloading Unary Operators – Overloading Binary Operators – Overloading Operators with Friend Functions–*Rules for Overloading Operators*.*.

Unit-IV

[10Hours]

Inheritance: Defining Derived Classes – Types of Inheritance – Virtual Base Classes – Abstract Classes – Nesting of Classes. **Pointers, Virtual Functions and Polymorphism:** Pointers to Objects – this Pointer – Pointers to Derived Classes – Virtual Function - Pure Virtual Functions.

Unit-V

[10Hours]

Managing Console I/O Operators: C++ Streams–Stream Classes–Unformatted I/O Operator – Formatted Console I/O Operations. **Working with Files:** Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-File - File Open Modes – File Pointers and Their Manipulators.

Note: **Italicized texts are for self study*

PowerpointPresentations,Seminar,Quiz,andAssignment
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BooksforStudy

1. BalaGurusamy.E,(2013),“ObjectOrientedProgrammingwithC++”,6theditionTMHPublication,ISBN-13:9781259029936.

BooksforReference

1. Ashok N Kamthane, (2009), “Object-Oriented Programming with ANSI and Turbo C++”, Pearson Education publication, ISBN-13:978-8131703830.
2. MariaLitvinandGaryLitvin,(2002),“C++foryou”,VikasPublication,ISBN-13:9788125912026.
3. JohnRHubbard,(2009),“ProgrammingwithC++”,3rdEdition,TMHPublication,ISBN-13:978-0070144811.
4. Bhushan Trivedi, (2010) “Programming with Ansi C++”, Oxford University Press, ISBN-13:9780198063087.
5. <https://www.syncfusion.com/resources/techportal/ebooks/cplusplus>

Mapping

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

H-High;M-Medium;L-Low

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Ms.K.S.Leelavathi Signature:	Name: Ms.C.Keerthana Signature:	Name: Mr.K.Srinivasan Signature:	Name: Dr.R.Muthukumaran Signature:

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 nonlinear 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**[10Hours]**

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

Unit-III**[10Hours]**

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

Unit-IV**[11Hours]**

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**[11Hours]**

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

Note:**Italicized texts are for self study*

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. GAVPai, (2011), “Data Structures and Algorithms – Concepts, Techniques and Applications”, Tata McGraw Hill 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”, F accsimile Edition, Pearson India, ISBN-13: 978-8131702291.

2. AshokNKamthane,(2009),“ProgrammingandDataStructures”,PearsonEducation,1st IndianPrint,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

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Ms.C.Keerthana Signature:	Name: Ms.C.Keerthana Signature:	Name: Mr.K.Srinivasan Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	20UCT2A2	Title	Batch:	2020-23
		ALLIED II: DISCRETE MATHEMATICS	Semester	II
Hrs/Week:	04		Credits:	04

Course Objective

To instruct the concepts of Set Theory, Propositional Calculus, Relations and Graph Theory.

Course Outcomes (CO)

K1	CO1	To keep in mind about the Set theory and its laws
K2	CO2	To understand the law relating to Propositional calculus, Tautologies and Contradiction
K3	CO3	To implement the conceptual knowledge of Relations and Functions
K4	CO4	To evaluate the elements related to various aspects of Graph Theory and its representation

Syllabus

Unit-I

[10 Hours]

Mathematical logic—Introduction—Propositional calculus—Basic logical operations—Tautologies—Contradiction—Argument—Method of proof.

Unit-II

[10 Hours]

Set theory—Introduction—Set & its Elements - Set Description - Types of sets—Venn-Euler Diagrams*—Set operations & Laws of set theory—Fundamental products—partitions of sets—minsets—Algebra of sets and Duality.

Unit–III

[10Hours]

Relations–Set operationonrelations-TypesofRelations–Partialorderrelation–Equivalence relation – Composition of relations – **Functions** – Types of functions – Invertiblefunctions – *Compositionoffunctions**.

Unit–IV

[11Hours]

Graph Theory – Basic terminology – Paths, Cycle and Connectivity – Sub graphs – Types ofgraphs –Isomorphic Graphs, HomeomorphicGraphs.

Unit–V

[11Hours]

Representation of graphs in computer memory–Operationson Graphs– Shortestpathproblems:Unweighted Graph and Weighted Graph–Planar Graph.

Note: Note: **Italicizedtextsareforselfstudy*

PowerPointPresentations,Quiz,Assignment,CaseStudy

BooksforStudy

- 1.Sharma J. K, (2005) “Discrete Mathematics”, 3rd Edition, MacMillan India Ltd, ISBN-13:9780230322301.

BooksforReference

1. N. Chandrasekaran and M. Umaparvathi, (2015), “Discrete Mathematics”, Second Ed,ISBN-978-81-203-5097-7
2. J.P. Tremblay, R.Manohar,(2008), “Discrete Mathematical Structures with applicationsto Computer Science” Tata McGraw-Hill Publishing company pvt. Ltd., New Delhi, 35thedition.
3. Veerajan T., (2010),”Discrete Mathematics with Graph Theory and Combinatorics”, 10thedition,TataMcGrawHillCompanies.
4. <http://pdfebooklibrary.com/ebooks/discrete-mathematics-book-download.pdf>

Mapping

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

H-High;M-Medium;L-Low

CourseDesignedby	VerifiedbyHOD	Checkedby	Approvedby
NameandSignature	NameandSignature	Co-ordinator CDC	COE
Name: Mr. R.Jayaprakash Signature:	Name: Ms.C.Keerthana Signature:	Name: Mr.K.Srinivasan Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	20UCT206	Title	Batch:	2020-23
		LAB– II:PROGRAMMING IN C++WITH DATA STRUCTURES	Semester	II
Hrs/Week:	04		Credits:	02

Course Objective

To develop the programming ability in C++ by knowing the OOPS concepts like Encapsulation, Abstraction, Inheritance, Polymorphism, Exception handling.

Course Outcomes(CO)

K3	CO1	To collect the structure of the C++ programming language
K4	CO2	To understand how to implement copy constructors and class member concept of data abstraction and encapsulation and to overload functions and operators in C++
K5	CO3	To access how inheritance promotes code reuse, how virtual functions implement dynamic binding with polymorphism, how to design and implement generic classes with C++ templates and how to use exception handling in C++ programs

Sample Programs

[Total Hours: 52]

1. Write a C++ program to check if two strings are equal or not using user-defined function.
2. Write a C++ program to swap two numbers by function through pass by value, address and reference.
3. Write a C++ program to calculate the area of a regular hexagon using user-defined function with arguments and return value.

4. Write a C++ program to find the largest of two numbers using inline function.
5. Write a C++ program to find volume of cube, cylinder and rectangle using function overloading.
6. Write a C++ program to find LCM of two numbers using recursive function.
7. Write a C++ program to display numbers in Floyd's triangle format using class.
8. Write a C++ program to find sum of individual digits of a natural number using class.
9. Write a C++ program to solve these second order quadratic equation using class.
10. Write a C++ program to find mean of two numbers using friend function.
11. Write a C++ program to check prime number or not using constructor, destructor and copy constructor.
12. Write a C++ program for stack operation.
13. Write a C++ program for queue operation.
14. Write a C++ program for single linked list operation.
15. Write a C++ program for merging and sorting of two arrays.
16. Write a C++ program to overload ++ unary operator.
17. Write a C++ program to concatenate two strings by overloading binary operator ++ using member function.
18. Write a C++ program to overload binary operator '+' and '-' using friend function.
19. Write a C++ program to process employee payslip processing using single inheritance.
20. Write a C++ program to process student details using multiple inheritance.
21. Write a C++ program using hybrid inheritance.
22. Write a C++ program using "virtual" keyword.
23. Write a C++ program for conversion of one class to another class.
24. Write a C++ program to display successor and predecessor of a given number using concept of pointer to derived and base class.
25. Write a C++ program to illustrate the concept of new and delete operators.
26. Write a C++ program to perform file operations using read() and write() functions.

27. Write a C++ program to convert uppercase to lowercase and vice versa in a file.
28. Write a C++ program to copy from one file to another file using command line arguments.
29. Write a C++ program to merge two files into one file.
30. Write a C++ program for class template.
31. Write a C++ program for function template.

Powerpoint Presentations, Activity

Mapping

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

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.K.S.Leelavathi	Name: Ms.C. Keerthana	Name: Mr.K.Srinivasan	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

NGM College

Vision

Our dream is to make the college an institution of excellence at the national level by imparting quality education of global standards to make students academically superior, socially committed, ethically strong, spiritually evolved and culturally rich citizens to contribute to the holistic development of the self and society.

Mission

Training students to become role models in academics by strengthening infrastructure, upgrading curriculum, developing faculty, augmenting extension services and imparting quality education through an enlightened management and committed faculty who ensure knowledge transfer, instill research aptitude and infuse ethical and cultural values to transform students into disciplined citizens in order to improve quality of life.

Department of Computer Technology

Vision

To continue to be the Premier Department for Computer Technology and to become regionally top-ranked and nationally recognized for Academic Excellence.

Mission

To offer a broad-based education, encourage lifelong learning, foster teamwork, promote creativity, discovery and competitiveness.

To turn out highly qualified graduates into world-class professionals capable of competing in the IT Arena as well as in a research environment.

Scheme of Examination

Part	Subject Code	Subject	Ins.Hours Per Week	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTER I								
I	18UTL101	TAMIL -I	6	3	25	75	100	3
	18 UHN 101	HINDI- I						
II	18 UEN101	ENGLISH-I	5	3	25	75	100	3
III	18 UCT101	COREI:C PROGRAMMING	4	3	25	75	100	4
	18 UCT102	COREII:DIGITALCOMPUTER FUNDAMENTALS	4	3	25	75	100	4
	18UCT1A1	ALLIED I: MATHEMATICAL STRUCTURES FORCOMPUTERSCIENCE	5	3	25	75	100	4
	18 UCT103	PROGRAMMINGLAB-I('C')	4	3	20	30	50	2
IV	18 UHR 101	HUMANRIGHTS	1	2	-	50	50	2
	18 HEC 101	HUMANEXCELLENCE- PERSONALVALUES&SKYYOGA PRACTICE-I	1	2	25	25	50	1
V	18 UNS401/ 18UNC402/ 18 USG403	EXTENSIONACTIVITIES(NSS/NCC/SPORTSANDG AMES)	-					
TOTAL			30	-	170	480	650	22
SEMESTER II								
I	18UTL202	TAMIL- II	6	3	25	75	100	3
	18 UHN 202	HINDI- II						
II	18 UEN202	ENGLISH-II	5	3	25	75	100	3
III	18 UCT204	CORE III: OBJECT ORIENTED PROGRAMMINGWITH'C++'	4	3	25	75	100	4
	18 UCT205	COREIV:DATASTRUCTURESANDA LGORITHMS	4	3	25	75	100	4
	18UCT2A2	ALLIEDII: DISCRETE MATHEMATICS	4	3	25	75	100	4
	18 UCT206	PROGRAMMINGLAB-II(C++)	4	3	20	30	50	2
IV	18 EVS201	ENVIRONMENTALSTUDIES	2	2	-	50	50	2
	18 HEC 202	HUMAN EXCELLENCE - FAMILY VALUES &SKYYOGA PRACTICE- II	1	2	25	25	50	1
V	18 UNS401/ 18 UNC402/ 18 USG403	EXTENSIONACTIVITIES(NSS/NCC/SPORTSANDG AMES)	-					
TOTAL			30	-	170	480	650	23

Part	SubjectCode	Subject	Ins.Hours PerWeek	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTERIII								
III	18 UCT307	CORE V:JAVAPROGRAMMING	5	3	25	75	100	4
	18 UCT308	CORE VI: RELATIONAL DATABASEMANAGEMENTSYSTEM &ORACLE	5	3	25	75	100	4
	18 UCT309	CORE VII:OPERATINGSYSTEMS	5	3	25	75	100	4
	18UCT3A3	ALLIEDIII:COMPUTERSYSTEMARCHITECTURE	5	3	25	75	100	4
	18 UCT310	PROGRAMMINGLAB-III(JAVAPROGRAMMING)	4	3	20	30	50	2
	18 UCT311	PROGRAMMINGLAB - IV(RELATIONALDATABASEMANAGEM ENTSYSTEM)	4	3	20	30	50	2
IV	18 HEC 303	HUMAN EXCELLENCE - PROFESSIONAL VALUES&SKY YOGA PRACTICE- III	1	2	25	25	50	1
	18UCT3N1/ 18UCT3N2	SKILL BASED NON- MAJOR ELECTIVE I - HTMLLAB/MULTIMEDIA LAB	1	2	-	50	50	2
V	18 UNS401/ 18UNC402/ 18 USG403	EXTENSIONACTIVITIES(NSS/NCC/SPORTSANDG AMES)	-					
TOTAL			30	-	165	435	600	23
SEMESTERIV								
III	18 UCT412	CORE VIII:J2EETECHNOLOGIES	5	3	25	75	100	4
	18 UCT413	COREIX:FUNDAMENTALSOFSOFTWAREE NGINEERING	5	3	25	75	100	4
	18 UCT414	COREX:DATACOMMUNICATIONANDN ETWORKS	5	3	25	75	100	4
	18UCT4A4	ALLIEDIV:PROCESSORS	5	3	25	75	100	4
	18 UCT415	PROGRAMMINGLAB-V(J2EETECHNOLOGIES)	4	3	20	30	50	2
	18 UCT416	PROGRAMMINGLAB-VI(SOFTWARETESTING)	4	3	20	30	50	2
IV	18 HEC 404	HUMANEXCELLENCE - SOCIALVALUES&SKY YOGAPRACTICE -IV	1	2	25	25	50	1
	18UCT4N3/ 18UCT4N4	SKILL BASED NON-MAJOR ELECTIVE II - OFFICEAUTOMATIONLAB/ CORELDRAWLAB	1	2	-	50	50	2
V	18 UNS401/ 18UNC402/ 18 USG403	NSS/NCC/SPORTSANDGAMES	-	-	-	50	50	1
TOTAL			30	-	165	485	650	24

Part	Subject Code	Subject	Ins.Hours PerWeek	Exam				Credit
				Hours	CIA	ESE	Total	
SEMESTERV								
III	18 UCT517	CORE XI:OPENSOURCETECHNOLOGIES	6	3	25	75	100	4
	18 UCT518	CORE XII:INFORMATIONSECURITY	6	3	25	75	100	4
	18 UCT519	ELECTIVEI	6	3	25	75	100	5
	18 UCT520	PROGRAMMINGLAB-VII(OPENSOURCETECHNOLOGIES)	5	3	40	60	100	3
	18 UCT521	PROGRAMMINGLAB - VIII(WEBDESIGNINGLAB)	5	3	40	60	100	3
IV	18 HEC 505	HUMANEXCELLENCE-NATIONALVALUES&SKYYOGA PRACTICE- V	1	2	25	25	50	1
	18 GKL501	GENERALKNOWLEDGEANDGENERALA WARENESS	SS	2	-	50	50	2
	18 UCT5S1/ 18UCT5S2	SKILLBASEDMAJORELECTIVE I - PYTHON LAB/HTML5withCSS	1	2	-	50	50	2
TOTAL			30	-	205	545	650	24
SEMESTERVI								
III	18 UCT622	COREXIII:FRAMEWORKTECHNOLOGY	6	3	25	75	100	4
	18 UCT623	ELECTIVE-II	6	3	25	75	100	4
	18 UCT624	ELECTIVE-III	6	3	25	75	100	5
	18 UCT625	PROGRAMMING LAB - IX: (FRAMEWORKTECHNOLOGY)	5	3	40	60	100	3
	18 UCT626	INDUSTRYORIENTEDPRACTICALS	5	3	40	60	100	4
IV	18 HEC 606	HUMAN EXCELLENCE - GLOBAL VALUES &SKYYOGA PRACTICE- VI	1	2	25	25	50	1
	18 UCT6S3/ 18UCT6S4	SKILL BASED MAJOR ELECTIVE II - DATAANALYTICS(BIGDATA)/DREAMWEA VER	1	2	-	50	50	2
TOTAL			30	-	180	420	600	24
TOTAL			180	-	1055	2845	3800	140

LIST OF MAJOR ELECTIVE PAPERS

ELECTIVE-I	A.CloudComputing
	B.DataMining andAnalytics
	C.ArtificialIntelligence
ELECTIVE-II	A.EmbeddedSystems
	B.E-Commerce
	C.UnderwaterCommunication
ELECTIVE-III	A.IntroductiontoComputerGraphicsandMultimedia
	B.MobileComputing
	C.IoT

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT517	Title	Batch:	2018 -21
		CORE XI: OPENSOURCE TECHNOLOGIES (PHP and MySQL)	Semester	V
Hrs/Week:	06		Credits:	04

Course Objective

To learn the process of executing a PHP-based script with MySQL on a web server.

Course Outcomes (CO)

K1	CO1	To keep in mind PHP basic syntax and PHP object-oriented classes
K2	CO2	To understand functions available to deal with file and directory operations
K3	CO3	To implement cookies, sessions and headers
K4	CO4	To evaluate the database connectivity using PHP MySQL/MySQLi/SQLite extensions and to figure out the error handling methods

Syllabus

Unit-I

[13 Hours]

Introducing PHP: History – Unique features – Basic Development Concepts – **Creating your First PHP Script** – Sample Applications. **Using Variables and Operators:** Storing Data in Variables – Understanding PHP's Data types – Setting and Checking Variable Data Types – Using Constants – *Manipulating Variables with Operators** – Handling Form Input.

Unit-II

[13 Hours]

Controlling Program Flow: **Writing Simple Conditional Statements** – Writing More Complex Conditional Statements – Repeating Actions with Loops – Working with String and Numeric Functions. **Working with Arrays:** Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms – Working with Array Functions – *Working with Dates and Times**.

Unit-III

[13 Hours]

Using Functions and Classes: Creating User-Defined Functions – Creating Classes – Using Advanced OOP Concepts. **Working with Files and Directories:** Reading Files – **Writing Files – Processing Directories** – Performing Other File and Directory Operations.

Unit-IV

[13 Hours]

Working with Databases and SQL: Introducing Databases and SQL – Creating and Populating a Database – Using PHP's MySQLi Extension – **Adding or Modifying Data** – Handling Errors. Using PHP's SQLite Extension – Using PHP's PDO Extension – Using a **MySQL Database** – Switching to a different Database.

Unit-V

[13 Hours]

Working with Cookies, Sessions and Headers: Working with **Cookies** – Saving and Restoring User Preferences – Working with **Sessions** – Using **HTTP Headers**. **Handling Errors:** Handling Script Errors – Using **Exceptions** – **Validating form Input** – Logging Errors – **Debugging** Errors.

Note: **Italicized texts are for self study*

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. Vikram Vaswani, (2009), "PHP: A Beginner's Guide", Second Reprint, Tata McGraw Hill Publications, ISBN-13: 9780070140691.

Books for Reference

1. Tim Converse, (2000), "PHP 4 Bible", IDG Books Worldwide, INC, An International Data Group Company, ISBN-13: 9788126501472.
2. Rasmus Lerdorf, Kevin Tatroe, (2011), "Programming PHP", 2nd Edition, O'Reilly Media, 1st Edition, ISBN-13: 9788184042719.
3. Luke Welling; Laura Thomson, (2010), "PHP and MySQL-Web Development", 4th Edition, ISBN-13: 9788131729878.

4. http://cdn.phpreferencebook.com/wp-content/uploads/2008/12/php_reference_-_beginner_to_intermediate_php5.pdf

Mapping

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

S-Strong 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: Dr.J.Thilagavathi Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc.	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT518	Title	Batch:	2018 -21
		CORE XII - INFORMATION SECURITY	Semester	V
Hrs/Week:	06		Credits:	04

Course Objective

To develop the knowledge about Cyber Security, Cryptography, Symmetric/Asymmetric Key Algorithms and other security techniques.

Course Outcomes (CO)

K1	CO1	To remember about the concepts of Attacks on computers, Encryption and Decryption Methods, Substitution and Transposition Techniques
K2	CO2	To understand how DES and RSA Algorithm works
K3	CO3	To apply the conceptual knowledge of Digital Certificates and Secure Socket Layer
K4	CO4	To analyze the elements related with Cryptographic Algorithms used in S/MIME and Virtual Private Network

Syllabus

Unit-I

[15 Hours]

Attacks on Computers and Computer Security: Introduction – Need For Security – Types Of Attacks. **Cryptography - Concepts and Techniques:** Introduction – Plain Text and Cipher Text – Substitution Techniques – Transposition Techniques – Encryption and Decryption.

Unit-II

[16 Hours]

Symmetric Key Algorithms: Introduction – Algorithm Types – An Overview Of Symmetric Key Cryptography –

Data Encryption Standard (DES): How DES Works? **Asymmetric**

Key Algorithms, Digital Signature And RSA: Introduction – An Overview Of Asymmetric Cryptography-The RSA Algorithm.

Unit–III

[16Hours]

Digital Certificate and Public Key Infrastructure (PKI): Digital Certificates: Introduction – **The Concept of Digital Certificate** – Certificate Authority – **Technical Details**. The PKIX Model. **Internet Security Protocols:** Introduction – Basic Concepts – Secure Socket Layer – (SSL) – **Secure Hyper Text Transfer Protocol (SHTTP)***.

Unit–IV

[15 Hours]

Email Security: PGP – How PGP Works? – **S / MIME: Introduction** – Cryptographic Algorithms used in S/MIME – Security in GSM – Security in 3G. **User Authentication And Kerberos:** Introduction – **Authentication Basics** – **Passwords:** Introduction – Clear Text Passwords-Kerberos.

Unit–V

[16Hours]

Cryptography In JAVA: Introduction – Cryptographic Solution Using JAVA. **Network Security Firewalls And Virtual Private Networks (VPN):** Introduction – Brief Introduction To TCP/IP – **Fire Walls:** Introduction – *Types of Firewalls**. **Virtual Private Networks (VPN)** – Intrusion.

Note: **Italicized texts are for self study*

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment

Books for Study

1. Atul Kahate, (2007), “Cryptography and Network Security”, 2nd Edition, Tata McGraw-Hill Publication, and ISBN-13: 9780070648234.

Books for Reference

1. Mark Rhodes-Ousley, Roberta Bragg, Keith Strassberg, (2004), “Network Security: The Complete Reference”, Tata McGraw-Hill. ISBN: 0-07-222697-8.

2. William Stallings, (2006), "Cryptography and Network Security Principles and Practices", 4th Edition, ISBN: 978-81-203-3018-4.
3. Brijendrasingh, (2009), "Network Security and Management", 2nd Edition, PHI Publication, ISBN-13: 9788120339101.
4. <https://www.scribd.com/doc/159080504/Cryptography-Network-Security-Atul-Kahate>

Mapping

PO \ CO	PO1	PO2	PO3	PO4	PO5
CO1	H	S	M	M	S
CO2	H	H	M	L	S
CO3	S	S	M	M	S
CO4	S	M	H	S	M

S-Strong 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: Mr. R. Jayaprakash	Name: Dr. J. Thilagavathi	Name: Dr. M. Durairaju	Name: Dr. R. Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT519	Title	Batch:	2018 -21
		ELECTIVE I: CLOUD COMPUTING	Semester	V
Hrs/Week:	06		Credits:	05

Course Objective

To make out facts about cloud computing, developing cloud services, Cloud Storage, Cloud Computing at Work, Cloud computing Security Issues and Challenges.

Course Outcomes (CO)

K1	CO1	To collect cloud networking concepts
K2	CO2	To understand and familiar with the basic concepts of cloud computing and python
K3	CO3	To apply cloud to large scaled distributed systems
K4	CO4	To figure out security issues in cloud computing

Syllabus

Unit-I

[12 Hours]

Introduction to Cloud Computing: Characteristics – Models – *Services Examples –

Services and Applications. **Cloud concepts and Technologies:** Virtualization – Load balancing – scalability and elasticity – Deployment – Replication – Monitoring – Software defined Networking – Network function virtualization – MapReduce – Identity and access management – Service level agreements – Billing.

Unit-II

[13 Hours]

Cloud services and Platforms: Compute – *Storage – Database – Application – Content Delivery – analytics – Deployment and Management – Identity and access Management – Open source Private **Cloud Software**. **Hadoop and MapReduce:** **Apache Hadoop** – **MapReduce** Job execution – Schedulers – Cluster setup.

Unit-III

[14Hours]

CloudApplicationDesign: Introduction–Designconsiderations–ReferenceArchitectures

– Design methodologies – Data storage approaches. **Cloud Application Benchmarking andTuning:** Introduction–WorkloadCharacteristics–ApplicationPerformanceMetrics–Design Considerations – Benchmarking Tools – Deployment prototyping – Load Testing andBottleneckDeduction –Hadoop Benchmarking.

Unit-IV

[13Hours]

CloudSecurity: Introduction–CSA**CloudSecurityArchitecture**–Authentication–Authorization

– Identity and Access Management – Data Security – Key Management – Auditing.**CloudForIndustry,HealthCareandEducation:** HealthCare–Energysystems – Transportationsystems –ManufacturingIndustry–Education.

Unit-V

[13 Hours]

Python Basics: Introduction – Installation – Data types and Data structures – **Control flow* – Functions–Modules–Packages–Filehandling–Date/Time–Operations–

Classes.**PythonforCloud:** Amazonwebservices–GooglePlatform–WindowsAzure–

MapReduce–Packages–**WebApplicationFramework**–DesigningaRESTful**WebAPI**.Note:

**Italicized texts are for self study*

PowerpointPresentations,GroupDiscussions,Seminar,Quiz,Assignment,CaseStudy

BooksforStudy

- 1.ArshdeepBahga,VijayMadiseti.(2016).*CloudComputing–AHands-onApproach*. UniversitiesPressPvt. Ltd.

BooksforReference

1. Michael Miller, (2008), “Cloud Computing: Web-Based Applications That Change the way you work and Collaborate Online”, Macmillan Computer Publication, 1st Edition, ISBN-13:9780789738035.
2. http://cs.ecust.edu.cn/~yhq/course_files/cloud/Cloud%20Computing%20Bible.pdf

Mapping

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

S-Strong 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: Mr.R.Jayaprakash	Name: Dr.J.Thilagavathi	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	18UCT519	Elective I-Artificial Intelligence	Batch:	2018 -21
			Semester	V
Hrs/Week:	06		Credits:	5

Course Objective

To embed a deep knowledge about search techniques, reasoning, game playing, expert systems and prolog.

Course Outcomes (CO)

K1	CO1	To keep in mind different search strategies for a problem
K2	CO2	To understand concepts of semantic net
K3	CO3	To implement a AI problem to be solved using prolog
K4	CO4	To evaluate different knowledge representation schemes for AI problems

Syllabus

Unit-I

[15 Hours]

Problems and search: AI Techniques-Defining the problem as a State Space Search-
Production Systems-Problem Characteristics- **Production system Characteristics**-
 Heuristic Search Techniques- Generate and test - Hill Climbing - Best-first Search -
 Problem Reduction -Constraint Satisfaction-*Mean-Ends Analysis.

Unit-II

[16 Hours]

Knowledge Representation: Representations and Mappings- **Approaches to Knowledge Representation**-
Issues in knowledge representation- Representing simple Facts in Logic-
 Representing Instance and Is-a Relationships-Procedural versus Declarative Knowledge-**Logic Programming**-
 *Forward versus Backward reasoning.

Unit-III

[15 Hours]

Semantic Nets: Frames - Conceptual Dependency - **Game Playing** – Overview– The minimax search procedure– Adding Alpha-Beta cutoffs.

Unit-IV

[16 Hours]

Expert System : Definition – Characteristics of Expert System – Architecture & Description of Modules–Backward Chaining–Knowledge Acquisition facility.Knowledge Engineering–**Expert System Life Cycles**– * Expert SystemTools.

Unit-V

[16Hours]

Prolog:The Introduction-Converting English to prolog fact sand rules–goals–**Terminology** – Variables - **Control structures** - Arithmetic operators - Matching in Prolog – Back tracking –cuts – Recursion – Lists - Dynamic Databases - I/O Streams - Some aspects specific to LPAProlog.

Note: **Italicized*texts arefor selfstudy

PowerpointPresentations,GroupDiscussions,Seminar,Quiz,Assignment

BooksforStudy

1.ElaineRich,KevinKnight,(2009),ArtificialIntelligence,3rd edition,TataMcGrawHillPublications.

BooksforReference

1. StuartRussell,PeterNorvig,(2009),ArtificialIntelligence:AModernApproach,3rdEdition,Pe arson NewInternational Edition.
2. Er.RajivChopra,(2005),ArtificialIntelligence:APracticalApproach,1stEdition,S.ChandPublications.

Mapping

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

S-Strong 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: Ms.K.S. Leelavathi Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	18UCT519	Elective I-Data Mining and Analytics	Batch:	2018 -21
			Semester	V
Hrs/Week:	06		Credits:	5

Course Objective

To give a better understanding of various concepts of Data Mining includes KDD, Association rules, Classification, Clustering, different types of mining and also about big data analytics.

Course Outcomes (CO)

K1	CO1	To keep in mind the various concepts of data mining
K2	CO2	To understand the types of data mining and analytics
K3	CO3	To execute data mining algorithms for finding hidden interesting patterns in data
K4	CO4	To evaluate various data mining algorithms and analysis of big data.

Syllabus

Unit-I

[15 Hours]

Data mining and the data warehouse: Introduction-Data mining-Kind of data-functionalities-classification-Task primitives-Integration with database or warehouse-Major issues. **Mining frequent patterns, association and correlations:** Basic concepts. **Efficient and scalable frequent itemset mining methods:** Apriori Algorithm-Generating association rules.

Unit-II

[16 Hours]

Classification and prediction: Definition-Issues-*classification by* **Decision tree** Induction-Bayesian classification-rule based classification-classification by backpropagation-support vector machine.

Unit-III

[15 Hours]

Clusteranalysis: Definition-types of data in clusteranalysis-categorization of major clustering methods-partitioning methods-hierarchical methods

Unit-IV

[16 Hours]

Spatial data mining-multimedia data mining-text mining-mining the web-**datamining Applications.*

Unit-V

[16Hours]

Bigdata Analytics: Introduction-Drivers for big data-Applications-Architecture-Advanced Analytics platform-Implementation

Note: **Italicized* texts are for self study

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment
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Books for Study

1. Jiawei Han and Micheline Kamber (2005) *Data Mining concepts and techniques*, Elsevier publication.
2. Dr. Aravind Sathi (2012) *Big Data Analytics: Disruptive Technologies for Changing the Game*, first edition, MC Press publication.

Books for Reference

1. Margaret H. Dunham (2009), *Data Mining Introductory and Advanced Topics*, Pearson Education Publications.
2. Vikram Pudi, P. Radha Krishna (2009), *Data Mining*, Oxford University Press, First Edition.
3. Anand Rajaraman and Jeffrey David Ullman (2012), "Mining of Massive Datasets", Cambridge University Press.

Mapping

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

S-Strong 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: Ms.J.Priya Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

ProgrammeCode:	B.Sc	ProgrammeTitle:	BachelorofScience (ComputerTechnology)	
CourseCode:	18UCT622	Title	Batch:	2018 -21
		CORE XIII - FRAMEWORK TECHNOLOGY	Semester	VI
Hrs/Week:	06		Credits:	04

CourseObjective

Toaddresstherequirementsofdeveloperstobecome expertsin .NETenvironment.

CourseOutcomes (CO)

K1	CO1	Tokeepinmind about.NETframeworkfundamentals
K2	CO2	Tounderstandthecontrolstatements,arraysandprocedures
K3	CO3	Toimplementtheconceptof GUI,filesandstreams
K4	CO4	Toanalyzeabout databaseconnectivitywith.NET framework

Syllabus

Unit–I

[13Hours]

IntroductiontoVisualBasic.NET: VisualBasic.NET-IntroductiontoMicrosoft.NET-.NETFrameworkandthecommonlanguageruntime.

IntroductiontotheVisualStudio.NETIDE: Introduction–Overviewofthevisualstudio .NET IDE-Menubar andToolbar–VisualStudio.NET IDEwindows.

Introduction to Visual Basic Programming: Introduction – simple programs – memoryconcepts-Arithmetic-Decision Making–Using adialogto displayamessage.

Unit–II

[13 Hours]

Control Structures: Introduction – Control Structures- if/then selection structure- if/then/elseSelectionStructure–While,DoWhile/loop,DoUntil/LoopRepetitionStructures– Assignment Operators* – For Next – Select Case – do/loop while – do/loop until – exit keyword–logical operators.

Procedures: Introduction – Modules, classes and procedures – sub procedures – functionprocedures – methods – Arguments Promotion – Option Strict and Data type conversions –value types and reference types – passing arguments: pass – by-value vs. pass-by-reference –durationofidentifiers– scoperules.

Unit–III

[13 Hours]

Arrays:Introduction - arrays - declaring and allocating arrays - examples - passing arrays toprocedures-ByVal vsByRef. –foreach/next repetition structure.

Graphical user interface concepts: Introduction – windows forms – event handling model – control properties and layout – labels, textboxes and buttons – group boxes and panels – *checkboxes and radio buttons** – picture boxes – mouse **event handling** – keyboard eventhandling.

Menus – Link labels – List boxes and checked list boxes – Combo boxes – Tree views – Listviews– Tab control –**MDIwindows**– Visual inheritance –User definedcontrols.

Unit–IV

[13 Hours]

Files and Streams: Introduction – Data Hierarchy – Files and Streams – Classes File andDirectory – **Creating a Sequential-Access File – Reading data from a Sequential-Access File**-Random-AccessFiles-CreatingaRandom-AccessFile-WritingDataRandomly toaRandom-AccessFile-ReadingDataSequentiallyfrom aRandom-AccessFile.

Unit–V

[13 Hours]

Database,SQLandADO.NET:Introduction–**relationaldatabasemodel**-SQL–**ADO.NET object model** – programming with ADO.NET – extracting from a database –modifyingadatabase-readingand writingXMLfiles.

ASP.NET, **web forms and web controls:** Introduction – simple **HTTP transaction** – systemarchitecture– web controls– **session tracking**.

Note: **Italicized*texts arefor selfstudy

PowerpointPresentations,Seminar,Assignment
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BooksforStudy

1. Deitel H.M, Deitel P.J, Nieto T.R, “Visual Basic .NET How to Program”, 2nd Edition, Pearson Education, ISBN-13: 9780130389374.

BooksforReference

1. Kogent Learning Solutions Inc., (2010), “.Net 3.5 Programming: Covering .Net Framework”, 1st Edition, Dream Tech Press, ISBN-13: 9788177228342.
2. Bill Evjen, Jason Beres, et.al, (2002), “Visual Basic .Net Programming – Black Book”, Wiley Dream Tech India (p) Ltd. ISBN: 81-265-0254-1.
3. Tim Anderson, “VB .Net programming in Easy Steps”, 1st Edition, Dream Tech, ISBN-13: 9788177221930.
4. <https://www.syncfusion.com/resources/techportal/details/ebooks/aspnetmultitenant>

Mapping

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

S-Strong 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: Ms.J.Priya Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	18UCT623	Title	Batch:	2018 -21
		ELECTIVE II: EMBEDDED SYSTEMS	Semester	VI
Hrs/Week:	06		Credits:	4

Course Objective

To introduce real-time systems and embedded computing systems.

Course Outcomes (CO)

K1	CO1	To keep in mind the basic concepts of Embedded System, Microcontroller, Ports and embedded programming in C, C++ and Java
K2	CO2	To understand the concepts of devices and buses for device networks, internal architecture and interfacing of different peripheral devices with Microcontrollers
K3	CO3	To deploy in depth knowledge in Device drivers and Interrupt servicing mechanism, inter-process communication and synchronization of processes
K4	CO4	To analyze a vast experience about Real Time Operating Systems and its applications and program modeling concepts in a single and multiprocessor systems

Syllabus

Unit-I

[16 Hours]

Introduction to Embedded System: Embedded System – Processor Embedded into the System – Embedded Hardware units and Devices in a System – Embedded Software in a system – Examples of embedded system – Embedded system on chip and use of VLSI circuit – Classification of embedded systems – *Skills required for an embedded System Designer* *.

Unit-II

[15 Hours]

Devices and buses for device networks: I/O Types and Examples – Serial Communication devices: Synchronous, Iso-Synchronous and Asynchronous communication from serial devices – Parallel Device Ports - **Timer and counting devices** – Watchdog timer – *Real time clock** – **Network Embedded Systems** – Serial Bus Communication Protocol.

Unit-III

[16 Hours]

Device drivers and Interrupts servicing mechanism: **Device drivers** – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency – **Device Driver** Programming: – Parallel port **device drivers** – Serial port **device drivers** – **Device drivers** for IPTD.

Unit-IV

[15 Hours]

Programming concepts and embedded programming in C and C++: Embedded programming in C++ and in Java. **Program modeling concepts in single and multiprocessor systems:** Program Models – DFG Models – State Machine Programming Models for Event-controlled Program Flow – Modeling of Multiprocessor Systems

Unit-V

[16 Hours]

Inter – process communication and synchronization of processes. Tasks and threads: Multiple processes in an application – Multiple Threads Shared Data – Interprocess communication. **Real time operating systems:** **Operating system services – I/O subsystem** – Real time operating systems – Basic Design using RTOS – RTOS Task **scheduling Models**, Interrupt Latency and Response of the Tasks as Performance Metrics.

Note: **Italicized* texts are for self study

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment
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Books for Study

1. Raj Kamal, (2011), “Embedded Systems – Architecture, Programming and Design”, 2nd Edition, TMH, ISBN-13: 978-0-07-066764-8.

BooksforReference

1. DanielW.Lewis,(2007),“Fundamentals of Embedded Software”, 1st Edition, PHI Education Publications, ISBN:81-7808-604-2.
2. ShibuKV,(2009),“Introduction to Embedded Systems”, 1st Edition, McGraw Hill Education, ISBN-13: 9780070145894.
3. http://www.dauniv.ac.in/downloads/EmbsysRevEd_PPTs/Chap01Lesson_1Emsys.pdf

Mapping

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

S-Strong 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: Ms.C.Keerthana	Name: Dr.J.Thilagavathi	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	18UCT623	Title	Batch:	2018 -21
		ELECTIVEII: E-Commerce	Semester	VI
Hrs/Week:	06		Credits:	4

Course Objective

To learn E-Business revenue models, Law & taxation, online payment systems and sales.

Course Outcomes (CO)

K1	CO1	To remember basic concepts of e-commerce
K2	CO2	To understand the role of E-business in current scenario
K3	CO3	To apply different modes of payment
K4	CO4	To analyze various issues associated with e-commerce

Syllabus

Unit-I

[15 Hours]

E-Business Revenue Models: Introduction – Revenue models – Revenue models in transition –

Revenue Strategy Issues – Creating an effective web presence – Website usability –

*Connecting with customers.

Unit-II

[16 Hours]

Selling to consumers online: Introduction – Web marketing strategies – Communicating with different market segments. Beyond market segmentation: Customer Behavior and Relationship

intensity- *Advertising on the web - E-mail Marketing – Technology Enabled customer

Relationship Management- Creating and Maintaining brands on the web- Search Engine

positioning and Domain names.

Unit-III

[15Hours]

Selling to Business Online: Introduction-Purchasing Logistics and support Activities- **Electronic Data Interchange(EDI)**-Supply chain management using Internet Technologies-
*Electronic market places and portals.

Unit-IV

[16 Hours]

E-Business Law and Taxation: Introduction – The Legal environment of electronic commerce – **Use and protection of Intellectual property in Online Business** – Online crime, Terrorism and warfare-Ethical Issues-*Taxation and Electronic commerce.

Unit-V

[16Hours]

Online payment systems: Introduction - Online payment basics - Payment cards - Electronic cash-Electronic wallets-Stored value cards- Internet Technologies and the Banking Industry. Criminal Activity and payment system: Phishing and Identity Theft.

Note: **Italicized* texts are for self study

Powerpoint Presentations, Group Discussions, Seminar, Quiz, Assignment
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Books for Study

1. Gary P Schneider, (2012), *E-Commerce Strategy, Technology And Implementation*, 9th Edition, Engage Learning Pub.

Books for Reference

1. Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, (2011), *E-commerce Fundamentals and Applications*, 1st Edition, Wiley India Pvt Ltd.
2. P.T. Joseph S.J., (2012), *E -Commerce: An Indian Perspective*, 4th Edition, PHI

Mapping

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

S-Strong 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: Ms.K.S. Leelavathi Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science(Computer Technology)	
Course Code:	18UCT623	Title	Batch:	2018 -21
		ELECTIVE II: Under Water Communication	Semester	VI
Hrs/Week:	06		Credits:	4

Course Objective

To study the feasibility and propose solutions to integrate multimedia traffic in the underwater wireless communication network paradigm.

Course Outcomes (CO)

K1	CO1	To remember the basic concepts of Underwater Environment.
K2	CO2	To understand the role of Radar, Antennas, Signals in underwater network Communication.
K3	CO3	To apply different modes of under water applications.
K4	CO4	To analyze various issues associated with under water communications

Syllabus

Unit-I

[15 Hours]

Under water Acoustics: The Development – **Exploring the Under water Environment** – Historical Highlights – The pioneers – Civilian developments – The Basic Oceanography – Depth variations. **Outline of Under water Applications:** Military applications – Civilian applications.

Unit-II

[16 Hours]

Underwater Networking Basics: Underwater Acoustic Infrastructure – Offshore Terrestrial Station-Radar Networks – **Data Handling of an Underwater Network** – Data Tabulation.

Types of Signals – Acoustic Modem – Boosters – Antennas – Receivers – Surface Buoy – Gliders–Yatch/SailingBoats- Networking ofsubmarines.Underwater electroacoustictransducers–Transducermodelingand design– installation.

Unit-III

[15 Hours]

UnderwaterSensorNetworks:OceanSamplingNetworks,PollutionMonitoring,Environm ental **Monitoring and Tactical surveillance systems**, Major challenges in **design of Underwater Sensor Networks** - Factors that affect the UWSN-Sensor Node Architecture- GIBS,VRAP, DABSRAPT.

UnderwaterCommunicationProtocols:RoutingProtocols– GPS.AutonomousUnderwater Vehicles – **Topologies – Servers and Databases** - Network Coding – **Security issues.**

Unit-IV

[16Hours]

Water Column Applications:Navigation–Militaryapplications–FisheryAcoustics–Physical Oceanography – **Tsunami Applications** - Underwater Intervention.Marine AnimalAcoustics:MarinemammalbioacousticsFishbioacoustics– AcousticPollutionoftheOcean.

Unit-V

[16Hours]

Case Study: Under Water Acoustic Software: AcTUP V2.2 L - Underwater Sound Recorder - SailToolSoftware-SailImagingSoftware.

Note: **Italicized*texts arefor selfstudy

PowerpointPresentations,GroupDiscussions,Seminar,Quiz,Assignment
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BooksforStudy

1.IntroductiontoUnderwaterAcoustics:PrinciplesandApplications,LurtonandXavier,SpringerPublications,2010.

BooksforReference

1. UnderwaterAcousticSensor Networks,YangXiao,CRCPress Publications,2016
2. WebResources:CurtinUniversity:<http://cmst.curtin.edu.au/products/underwater/>

Mapping

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

S-StrongH-HighM-Medium L-Low

CourseDesignedby	Verified byHOD	Checkedby	Approved by
NameandSignature	NameandSignature	CDC	COE
Name: Ms.C.Keerthana Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT624	Title	Batch:	2018 -21
		ELECTIVE III: INTRODUCTION TO COMPUTER GRAPHICS AND MULTIMEDIA	Semester	VI
Hrs/Week:	06		Credits:	05

Course Objective

To impart knowledge about 2D Geometric Transformations and Algorithms, Unicode standard, Multimedia Components like Text, Audio, Video and Compression.

Course Outcomes (CO)

K1	CO1	To keep in mind about video display devices and output primitives
K2	CO2	To understand about text and image file formats
K3	CO3	To implement 2D transformations and viewing functions
K4	CO4	To analyze about principles of animation and data compression techniques

Syllabus

Unit-I

[15 Hours]

Overview of Graphics Systems: Video display devices-Cathode-Ray Tubes-Raster Scan Displays-Random Scan Display-Color CRT monitors. **Output Primitives:** Points and Lines – Line-Drawing algorithms–Loading frame Buffer–Line function–Circle-Generating algorithms–Ellipse-generating algorithms. **Attributes of Output Primitives:** Line Attributes–Color and Grayscale Levels–Area-fill attributes –Character Attributes.

Unit-II

[16Hours]

2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation – 2D Viewing Functions – Clipping Operations.

Unit-III

[16Hours]

Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – Fileformats. **Image:** Image Types – Seeing Color – *Color Models** – Basic Steps for ImageProcessing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – FileFormats – ImageOutput on Monitor and Printer.

Unit-IV

[15Hours]

Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – *Loudspeaker** – Digital Audio – MIDI – Basics of StaffNotation – Sound Card – Audio Transmission – Audio File formats and CODECs – AudioRecording Systems – Audio and Multimedia – Voice Recognition and Response – AudioProcessingSoftware.

Unit-V

[16Hours]

Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Video File Formats and CODECs – Video Editing – Video Editing Software. **Animation:** Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. **Compression:** MPEG-1 Audio – MPEG-1 Video.

Note: **Italicized texts are for self study*

PowerPoint Presentations, Group Discussions, Seminar, Quiz, Assignment
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BooksforStudy

1. DonaldHearn,M.PaulineBaker,“ComputerGraphics”,2ndedition,PHI,ISBN:81-23-0944-8(UnitI& II)
2. RanjanParekh,“PrinciplesofMultimedia”,2008,TMH,ISBN-10:0-07-058833-3,(UnitIII,IV&V)

BooksforReference

1. AmarendraNSinha,ArunD Udai,“ComputerGraphics”, TMH.
2. TayVaughan,“Multimedia:MakingitWork”,7thedition,TMH.

Mapping

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

S-StrongH-HighM-Medium L-Low

CourseDesigned by	Verified byHOD	Checkedby	Approved by
NameandSignature	NameandSignature	CDC	COE
Name: Dr.J.Thilagavathi	Name: Dr.J.Thilagavathi	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT624	Title	Batch:	2018 -21
		ELECTIVE III: Internet of Things (IoT)	Semester	VI
Hrs/Week:	06		Credits:	5

Course Objective

Understand the IoT Architecture and Real World IoT Design Constraints, Industrial Automation in IoT.

Course Outcomes (CO)

K1	CO1	To keep in mind that the vision of IoT from a global context.
K2	CO2	To understand the use of devices, gateways and data management in IoT.
K3	CO3	To deploy the building state of the art architecture in IoT.
K4	CO4	To analyze the application of IoT in industrial and real world design constraints.

Syllabus

Unit-I

[15 Hours]

M2M to IoT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, an use case example, Differing Characteristics.

Unit-II

[16 Hours]

M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies. **M2M to IoT-An Architectural Overview**–Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

Unit-III

[16 Hours]

M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide areanetworking, Data management, Business processes in IoT, Everything as a Service(XaaS),M2MandIoT Analytics,KnowledgeManagement

Unit-IV

[15 Hours]

IoT Architecture-State of the Art – Introduction, State of the art, **Architecture ReferenceModel-** Introduction,ReferenceModeland architecture,IoT referenceModel

Unit-V

[16Hours]

IoTReferenceArchitecture- Introduction,FunctionalView,InformationView,Deployment and Operational View, Other Relevant architectural views. **Real-World DesignConstraints-** Introduction,TechnicalDesignconstraints- hardwareispopularagain,Datarepresentationandvisualization,Interactionandremotecomtrol. **IndustrialAutomation**-Service-oriented architecture-based device integration, SOCRADES: realizing the enterpriseintegratedWebofThings,IMC-AESOP:fromtheWebofThings totheCloud ofThings.

Note: **Italicized*texts arefor selfstudy

Presentation,Seminar,AssignmentandDiscussion
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BooksforStudy

1.Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand, StamatisKarnouskos,David Boyle, “**From Machine-to-Machine to the Internet of Things: Introduction to aNew AgeofIntelligence**”, 1st Edition, AcademicPress, 2014.

BooksforReference

1. VijayMadisetiandArshdeepBahga, “**InternetofThings(AHands-on-Approach)**”,1stEdition,VPT, 2014.
2. FrancisdaCosta, “**RethinkingtheInternetofThings:AScalableApproachtoConnectingEverything**”,1st Edition, ApressPublications, 2013

Mapping

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

S-Strong 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: Ms.J.Priya Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT624	Title	Batch:	2018 -21
		ELECTIVE III: MOBILE COMPUTING	Semester	VI
Hrs/Week:	06		Credits:	5

Course Objective

Understand the various concepts and techniques of WAP, GSM, CDMA, 2G, 3G

Course Outcomes (CO)

K1	CO1	To keep in mind the various networks, standards, communication medium, Spread spectrum technology
K2	CO2	To Understand the basic concepts of wireless networks.
K3	CO3	To deploy the mobile applications to the devices.
K4	CO4	To analyze the various wireless network techniques.

Syllabus

Unit-I

[15 Hours]

Introduction: Mobility of Bits and Bytes – Wireless the Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services – Security in mobile computing – * Standards – Why is it necessary – Standard bodies.

MOBILE COMPUTING ARCHITECTURE: Architecture for mobile computing – Three-tier architecture – Mobile computing through Internet – Making existing applications mobile enabled.

Unit-II

[16 Hours]

MOBILE COMPUTING THROUGH TELEPHONY: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – VoiceXML – TAPI. **EMERGING TECHNOLOGIES:** * Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.

Unit-III

[16 Hours]

GSM: Global System for mobile communications–GSM Architecture–GSM Entities–Call routing in GSM–PLMN Interfaces–GSM Addresses and Identifiers–Network Aspects in GSM–GSM Frequency allocations–Authentications and Security. **SMS:** Strengths– Architecture–SM MT – SMMO– VAS through SMS.

Unit-IV

[15 Hours]

GPRS: GPRS and packet data network–Architecture–Network Operations–Data services – Applications-Limitations – *Billing and Charging. **WAP:** WAE–User agent & UA Prof – WML– WSP–WTP –WDP – Gateway. **MMS:** Architecture – Transaction Flows.

Unit-V

[16 Hours]

CDMA and 3G: Spread spectrum technology. **IS95:** Speech and Channel Coding–Architecture – Channel Structure. CDMA vs. GSM – Wireless Data. **3G:** IMT & CDMA2000 – Applications on 3G. **WIRELESS LAN: Advantages** – IEEE 802.11 standards –Types – 802.11 Architecture – Mobility – Deploying – Mobile Ad Hoc networks and sensor networks– Security– Wi-Fi vs. 3G

Note: *Italicized texts are for self study

Presentation, Seminar, Assignment and Discussion
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Books for Study

1. Asoke K Talukder, Roopa R Yavagal. (2005), *Mobile Computing*, TMH.

Books for Reference

1. Jochen Schiller, (2008), *Mobile Communication*, Second Edition, Pearson Education Asia.
2. Christoffer Andersson (2001), *GPRS and 3G Wireless Applications*, John Wiley and son's pub.

Mapping

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

S-Strong 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: Mr.R.Jayaprakash Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT626	Title:	Batch:	2018 -21
		INDUSTRY ORIENTED PRACTICALS	Semester:	VI
Hrs/Week:	05		Credits:	04

Course Objective

The objective of the **industry oriented practical** is aimed at **enhancing the technical, soft skills and practical knowledge** of the students **by developing real time applications**.

Course Outcomes (CO).

K3	CO1	To collect the programming language concepts to think objectively, analytically, critically in developing industry oriented applications
K4	CO2	To comprehend about the database connectivity using frontend and backend tools
K5	CO3	To validate the application software by various types of testing and its implementation in real environment

Guidelines for Industry Oriented Practical

- Both the Internal (Respective Guides) and External Examiners should Conduct the Viva-Voce Examination at the last day of the practical session.
- No candidate will be allowed to change the title of the Project work after the completion of End-semester Viva.
- For those absent on genuine grounds a common supplement End-Semester Viva-voce may be conducted at our College by obtaining prior permission from the COE on the recommendations from the HOD before the commencement of the next semester Final Viva.
- Out of 100 marks, 40 (4 Reviews, each carries 10 marks) for Project Evaluation and 60 for Viva.

- For awarding a pass, a candidate should have obtained 40% of the Total 100 marks.

Powerpoint Presentations

Mapping

PSO CO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	S	S	H	S
CO2	H	H	S	H	S
CO3	S	S	S	S	S

S-Strong; 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: Dr.J.Thilagavathi	Name: Dr.J.Thilagavathi	Name: Dr.M.Durairaju	Name: Dr.R.Muthukumaran
Signature:	Signature:	Signature:	Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT6S3	Title	Batch:	2018 -21
		Skill Based MAJOR ELECTIVE II – DATA ANALYTICS (BIG DATA)	Semester	VI
Hrs/Week:	01		Credits:	02

Course Objective

To educate the basic techniques for extracting information from large datasets such as the web and large document repositories.

Course Outcomes (CO)

K3	CO1	To keep in mind about the data analysis using Excel
K4	CO2	To realize about sorting, cost benefit analysis, calculating mean and standard deviation.
K5	CO3	To validate the use of analysis tools to conduct regression and forecasting and calculate descriptive statistics

Sample Programs

[Total Hrs:13]

1. Illustrates how to create a basic spreadsheet by entering text, numbers, and formulas.
2. Illustrates the formatting of cells and columns.
3. Create a spreadsheet to perform "what if?" calculations using Built-in functions.
4. Demonstrate the ease of creating charts.
5. Sort the data and print portions of a worksheet.
6. Illustrates how to dress up a table using special formats and how to export a table or chart into a Microsoft Word document.

7. Demonstrate a basic cost-benefit analysis using Excel.
8. Consolidate several worksheets into one and to link several worksheets to a master worksheet.
9. Illustrate the use of analysis tools for conducting bivariate regression and forecasting.
10. Use a worksheet to calculate descriptive statistics (e.g., mean, standard deviation).
11. Estimate a bivariate regression equation and related summary statistics.

Mapping

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

S-Strong; 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: Ms.C.Keerthana Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Duraiaraju Signature:	Name: Dr.R.Muthukumaran Signature:

Programme Code:	B.Sc	Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	18UCT6S4	Title	Batch:	2018 -21
		Skill Based MAJOR ELECTIVE II - DREAMWEAVER LAB	Semester	VI
Hrs/Week:	01		Credits:	02

Course Objective

To focus on using Adobe Dreamweaver to create high quality websites.

Course Outcomes (CO)

K3	CO1	To keep in mind about the efficient use of Dreamweaver tools to create a website that adheres to current HTML and CSS
K4	CO2	To realize appropriate terminology to describe both web development and basic programming concepts and advanced aspects of the Dreamweaver interface and paradigm
K5	CO3	To validate programs by implementing PHP, CSS, JavaScript, JSP, HTML in DreamWeaver

Sample Programs

[Total Hrs: 13]

Using Dreamweaver,

1. Create a picture gallery
2. Create a template
3. Create a CSS text rollover
4. Create a Mail-To links
5. Create a website
6. Create a link to different pages from the same image
7. Create List Menus

8. CreateSubmitbuttons
9. CreateLinkswithoutanUnderlineusingCSS
10. Createaprogram usingCSS
11. WorkingPHP, CSS,JavaScript, JSP, HTMLinDream Weaver.

Mapping

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

S-Strong;H-High;M-Medium;L-Low

CourseDesigned by	Verified byHOD	Checkedby	Approved by
NameandSignature	NameandSignature	CDC	COE
Name: Ms.K.S. Leelavathi Signature:	Name: Dr.J.Thilagavathi Signature:	Name: Dr.M.Durairaju Signature:	Name: Dr.R.Muthukumaran Signature:

