

DEPARTMENT OF COMPUTER TECHNOLOGY
NALLAMUTHU GOUNDER MAHALINGAM COLLEGE
POLLACHI - 642001

**List of Courses having focus on Employability/ Entrepreneurship/ Skill development
offered by the Computer Technology**

Computer Technology					
Programme: B.Sc Computer Technology					Year: 2023 - 2024
Course Code	Course Title	Employability (EM) / Entrepreneurship (EN) / Skill Development (SD)			Year of Introduction
		EM	EN	SD	
21UCT517	CORE COURSE XI: Open Source Technologies			✓	2011
21UCT518	CORE COURSE XII: Information Security			✓	2015
21UCT5E1	DSE - I :Cloud Computing	✓			2015
21UCT5E2	DSE - I : Embedded Systems	✓			2011
21UCT5E3	DSE - I: Management Information System		✓		.2023
21UCT520	CORE COURSE LAB - VIII: Web Designing			✓	2015
21UCT5S1	Skill Based Major Elective - I : Python Lab			✓	2021
21UCT5S2	Skill Based Elective - I : HTML5 With CSS Lab			✓	2020
21UCT621	CORE COURSE- XII: Framework Technology			✓	2011
21UCT6E1	DSE- II : Mobile Computing		✓		2016
21UCT 6E2	DSE- II : Software Project Management		✓		2023
21UCT 6E3	DSE- II : Grid Computing	✓			2023
21UCT 6E4	DSE - III : Artificial Intelligence	✓			2021

21UCT 6E5	DSE - III : Under water Communication	✓			2016
21UCT 6E6	DSE - III : Digital Image Processing			✓	2022
21UCT622	CORE COURSE Lab - IX : Framework Technology			✓	2011
21 UCT 623	Project			✓	2011
21UCT6S1	SEC : Naan Mudhalvan -II : Data Analytics (Big Data) Lab			✓	2019
21UCT6S2	DreamweaverLab			✓	2019
22UCT307	CORE COURSE V – Advanced Java Programming	✓			2011
22UCT 308	CORE COURSE VI: Database Management System	✓			2011
22UCT3A3	GE: Allied - III :Software Engineering	✓			2011
22UCT309	Core Course Lab-III: Advanced Java Programming Lab			✓	2011
22UCT310	Core Course Lab IV: Database Management System Lab			✓	2011
22UCT3N1	Non Major Elective - I : HTML Lab			✓	2011
22UCT3N2	Non Major Elective - I : Multimedia Lab			✓	2011
22UCT411	Core Course VII: Python Programming	✓			2022
22UCT412	Core Course VIII: Linux And Shell Programming	✓			2021
22UCT4A4	GE IV : Allied IV: Data Communication And Networks		✓		2011
22UCT413	Core Course Lab - V: Python Programming Lab			✓	2022
22UCT414	Core Course Lab - VI : LinuxAnd Shell ProgrammingLab			✓	2021
22UCT4S1/	SEC II: Naan Mudhalvan :			✓	2023

22UCT4S2	Desktop Publishing Lab / PC Hardware & Troubleshooting				
22UCT4N3/ 22UCT4N4	Non-Major Elective II – Office Automation Lab / CorelDraw Lab			✓	2018
23UCT101	CC I: Programming in C	✓			2011
23UCT102	CC II: Digital Fundamentals and Computer Organization	✓			2011
23UCT1A1	GE I – Allied I: Mathematics - I: Mathematical Structures For Computer Science			✓	2011
23UCT1A2	GE I – Allied I: Mathematics - I: Discrete Mathematics			✓	2012
23UCT204	CCIII: Java programming	✓			2011
23UCT205	CC IV: DataStructures	✓			2012
23UCT2A1	GE II – Allied II: Mathematics II –Operations Research			✓	2021
23UCT2A2	GE II – Allied II: Mathematics II –Statistics			✓	2022


PRINCIPAL
Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Nallamuthu Gounder Mahalingam College (Autonomous)

Pollachi

Department of Computer Technology

Syllabus

2021 – 2024 Batch

DEPARTMENT OF COMPUTER TECHNOLOGY

Syllabus

BATCH: 2021 – 2024

Faculty Members

Dr. M. Rajasenathipathi, M.C.A., M. Phil., Ph.D.,

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

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

Dr. 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 – 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**

Program Educational Objectives:

PEO1	Demonstrating the concepts and technologies of Software Industry
PEO2	Motivate to select one domain knowledge and develop smart software solutions as per industry standard
PEO3	Focus to solve real time problems in terms of various technologies.
PEO4	Understand the concepts of software project life cycle during software development.
PEO5	Apply the knowledge of various levels of security in computer field.

Program Outcomes:

PO1	Under Graduate students are to apply, algorithmic, real time and Industry standard reasoning to a variety of computational problems
PO2	Understand the fundamental knowledge of various domains in IT Industry and change their carrier as per Industry Demand.
PO3	Combine the knowledge of mathematics and Software Technologies in the field of Software project development
PO4	Implement industry standard projects of their own choice using latest tools.
PO5	Improve the aptitude skill to clear various levels of entrance exams in their carrier.
PO6	The Under Graduate students are recognize the Human Excellence and ethical responsibilities through yoga in various disciplines
PO7	Demonstrate global Industry demand related subjects and transferable skills that are relevant to global Industry and employment opportunities
PO8	Graduates will recognize the need for self-motivation to update in technologies to be in par with changing technology
PO9	Ability to analyze the local and global impact of computing on individuals, organizations and society.
P10	Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Program Specific Outcomes:

PSO – 01	Acquire academic excellence with professional skill for employment and higher studies.
PSO – 02	Create, select and apply modern tools and techniques to analyze and develop successful software in IT Industry.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.PHIL., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.PHIL., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

SEMESTER – V										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External	100	
III	21UCT517	CORE COURSE XI: Open Source Technologies	6	-	2	3	50	50	100	5
	21UCT518	CORE COURSE XII: Information Security	6	-	2	3	50	50	100	5
	21UCT5E1 / 21UCT5E2 / 21UCT5E3	DSE - I :Cloud Computing / Embedded Systems / Management Information System	6		2	3	50	50	100	6
	21UCT519	CORE COURSE LAB - VII: Open Source Technologies	-	5	0	3	50	50	100	2
	21UCT520	CORE COURSE LAB - VIII: Web Designing	-	4	0	3	50	50	100	2
	21UCT5S1 / 21UCT5S2	Skill Based Major Elective I : Python Lab /HTML5 With CSS Lab	2 Hours			2	25	25	50	2
IV	21HEC505	Human Excellence - National Values & SKY Yoga Practice – V	1	-	-	2	25	25	50	1
		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
EC	21CFE505	Fluency in English - V	-	-	-	-	-	-	-	-
	21CSD501	Soft Skills Development – I	-	-	-	-	-	-	-	Grade
	21GKL501	General Awareness - Self Study (Online) (SBE) (Optional)	SS		-	2	-	50	50*	Grade
EC	21UCT5AL	Advanced Learner Course - I : Software Testing- Self Study (Optional)	SS		-	3	50	50	100	4*
EC	21UCT5VA	VAC I- IoT (Internet of Things) (Mandatory)	30 Hrs		2	-	25	25	50	2*
Total			19	11	6	-	300	350	650	23

SEMESTER – VI										
Part	Subject Code	Title of the Paper	Hrs / Week		Hrs / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External	100	
III	21UCT621	CORE COURSE- XIII : Framework Technology	6	-	8	3	50	50	100	4
	21UCT6E1 / 21UCT 6E2/ 21UCT 6E3	DSE- II : Mobile Computing / Software Project Management / Grid Computing	6	-	4	3	50	50	100	5
	21UCT 6E4 / 21UCT 6E5 / 21UCT 6E6	DSE - III : Artificial Intelligence /Under water Communication / Digital Image Processing	6	-	4	3	50	50	100	5
	21UCT622	CORE COURSE Lab - IX : Framework Technology	-	5	0	3	50	50	100	3
	21UCT623	Project	-	4	0	-	50	50	100	4
	21UCT6S1 / 21UCT6S2	SEC : Naan Mudhalvan - II : Data Analytics (Big Data) Lab / Dreamweaver Lab	-		2	0	2	25	25	50
IV	21HEC606	Human Excellence - Global Values & SKY Yoga Practice – VI	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
EC	21CFE606	Fluency in English - VI	-	-	-	-	-	-	-	-
	21CSD602	Soft Skills Development - II	-	-	-	-	-	-	-	Grade
EC	21UCT6AL	Advanced Learner Course - II : Data Analytics (Optional) - Self Study	SS	-	-					
EC	21UCT6VA	VAC-II:PC Assembly and CCTV camera Installation (Mandatory)	30 Hrs	2	-					
Total			19	11	16	-	300	300	600	24
Grant Total							1750	2150	3900	140

AL – Advanced Learner Course (Optional);

VA – Department Specific Value Added

CourseCC – Certification Course / Co - Scholastic Course

* - Extra Credits & Extra Hour

Course

Grand Total = 3900;

Total Credits = 140

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001

SEMESTER- V

Programme Code:	B.Sc. UCT		Programme Title:	Bachelor of Computer Technology	
Course Code:	21UCT517		Title	Batch:	2021 - 2024
Lecture Hrs./Week or Practical Hrs./Week	6	Tutorial Hrs./Sem.	2	Semester:	V
			CORE COURSE XI: OPEN SOURCE TECHNOLOGIES	Credits:	05

Course Objective

To impart basic knowledge of PHP and MySQL and development of web applications using open source web technologies like Apache, MySQL and PHP (LAMP/XAMP).

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Obtaining the basic concepts of PHP	K1
CO2	Gain the basic knowledge on Decision making and Looping	K1, K2
CO3	Understand the concept in string manipulation and arrays	K1, K3
CO4	Gain detailed knowledge on MySQL Commands	K4
CO5	Obtain knowledge about database manipulation using MySQL and design dynamic web pages.	K5, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	H	H	H	M	H	H	M	H
CO2	H	H	M	H	H	L	H	H	H	H	H	H
CO3	H	M	H	H	H	H	L	H	H	H	H	M
CO4	H	H	H	M	H	L	H	M	H	M	M	H
CO5	H	M	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	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.	18
Unit II	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.	18
Unit III	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.	18
Unit IV	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.	18
Unit V	Python Basics: Introduction – Installation – Data types and Data structures – Control flow – Functions – Modules – Packages – File handling – Date/Time – Operations – Classes.	18
Total Contact Hrs		90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	VikramVaswani	PHP: A Beginner's Guide	Tata McGraw Hill Publications , Second Reprint	2012

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Alan Forbes	The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL	Kindle Edition	2020
2	RasmusLerdorf, Kevin Tatroe	Programming PHP	O'Reilly Media , 3 rd Edition	2013
3	Luke Welling; Laura Thomson	PHP and MySQL-Web Development	4 th Edition	2013
4	Robin Nixon	Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition	O'reilly Media	2014

Web References

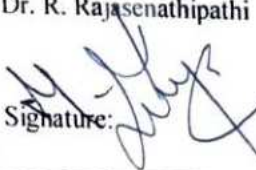
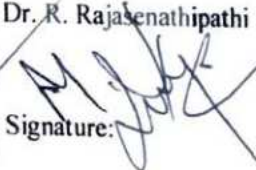
1. https://www.tutorialspoint.com/php/
2. https://www.siteground.com/tutorials/php-mysql/
3. https://onlinecourses.swayam2.ac.in/aic20_sp32/preview
4. https://www.geeksforgeeks.org/php-mysql-database-introduction/
5. https://www.w3schools.com/php/php_mysql_intro.asp

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

21UCT517

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.A., M.C.A., M.Phil., Ph.D.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.


Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT518			Title	Batch:	2021 - 2024	
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	2	CORE COURSE XII: INFORMATION SECURITY	Semester:	V	
					Credits:	05	

Course Objective

To understand the essentials of information security and learn the algorithms for implementing security.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and understand the fundamentals of security algorithm in various layers.	K1, K2
CO2	Analyze the various symmetric key and public key algorithms	K4
CO3	Understand the techniques to secure data in Hash algorithms.	K2
CO4	Assess cyber security risk management policies in order to adequately protect critical information and assets.	K3
CO5	Analyze the various attacks in networks and discover how to protect personal data, securing simple computer networks, and safe Internet usage.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	M	H
CO2	H	H	H	M	H	H	L	M	H	H	M	H
CO3	H	H	L	H	H	M	H	H	H	H	H	H
CO4	H	H	M	L	H	H	L	H	H	M	H	M
CO5	H	H	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Dr. R. MUTHUKUMARAN,
M.A., M.P.H., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	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.	18
Unit II	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.	18
Unit III	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 – Secure Socket Layer – (SSL) – Secure Hyper Text Transfer Protocol (SHTTP).	18
Unit IV	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.	18
Unit V	Cryptography in JAVA: Introduction – Cryptographic Solution Using JAVA. Network Security Firewalls and Virtual Private Networks (VPN): Introduction – Fire Walls: Introduction – Types of Firewalls. Virtual Private Networks (VPN) – Intrusion.	18
Total Contact Hrs		90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Atul Kahate	Cryptography and Network Security	McGraw Hill Education, 3 rd Edition	2012

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark Rhodes-Ousley, Roberta Bragg, Keith Strassberg	Network Security: The Complete Reference	Tata McGraw-Hill , 1 st Edition	2017
2	William Stallings	Cryptography and Network Security Principles and Practices	5 th Edition,	2011
3	Brijendrasingh	Network Security and Management	PHI Publication , 3 rd Edition	2011
4	Dr.Michael E. Whitman, Herbert J. Mattord	Principles and Practices of Information Security	Course Technology Cengage Learning, 4 th edition	2012

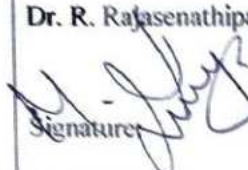
Web References

1. https://onlinecourses.swayam2.ac.in/nou21_cs01/preview
2. https://www.tutorialspoint.com/cryptography/index.htm
3. https://www.guru99.com/how-to-make-your-data-safe-using-cryptography.html
4. https://www.gatevidyalay.com/tag/cryptography-and-network-security-tutorial/
5. https://www.javatpoint.com/cyber-security-tutorial


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

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

Dr. M. RAJASENATHIPATHI

Head of the Department

Department of Computer Technology

Nallamuthu Gounder Mahalingam College (Autonomous)

POLLACHI - 642 001.

K. SRINIVASAN, MCA

Co-ordinator

Curriculum Development Cell (CDC)

NGM College (Autonomous)

Pollachi - 642 001.

Programme Code:	B.Sc. C.T.			Programme Title:	Bachelor of Computer Technology		
Course Code:	20UCT5E1			Title	Batch:	2021 - 2024	
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	2	DSE - I : CLOUD COMPUTING	Semester:	V	
					Credits:	06	

Course Objective

To impart the Basic Concepts of Cloud Computing and understand the Technologies and Architectures of Cloud Computing.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the fundamentals of cloud computing.	K1
CO2	Describe the scaling techniques in computer system and managing the cloud data.	K2
CO3	Discuss about tracing and exploring cloud services.	K2
CO4	Examine about cloud managing and security.	K3
CO5	Illustrate about managing desktops and devices in the cloud.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	M	H	H	H	M	H	M
CO2	H	M	L	H	H	H	H	L	M	H	H	H
CO3	H	H	M	H	L	H	M	H	H	L	H	M
CO4	H	H	H	H	H	H	H	H	H	M	H	H
CO5	H	H	M	H	H	M	H	L	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	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.	18
Unit II	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.	18
Unit III	Cloud Application Design: Introduction – Design considerations – Reference Architectures – Design methodologies – Data storage approaches. Cloud Application Benchmarking and Tuning: Introduction – Workload Characteristics – Application Performance Metrics – Design Considerations – Benchmarking Tools – Deployment prototyping – Load Testing and Bottleneck Deduction – Hadoop Benchmarking.	18
Unit IV	Cloud Security: Introduction – CSA Cloud Security Architecture – Authentication – Authorization – Identity and Access Management – Data Security – Key Management – Auditing. Cloud For Industry, Health Care and Education: Health Care – Energy systems – Transportation systems – Manufacturing Industry – Education.	18
Unit V	Python for Cloud: Amazon web services – Google Platform – Windows Azure – MapReduce – Packages – Web Application Framework – Designing a RESTful Web API	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	ArshdeepBahga, Vijay Madiseti.	Cloud Computing – A Hands-on Approach.	Universities Press Pvt. Ltd.	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Thomas Erl, ZaighamMahmood&Rich ardoputtini	Cloud Computing (Concepts, Technology & Architecture)	Prentice Hall Press.	2013
2	Judith Hurwitz,Robin Bloor Marcia Kaufman and Dr. Fernhalper	Cloud Computing For Dummies	Wiley India Publication Edition	2010
3	Prasant Kumar Pattnaik	Fundamentals of Cloud Computing	Vikas Publishing House	2014
4	RajkimarBuyya.,et.al	Cloud Computing: Principles and Paradigms	Wiley publications	2013
5	Michael Miller	Cloud Computing: Web-Based Applications That Change the way you work and Collaborate Online	Macmillan Computer Publication, 1 st Edition	2008

Web References

1. https://www.motc.gov.qa/sites/default/files/cloud_computing_ebook.pdf
2. https://onlinecourses.nptel.ac.in/noc21_cs62/preview
3. https://data-flair.training/blogs/cloud-computing-tutorial/
4. https://www.javatpoint.com/cloud-computing-tutorial
5. https://www.guru99.com/cloud-computing-for-beginners.html

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name:	Name:	Name:	Name:
Ms. K. S. Leelavathi	Dr. R. Rajaseenathipathi	Mr. K. Srinivasan	Dr. R. Manickachezian
Signature:	Signature:	Signature:	Signature:

Dr. M. RAJASENATHIPATHI

Head of the Department

Department of Computer Technology

Nallamuthu Gounder Mahalingam College (Autonomous)

POLLACHI - 642 001

Curriculum Development Cell of the

N.G.M. College (Autonomous)

Pollachi - 642 001

K. SRINIVARAN, MCA.,

Co-ordinator

Dr. R. MANICKACHEZIAN, B.Sc., B.Ed.,

Controller of Examinations

N.G.M. College (Autonomous)

POLLACHI - 642 001

Dr. M. RAJASENATHIPATHI, M.A., MCA., M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	21UCT5E2			Title	Batch:	2021 - 2024
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	2	DSE - I : EMBEDDED SYSTEMS	Semester:	V
					Credits:	05

Course Objective

To emphasizes on comprehensive treatment of embedded hardware and real time operating systems along with case studies, in tune with the requirements of Industry.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basics concepts in embedded systems	K1, K2
CO2	Understand the knowledge on hardware & software components and developing tools in embedded systems.	K2
CO3	Understand the working of ARM processor and learn to write programs in ARM processor	K2
CO4	Understand the basic concepts of real time operating systems using the concepts of RTOS.	K2
CO5	Develop embedded applications	K3, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	H	H	H	H	H	H	H	H
CO2	H	H	L	H	L	H	H	M	H	L	M	H
CO3	H	M	H	H	H	M	H	H	H	H	H	H
CO4	H	H	H	L	H	H	L	H	M	H	H	H
CO5	H	H	H	H	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	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.	18
Unit II	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.	18
Unit III	Device drivers and Interrupts servicing mechanism: ISR concept - Device drivers – Interrupt servicing mechanism – Context and the periods for context-switching, deadline and interrupt latency – Device Driver Programming: Writing physical device-driving ISRs in a system- Parallel port device drivers.	18
Unit IV	Programming concepts and embedded programming in C and C++: Embedded programming in C++ and in Java. Program modeling concepts in single and multi processor systems: Program Models – DFG Models – State Machine Programming Models for Event-controlled Program Flow – Modeling of Multiprocessor Systems.	18
Unit V	Inter – process communication and synchronization of processes, Threads and Tasks: Multiple processes in an application – Multiple Threads in an application – Tasks- Task States- Real time operating systems: Operating system services – Real time operating systems – Basic Design using RTOS: Principles – RTOS Task scheduling Models, Interrupt Latency and Response of the Tasks as Performance Metrics: Cooperative Scheduling model-Cyclic and Round Robin Scheduling models – Preemptive Scheduling model.	18
Total Contact Hrs		90

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Raj Kamal	Embedded Systems – Architecture, Programming and Design	McGraw Hill, 2 nd Edition	2013

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Shibu K V	Introduction to Embedded Systems	McGraw Hill Education, 2 nd Edition	2017
2	Lyla B Das	Embedded Systems-An Integrated Approach	Pearson Edition	2013
3	Elicia White	Making Embedded Systems	O' Reilly Series, SPD	2011
4	Daniel W. Lewis	Fundamentals of Embedded Software	PHI Education Publications, 1 st Edition	2007

Web References

1. https://onlinecourses.nptel.ac.in/noc21_cs09/preview
2. https://profile.iiita.ac.in/bibhas.ghoshal/IEMB_2018/Lectures/ES_basics.pdf
3. https://www.tutorialspoint.com/embedded_systems/index.htm
4. https://www.javatpoint.com/embedded-system-tutorial
5. https://www.bharathuniv.ac.in/colleges1/downloads/courseware_eee/Notes/NE1/BEE%20049-%20design%20of%20embedded%20system.pdf

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N., P.S.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. R. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.N., Ph.D.

Head of the Department

Department of Computer Technology

Nallamuthu Gounder Mahalingam College (Autonomous)

POLLACHI - 642 001

K. SRINIVASAN, M.C.A.

Co-ordinator

Curriculum Development Cell (CDC)

NGM College (Autonomous)

Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., U.S. Ph.D.

Controller of Examinations

NGM College (Autonomous)

POLLACHI - 642 001

Dr. M. RAJASENATHIPATHI

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	21UCT5E3			Title	Batch:	2021 - 2024
Lecture Hrs./Week or Practical Hrs./Week	6	Tutorial Hrs./Sem.	2	DSE - I : MANAGEMENT INFORMATION SYSTEM	Semester:	V
					Credits:	05

Course Objective

To inculcate knowledge to students why information systems are so important today for business and as well as educate the role of the major types of information systems in a business environment.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Tell about the basic concepts and Roles of Management Information Systems	K1
CO2	Describe the development of Business strategies, E-Business Models.	K2
CO3	Discuss about the Decision Making concepts and Knowledge Management in MIS	K2
CO4	Examine the applications in Manufacturing Sector and Service sector in Industry.	K3
CO5	Illustrate the Enterprise Management System and Information Systems processing.	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	H	H	H	H	H	H	H	H
CO2	H	H	L	L	H	H	H	M	H	M	L	H
CO3	H	M	H	H	H	H	M	H	H	H	H	H
CO4	H	H	M	M	H	H	M	H	H	L	H	H
CO5	H	H	H	H	L	H	H	H	M	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Introduction to MIS: MIS concept – Definition – Role of MIS – Impact of MIS – MIS and the User – Management as a Control system – MIS: a support to Management – Management Effectiveness and MIS – Organization as a system. Organizational Behaviour Process Management: Planning – Organizing – Staffing – Coordinating – Directing and – Controlling.	18
Unit II	Strategic Management of Business Performance: Essentiality of Strategic Planning – Tools of Planning – Strategic Management of Business Performance – What is Strategy? – Class and Types of Strategies. Electronic Business Technology: Introduction to E-Business – Models of E-Business- Electronic Payment System – Security in E-Business – MIS and E-Business. A tool for business management: Internet and Web Process Management – strategic Management under Web – Web Enabled Business Management – Application system Architecture in Web – MIS in Web Environment.	18
Unit III	Decision Making: Decision-making concepts – Decision-making process – Behavioural Concepts in Decision-making – Organizational Decision-making – MIS and Decision-making – Decision Methods Tools and Procedures. Information and Knowledge: Information Concepts – Information: a quality product – Classification of Information – Methods of data and Information Collection – Value of Information – General Model of a Human as an Information Processor. Choice of Information Technology: Nature of IT decision – Strategic Decision – Configuration Design – Evaluation.	18
Unit IV	Applications in Manufacturing Sector: Personnel, Financial, Production, Raw Material and Marketing Managements. Applications in Service Sector: Introduction to Service Sector – Creating a Distinctive Service MIS Application in Service Industry – MIS: Service Industry.	18
Unit V	Management of Global Enterprise: Enterprise Management Systems – ERP system – ERP Model and Modules – Benefits of ERP – ERP Product Evolution - ERP Implementation – EMS and MIS. Technology of Information Systems: Introduction – Data Processing – Transaction Processing – Application Processing – Information System processing – Human Factors and User Interface - Real Time Systems and Good Design.	18
	Total Contact Hrs	90

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Waman S Jawadekar	Management Information Systems Text and cases	Tata McGraw Hill Publications , 5 th Edition	2013

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	James A O'Brien & George M Marakas	Management Information Systems	Tata McGraw Hill, 10th Edition	2014
2	Kenneth C Laudon & Jane p.Laudon	Management Information Systems managing the digital firm	PHI 12th Edition,	2011
3	Mahadeo Jaiswal & Monika Mital	Management Information Systems	Oxford University Press 4th Edition	2004

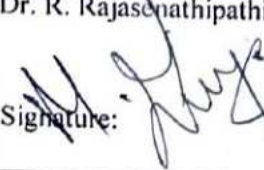
Web References

1.	https://ebooks.lpude.in/management/mba/term_4/DMGT505_MANAGEMENT_INFORMATION_SYSTEM.pdf
2.	https://onlinecourses.nptel.ac.in/noc21_mg89/preview
3.	http://www.himpub.com/documents/Chapter963.pdf
4.	https://www.guru99.com/mis-tutorial.html
5.	https://repository.dinus.ac.id/docs/ajar/Kenneth_C.Laudon,Jane_P_.Laudon_Management_Information_Sysrem_13th_Edition_.pdf


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.,
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.,
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT519			Title	Batch:	2021 - 2024	
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	0	CORE COURSE LAB – VII - OPEN SOURCE TECHNOLOGIES	Semester:	V	
					Credits:	02	

Course Objective

To expose students to free open source software environment and introduce them to use open source packages.

To work with open source applications that deal with database and website development.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Write PHP scripts using operators to perform various functions	K6
CO2	Implement different types of PHP functions and the concepts of files and directories	K3
CO3	Write regular expressions including modifiers, operators, and meta characters	K6
CO4	Create PHP scripts using array	K6
CO5	Evaluate the database connectivity using PHP and SQLite and Develop dynamic web pages.	K5, K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	H	H	H	H	H	H	H	H
CO2	H	H	M	H	L	H	H	M	L	M	H	H
CO3	H	M	H	M	H	M	H	H	H	L	M	H
CO4	H	H	M	H	L	H	M	L	M	H	H	M
CO5	H	H	M	H	H	H	M	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.S.O.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

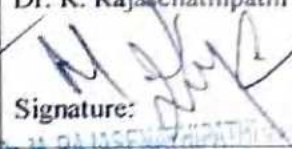
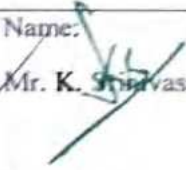
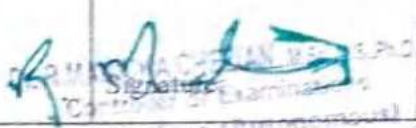
Content	Hrs
Sample Programs 1. Develop a PHP Script using the concept of Control Structure & Loops. 2. Develop a PHP Script to illustrate the concept of Array. 3. Develop a PHP Script to illustrate the concept of Functions. 4. Develop a PHP Script to illustrate the concept of Constructor and Destructor. 5. Develop a PHP Script to illustrate the concept of Files and Directory. 6. Write a PHP Code to make PHP Data Base Connectivity with MySQL. 7. Write a PHP Code to make MySQL Data Base Operation. 8. Develop a PHP Script to make Data Base Operation using MySQLite. 9. Develop a PHP Script to illustrate the concept of Cookies 10. Develop a PHP Script to illustrate the concept of Sessions	75
Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi	Name: Dr. R. Rajasenathipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 

Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College
POLLACHI - 642 001.

Course Objective
K. SRINIVASAN, MCA,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

NGM College (Autonomous)
POLLACHI - 642 001.

Content				Hrs
Programme Code:	B.Sc. C.T			Bachelor of Computer Technology
Course Code:	21UC1520			Batch: 2021 - 2024
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	0	Semester: V
				Credits: 02
				CORE COURSE
				LAB - VIII - WEB
				DESIGNING

To create tables and frames, ordered and unordered lists within a web page and learn the language of HTML, DHTML, XML and JavaScript.

To develop dynamic web page using scripting languages and various XML, HTML5 where scripting codes are embedded into HTML document for interactive presentation effect.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Analyze a web page and identify its elements and attributes	K3
CO2	Create a HTML page with formatting text tags, tables and lists	K6
CO3	Create a HTML file with Frames	K6
CO4	Create web pages using DHTML and XML documents	K6
CO5	Build dynamic web pages using JavaScript (client side programming)	K3, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	L	H	M	H	H	H	H
CO3	H	M	H	H	H	H	L	H	H	H	H	H
CO4	H	H	M	H	M	H	H	L	H	M	H	H
CO5	H	H	H	H	H	H	H	H	L	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Pol.Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. K. MUTHUKUMARAN,
M.A., M.Pol., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Sample Programs

1. Develop static webpages using HTML tags.
2. Prepare a webpage using OL & UL.
3. Prepare Frames which includes four html programs using frames.
4. Design and Develop webpage with the help of HTML and CSS.
5. Develop webpage using event handling in javascript
6. Embedding Javascript in HTML pages.
7. Create a home page using xml.
8. Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Declaration
9. Usage of Internal DTD, External DTD, Entity Declaration.
10. Create a web page using image files, which switch between one another as the mouse Pointer moves over the images.

60

Total Contact Hrs

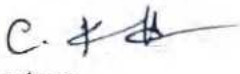
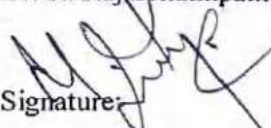
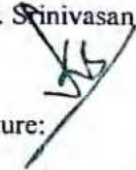
60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

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

Dr. M. RAJASENATHIPATHI
Head of the Department

Department of Computer Science
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001

K. SRINIVASAN, M.C.C.
Co-ordinator

Curriculum Development Cell
NGMC College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGMC College (Autonomous)
Pollachi - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT5AL			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS	Advanced Learner Course - I : SOFTWARE TESTING	Semester :	V
					Credits:	04

Course Objective

To study fundamental concepts in software testing and discuss various software testing issues and solutions in software unit test, integration and system testing.

To List a range of different software testing techniques and strategies and be able to apply specific automated unit testing method to the projects.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts and the processes that lead to software testing	K2
CO2	Design test cases from the given requirements using Black box testing techniques	K3
CO3	Identify the test cases from Source code by means of white box testing techniques	K3
CO4	Know about user acceptance testing and generate test cases for it	K4
CO5	Examine the test adequacy criteria to complete the testing process	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	H	H	H
CO3	H	H	M	H	L	H	M	H	H	H	H	H
CO4	H	H	H	M	H	M	H	L	H	H	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A.,M.C.A.,M.Phil.,Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A.,M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.	SS
Unit II	Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do BlackBox Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.	
Unit III	System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.	
Unit IV	Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.	
Unit V	Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics	
	(*SS – Self Study)Total Contact Hrs	SS

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

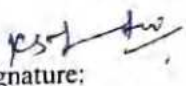
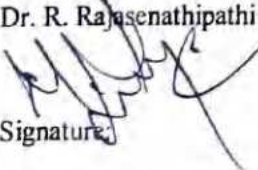
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Srinivasan Desikan and Gopalswamy Ramesh	Software Testing Principles and Practices	Pearson Education	2012
2	Limaye M.G	Software Testing Principles, Techniques and Tools	Second Reprint, TMH Publishers	2010.

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	William E. Perry,	Effective Methods of Software Testing	Wiley India, 3rd ed,	2017
2	Renu Rajani, Pradeep Oak,	Software Testing	TMH, 3 rd ed,	2014

Web References

1. https://nptel.ac.in/courses/106/101/106101163/
2. https://www.guru99.com/software-testing-seven-principles.html
3. https://www.geeksforgeeks.org/software-engineering-seven-principles-of-software-testing/
4. http://www.cse.hcmut.edu.vn/~hiep/KiemthuPhanmem/Tailieuthamkhao/Introduction%20to%20Software%20Testing.pdf
5. https://www.tutorialspoint.com/software_testing/index.htm

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  Signature:	Name: Dr. R. Rajaseenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manicka Chezian  Signature: Dr. R. MANICKA CHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.

Dr. N. K. RAJASEENATHIPATHI
Head of the Department
Department of Computer Technology
Pollachi
Dr. K. S. SRINIVASAN
Co-ordinator
Department of Computer Technology
Pollachi
Dr. R. MANICKA CHEZIAN
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT5VA			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	01	Tutorial Hrs./Sem.	-	VAC I- IoT (Internet of Things)	Semester:	V
					Credits:	2

Course Objective

To imparts a sound understanding of the basic electronics, microcontroller architectures, sensors, IoT architecture and communication protocols.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the scope of the IoT system, architectures, components and supporting technologies.	K2
CO2	Analyzing existing business processes to understand and build technical strategy to develop need aligned technical solutions.	K3
CO3	Apply decision and repetition structures in program design.	K3
CO4	Implement architecture of its networks, devices, programming, data and security.	K4
CO5	Evaluate the data received through sensors in IOT and Design smart city in IOT.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	H
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	L
CO5	H	L	H	M	H	H	M	H	M	H	L	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.PHIL., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.PHIL., B.ED., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Introduction: Definition and characteristics of IoT – IoT enabling Technologies. IoT Levels – Domain Specific IoTs: Home Automation – Cities – Environment.	10
Unit II	IoT and M2M: Introduction - M2M – Difference between IoT and M2M – Need for IoT system management.	10
Unit III	IoT platform design methodology: Introduction -IoT design methodology. IoT Physical devices and End points: What is an IoT Device? – Basic building blocks of an IoT device – Exemplary device: Raspberry Pi – About the Board.	10
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Vijay Madiseti and Arshdeep Bahga	Internet of Things (A Hands-on-Approach)	1 st Edition, VPT	2017

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

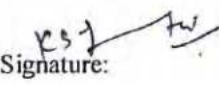
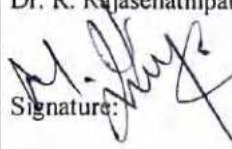
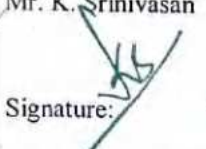
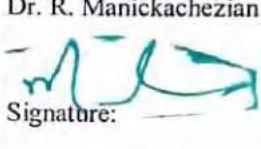
References Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Francis da Costa	Rethinking the Internet of Things: A Scalable Approach to Connecting Everything	1 st Edition, A press Publications.	2015

21UCT5VA

Web References

1. https://electronics-project-hub.com/send-data-to-thingspeak-using-esp8266/
2. https://www.instructables.com/id/ESP8266-to-IFTTT-Using-Arduino-IDE/
3. https://virtronics.com.au/Simulator-for-Arduino.html
4. https://www.slideshare.net/MohanKumarG/internetofthings-iot-aseminar-ppt-by-mohankumarg
5. https://blog.infodiagram.com/2019/07/explain-internet-of-things-powerpoint.html

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 Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.Ed., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.A., M.Ed., M.Phil., Ph.D.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT5S1			Title	Batch:	2021	-
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	Skill Based Major	Semester:	V	
				Elective I: PYTHON LAB	Credits:	03	

Course Objective

To understand the basic logic statements, Strings, Lists, Dictionaries and Learn Syntax and Semantics of Python

To Build GUI applications and create Functions in python

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remembering the concept of operators, data types, looping statements in python programming.	K1
CO2	Understanding the concepts of Input / Output operations in file.	K2
CO3	Apply and implement python concept with simple program.	K3
CO4	Analyze the use control structures in programming.	K4
CO5	Design Python scripting language to develop innovative real time applications.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	M	H	L	H	H
CO3	H	M	H	H	M	H	L	H	M	H	H	H
CO4	H	H	M	H	H	L	H	H	L	M	H	H
CO5	H	H	H	M	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT551			Title	Batch:	2021 – 2024	
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC : Naan Mudhalvan I – PYTHON LAB	Semester:	V	
					Credits:	03	

Course Objective

To understand the basic logic statements, Strings, Lists, Dictionaries and Learn Syntax and Semantics of Python

To Build GUI applications and create Functions in python

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remembering the concept of operators, data types, looping statements in python programming.	K1
CO2	Understanding the concepts of Input / Output operations in file.	K2
CO3	Apply and implement python concept with simple program.	K3
CO4	Analyze the use control structures in programming.	K4
CO5	Design Python scripting language to develop innovative real time applications.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	M	H	L	H	H
CO3	H	M	H	H	M	H	L	H	M	H	H	H
CO4	H	H	M	H	H	L	H	H	L	M	H	H
CO5	H	H	H	M	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a program to demonstrate basic data type in python. 2. Exercise programs on operators & I/O operations. 3. Exercise program on basic control structures & loops. 4. Exercise programs on functions. 5. Simple programming for one dimensional and two dimensional arrays. 6. Write a Python code to explore string functions. 7. Demonstrate the use of Lists, Dictionaries. 8. Write a program to implement Tuples. 9. Exercise programs on files. 10. Exercise programs on Exception handling concepts.	30
Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. R. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. R. RAJASENATHIPATHI, M.A., M.Sc., Ph.D.
Head of the Department
Department of Computer Technology
K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
POLLACHI - 642 001
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.A., M.Sc., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT582			Title	Batch:	2021 - 2024	
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC : Naan Mudhalvan 1 - HTML5 WITH CSS LAB	Semester:	V	
					Credits:	03	

Course Objective

To get knowledge and practical skill to create dynamic web applications.

To develop an ability to design and implement static and dynamic website.

To Design and develop a Web site using text, images, links, lists, and tables for navigation and layout.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember and Understand the internet related concepts that are vital in understanding web development to create Dynamic Web Applications.	K1, K2
CO2	Evaluate Several Alternatives in the Design of a Web Application.	K5
CO3	Understand the important HTML tags for designing static pages and separate design from content using Cascading Style sheet.	K3
CO4	Comprehend and Propose Web Application Infrastructure and Develop A Functional Web Application.	K2, K3
CO5	Design and develop web pages using CSS styles, internal and/or external style sheets.	K3, K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	L	H	H	H	H	H	H
CO2	H	M	H	H	H	H	H	H	H	H	H	H
CO3	H	H	M	H	L	H	M	H	H	L	H	H
CO4	H	H	H	H	M	H	L	H	M	H	H	H
CO5	H	H	M	H	H	H	H	H	H	H	M	H

*H-High; M-Medium; L-Low

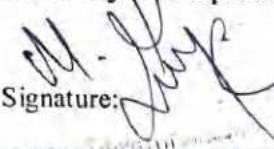
Content	Hrs
Sample Programs 1. Write HTML code to develop a static web page having the background and title page in any other color. 2. Create a page to show different attribute of Font tags and italic, bold, underline. 3. Create a page to show different attribute Design a Signup form with validation using HTML5. 4. Create a webpage with HTML5, Use paragraph and list tags. 5. Design a webpage and display it using HTML in tabular format. 6. Design a CSS to create menu. 7. Create a web page using all the attributes of the frame 8. Write a program to draw any shape using canvas tag. 9. Write a program to include video/Audio file in HTML5 page 10. Write a program to Drag and Drop the content in HTML5.	30
Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. R. Rajaseenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASEENATHIPATHI
Head of the Department
Department of Computer Technology
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S. Ph.D.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S. Ph.D.
Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

SEMESTER- VI

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT621			Title	Batch:	2021 – 2024	
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	08	CORE COURSE	Semester:	VI	
				XIII: FRAMEWORK TECHNOLOGY	Credits:	04	

Course Objective

To provide in depth knowledge on VB.NET and ASP.NET and making them to develop dynamic web applications, websites using window controls and web controls.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of .NET framework and its components.	K1 / K2
CO2	Acquire the usage of various Elements of VB.Net to develop programs using them	K3
CO3	Implement lists and loops with VB.NET controls and iteration	K3
CO4	Assemble multiple forms, modules, and menus into working VB.NET solutions	K3/K4
CO5	Connect database by using ADO.NET and manipulate the database	K4/K5

Mapping

PO /PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	H	M	L	H	M
CO3	H	M	L	M	H	M	H	H	M	M	H	M
CO4	M	H	M	H	M	H	M	L	H	H	M	H
CO5	H	M	H	M	H	M	H	H	M	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Visual Basic .NET: Visual Basic .NET- Introduction to Microsoft.NET- .NET Framework and the common language runtime. Introduction to the Visual Studio.NET IDE: Introduction – Overview of the visual studio .NET IDE - Menu bar and Toolbar –Visual Studio.NET IDE windows. Introduction to Visual Basic Programming: Introduction – simple programs – memory concepts- Arithmetic - Decision Making – Using a dialog to display a message.	18
Unit II	Control Structures: Introduction – Control Structures- if/then selection structure- if/then/else Selection Structure – While, Do while/loop, Do Until/Loop Repetition Structures –Assignment Operators* – For Next – Select Case – do/loop while – do/loop until – exit key word – logical operators. Procedures: Introduction – Modules, classes and procedures – sub procedures – function procedures – methods – Arguments Promotion – Option Strict and Data type conversions – value types and reference types – passing arguments: pass – by-value vs. pass-by-reference – duration of identifiers – scope rules.	18
Unit III	Arrays: Introduction - arrays - declaring and allocating arrays - examples - passing arrays to procedures - By Val vs By Ref. – for each/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 event handling. Menus – Link labels – List boxes and checked list boxes – Combo boxes – Tree views – List views – Tab control –MDI windows – Visual inheritance – User defined controls.	18
Unit IV	Database, SQL and ADO.NET: Introduction – relational database model- SQL – ADO.NET object model – programming with ADO.NET – extracting from a database – modifying a database	18
Unit V	ASP.NET, web forms and web controls: Introduction – simple HTTP transaction – system architecture – web controls – session tracking	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

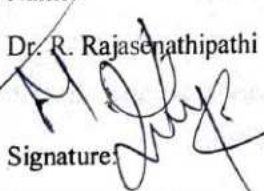
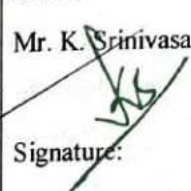
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Deitel H.M, Deitel P.J, Nieto T.R	Visual Basic.NET How to Program	Pearson Education , 6 th Edition	2012

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Kogent Learning Solutions Inc.,	.Net 3.5 Programming: Covering.Net Framework	1st Edition , DreamTech Press.	2015
2	Bill Evjen, Jason Beres, et.al,	Visual Basic.Net Programming – Black Book	2nd Edition , John Wiley & Sons	2014
3	Gary B. Shelly Thomas J. Cashman,	Microsoft Visual Basic. Net Comprehensive Concepts And Techniques	Cengage Learning India ,1st Edition	2016

Web References

1. https://www.w3schools.com/asp/
2. https://www.tutorialspoint.com/vb.net
3. https://www.nptelvideos.com/visualbasic_net/?pn=1
4. https://www.javatpoint.com/vb-net-control-statements
5. https://www.tutorialspoint.com/ASP.net

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature:  Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.N.I., Ph.D.
 Head of the Department
 Department of Computer Science
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
 Co-ordinator
 Curriculum Development Cell (CDC)
 NGM College (Autonomous)
 Pollachi - 642 001.

NGM College (Autonomous)
 POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E1			Title	Batch:	2021 – 2024
					Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	4	DSE II: MOBILE COMPUTING	Credits:	5

Course Objective

1. Understand the various concepts and techniques of WAP, GSM, CDMA, 2G, and 3G.
2. Gain knowledge about different mobile platforms and application development.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand various networks, standards, communication medium, Spread spectrum technology	K1/K2
CO2	Analyze the basic concepts of wireless networks.	K2/K3
CO3	Deploy the mobile applications to the devices.	K3
CO4	Demonstrate basic skills for cellular networks design.	K4/K5
CO5	Examine to design and develop mobile computing solutions using various components of mobile computing	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	L	H	M	H	M	H	H	M	M	L	M
CO3	H	M	H	M	H	M	H	H	M	M	H	M
CO4	M	H	M	H	M	H	M	L	H	H	M	H
CO5	H	M	H	M	L	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	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.	18
Unit II	Mobile Computing Through Telephony: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI. Emerging Technologies: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card.	18
Unit III	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 – SM MO – VAS through SMS	18
Unit IV	GPRS: GPRS and packet data network – Architecture – Network Operations – Data services – Applications – Limitations – Billing and Charging. WAP: WAE – User agent & UAProf – WML – WSP – WTP – WDP – Gateway. MMS: Architecture – Transaction Flows	18
Unit V	CDMA and 3G: Spread spectrum technology. IS 95: Speech and Channel Coding – Architecture – Channel Structure. CDMA vs. GSM – Wireless Data. 3G: IMT & CDMA 2000 – 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	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal	Mobile Computing: Technology, Applications and Service Creation	TMH, 2 nd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Jochen Schiller	Mobile Communication	Pearson Education Asia, 2nd Edition	2017
2	Christoffer Andersson	GPRS and 3G Wireless Applications	John Wiley and son's	2012
3	Raj Kamal	Mobile Computing	Oxford University Press, 3 rd Edition	2019

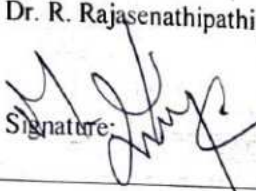
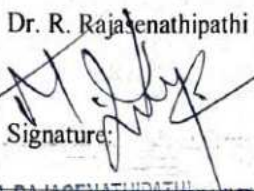
Web Resources

1. https://nptel.ac.in/courses/106/106/106106147/
2. https://www.tutorialspoint.com/mobile_computing/index.htm
3. https://minigranth.in/mobile-computing-tutorial/bluetooth-technology-mobile-computing
4. https://www.educba.com/gprs-architecture/
5. https://www.javatpoint.com/wireless-lan-introduction

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 
Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D. Head of the Department Department of Computer Technology Nallamuthu Gounder Mahalingam College (Autonomous) POLLACHI - 642 001 K. SRINIVASAN, M.C.A., Co-ordinator Curriculum Development Cell (CDC) N.G.M. College (Autonomous) Pollachi - 642 001 Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.			


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.


Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District



Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E2			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE II:	Semester:	VI
				SOFTWARE PROJECT MANAGEMENT	Credits:	5

Course Objective

1. To provide the graduates to identify key areas of concern over Project Life Cycle (PLC) and use of project management principles across all the phases of PLC.
2. To understand the importance and necessity of project plan and how it is helpful to project manager in monitoring and controlling the various aspects of the project

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the activities of Software Project Management	K2
CO2	Select appropriate approach for software project	K2/K3
CO3	Manage people in software environment	K3
CO4	Create a critical path and a precedence network for a project.	K4
CO5	Generate project schedule and can construct, design and develop network diagram for different type of Projects.	K4/K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	L	H
CO2	H	M	L	M	H	M	H	M	H	M	H	M
CO3	H	M	H	M	H	M	H	L	H	M	H	M
CO4	M	H	M	H	M	H	M	H	M	H	M	H
CO5	L	M	H	M	H	M	H	M	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Software Project Management, Why is software project management is important?, What is Project, Software Project vs other types of project, Activities covered by Software Project Management Plans, Methods and Methodologies, Categorizing software Projects, Stakeholder, Setting Objectives, Project success and Failure. What is Management? Management Control, Traditional and modern Project Management Practices.	18
Unit II	An overview of Project Planning: Step 0 to 10, Selecting of an Appropriate Project Approach: Choosing methodologies and Technologies, Software Processes and Software Models, The Waterfall Model, The Spiral Model, Software Prototyping, other ways of categorizing prototypes, Incremental Delivery, RAD and Agile Methods: Extreme programming, Scrum.	18
Unit III	Software Effort Estimation: Introduction, Where are Estimates Done? Software Effort Estimation Techniques, Bottom up Estimating, The Top Down Approach, Expert Judgement, Function Point Analysis, COCOMO Model, Activity Planning	18
Unit IV	Risk Management: Risk, Categories of Risk, A Framework for Dealing with Risk, Risk Identification, Risk Assessment, Risk Planning, Risk Management, Applying PERT Technique. Resource Allocation.	18
Unit V	Monitoring and Control, Managing People in Software environments.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

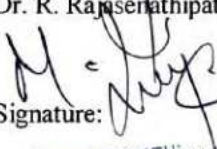
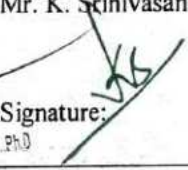
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Bob Hughes, Mike Cotterell, Rajib Mall	Software Project Management	Tata McGraw Hill Publications, 6 th Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Roger S. Pressman	Software Engineering	Tata McGraw Hill Publications, 8 th Edition	2019
2	John M. Nicholas and Herman Steyn	Project Management for Engineering, Business and Technology	Taylor&Francis, 5 th Edition	2016
3	Er. Rishabh Anand	Principles of Software Project Management	S.K. Kataria & Sons, 1 st Edition	2014
4	Walker Royce	Software Project Management-A Unified Framework	Pearson publication, 1 st Edition	2015

Web Resources

1.	https://nptel.ac.in/courses/106/105/106105218/
2.	https://freevideolectures.com/course/4071/nptel-software-project-management
3.	https://www.nptelvideos.com/video.php?id=918
4.	https://www.classcentral.com/course/swayam-software-project-management-14294
5.	https://www.w3schools.in/sdlc-tutorial/software-development-life-cycle-sdlc

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

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.A., M.C.A., M.Phil., Ph.D.
Controller of Examinations
Signature:
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E3			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE II: GRID COMPUTING	Semester:	VI
					Credits:	5

Course Objective

To provide a thorough knowledge about the technology application and tool kits for grid computing

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understanding the fundamentals of grid computing	K1
CO2	Discussing the basics of grid monitoring.	K2/K3
CO3	Dissect Grid Computing Systems and Architectures	K4
CO4	Analyze the importance of Grid Computing Standards	K4/K5
CO5	Examine the standards supporting Grid Computing services and Functionality	K5

Mapping

PO /PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PSO1	PSO2
CO1	H	H	H	H	H	H	L	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	M
CO3	H	M	H	L	H	M	H	M	H	M	H	M
CO4	L	H	M	H	M	H	M	H	M	H	M	H
CO5	H	M	H	M	H	M	H	M	H	L	H	M

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.N.E.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Introduction: Grid Computing-Key Issues – Applications – Other Approaches – Grid Computing Standards – Pragmatic Course of Investigation.	18
Unit II	Grid Benefits & Status of Technology: Motivations – History of Computing, Communications and Grid Computing – Grid Computing Prime Time – Suppliers and Vendors –Economic Value – Challenges.	18
Unit III	Components of Grid Computing Systems and Architectures: Basic Constituent Elements-A Functional View – A Physical View – Service View.	18
Unit IV	Grid Computing Standards-OGSI: Standardization – Architectural Constructs –Practical View – OGSA/OGSI Service Elements and Layered Model – More Detailed View.	18
Unit V	Standards Supporting Grid Computing-OGSA: Functionality Requirements – OGSA Service Taxonomy – Service Relationships – OGSA Services – Security Considerations.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Daniel Minoli	A Networking Approach to Grid Computing	John Wiley & Sons, Inc, 1 st Edition	2010

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.N., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Joseph	Grid Computing	Pearson Education India	2014
2	Kai Hwang, Geoffrey C. Fox and Jack J. Dongarra	Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet	Morgan Kaufman Publisher, 1 st Edition	2012
3	Jorge C. Barbosa, Ines Dutra	Grid Computing: Techniques & Future Prospects	Nova Science Publishers Inc, 1 st Edition	2015

Web Resources

1. https://www.slideshare.net/poojadixit19/grid-computing-standards
2. http://www.cs.kent.edu/~farrell/grid06/lectures/grid08.pdf
3. https://www.geeksforgoeks.org/grid-computing/
4. http://www.cs.kent.edu/~farrell/grid06/lectures/grid01.pdf
5. https://plt.ac.in/pltnotes/uploads/CS6703_11.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. C. Keerthana Signature: 	Name: Dr. R. Rajaseenathipathi Signature:  Dr. R. RAJASEENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D. Head of the Department Department of Computer Technology Sri Lakshmi Narayana Mahavidyalaya College (Autonomous) Pollachi - 642 001.	Name: Mr. K. Srinivasan Signature:  K. SRINIVASAN, M.A., M.C.A., M.Phil., Ph.D. Co-ordinator Curriculum Development Cell (CDC) NGM College (Autonomous) Pollachi - 642 001.	Name: Dr. R. Manickachezian Signature:  Dr. R. MANICKACHEZIAN, M.A., M.C.A., M.Phil., Ph.D. Controller of Examinations NGM College (Autonomous) Pollachi - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E4			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE III: ARTIFICIAL INTELLIGENCE	Semester:	VI
					Credits:	5

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Learn about the artificial intelligence problem and the characteristics of the problem space	K1
CO2	Understand the problem solving using predicates.	K1/K2
CO3	Apply the concepts of game playing techniques and Expert system	K3
CO4	Analyze AI problem to be solved using prolog	K4
CO5	Evaluate different knowledge representation schemes for AI problems	K4 /K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	L	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	L	M	M	H	L
CO3	H	M	H	M	L	M	H	H	M	M	H	M
CO4	M	H	M	H	M	H	M	M	H	H	L	H
CO5	H	L	H	M	H	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	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.	18
Unit II	Knowledge Representation: Representations and Mappings- Approaches to Knowledge Representation – Issues in knowledge representation – Representing simple Facts in Logic – Representing Instance and Isa Relationships- Procedural versus Declarative Knowledge – Logic Programming – Forward versus Backward reasoning.	18
Unit III	Semantic Nets: Frames - Conceptual Dependency - Game Playing – Overview– The minimax search procedure – Adding Alpha - Beta cutoffs.	18
Unit IV	Expert System : Definition – Characteristics of Expert System – Architecture & Description of Modules – Backward Chaining – Knowledge Acquisition facility. Knowledge Engineering – Expert System Life Cycles – Expert System Tools.	18
Unit V	Prolog: The Introduction-Converting English to prolog facts and rules – goals – Terminology – Variables - Control structures - Arithmetic operators - Matching in Prolog – Backtracking – cuts – Recursion – Lists - Dynamic Databases - I/O Streams - Some aspects specific to LPA Prolog	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Elaine Rich, Kevin Knight, Shivashankar B Nair	Artificial Intelligence	Tata McGraw Hill , 3 rd Edition	2017

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

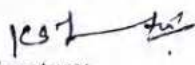
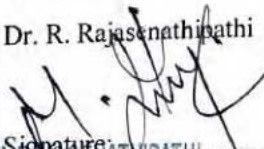
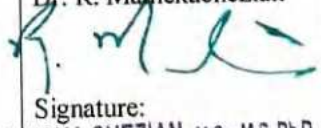
Dr. R. MUTHUKUMARAN,
M.A., M.Phil., D.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Stuart Russell, Peter Norvig	Artificial Intelligence: A Modern Approach	Pearson Education, 3 rd Edition.	2015
2	Er. Rajiv Chopra	Artificial Intelligence: A Practical Approach	S. Chand Publications, 1 st Edition.	2016

Web Resources

1. https://nptel.ac.in/courses/106/102/106102220/
2. http://aimaterials.blogspot.com/p/syllabus.html
3. https://www.javatpoint.com/expert-systems-in-artificial-intelligence
4. https://www.tutorialspoint.com/prolog/prolog_introduction.htm
5. https://www.cet.edu.in/noticefiles/271_AI%20Lect%20Notes.pdf

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 Signature: 	Name: Dr. R. Rajaseenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. R. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department

Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)

POLLACHI - 642 001. **K. SRINIVASAN, M.C.A.,**
Co-ordinator

Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.

Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. R. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., D.Ed., Ph.D.,
PRINCIPAL
NGM College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E5			Title	Batch:	2021 – 2024
Lecture Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE - III:	Semester:	VI
				UNDERWATER COMMUNICATION	Credits:	5

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of Underwater Environment	K1/K2
CO2	To understand the role of Radar, Antennas, Signals in underwater network Communication.	K2/K3
CO3	To apply different modes of underwater applications	K3
CO4	To analyze various issues associated with under water communication	K4/K5
CO5	Justify the importance of various Under Water Acoustic Software	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	L	H	H	H	M	H	H	H	H
CO2	H	M	H	M	H	M	H	H	L	M	H	M
CO3	H	M	H	M	H	M	H	H	H	M	H	M
CO4	M	H	L	H	M	H	M	L	M	H	M	L
CO5	H	M	H	M	H	M	H	M	H	M	H	M

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Underwater Acoustics: The Development – Exploring the Underwater Environment - Historical Highlights – The pioneers – Civilian developments – The Basic Oceanography – Depth variations. Outline of Underwater Applications: Military applications – Civilian applications.	18
Unit II	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/Sailing Boats - Networking of submarines. Underwater electro acoustic transducers – Transducer modeling and design – installation.	18
Unit III	Underwater Sensor Networks: Ocean Sampling Networks, Pollution Monitoring, Environmental Monitoring and Tactical surveillance systems, Major challenges in design of Underwater Sensor Networks - Factors that affect the UWSN- Sensor Node Architecture GIBS, VRAP, DABSAPT. Underwater Communication-Protocols: Routing- Protocols – GPS . Autonomous Underwater Vehicles – Topologies – Servers and Databases - Network Coding – Security issues.	18
Unit IV	Water Column Applications: Navigation – Military applications – Fishery Acoustics – Physical Oceanography – Tsunami Applications - Underwater Intervention, Marine Animal Acoustics: Marine mammal bioacoustics Fish bioacoustics – Acoustic Pollution of the Ocean	18
Unit V	Case Study: Under Water Acoustic Software: AcTUP V2.2 L – Underwater Sound Recorder – Sail Tool Software – Sail Imaging Software.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

M. Rajasenathipathi
Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. Muthukumar
Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

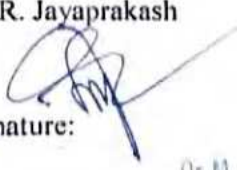
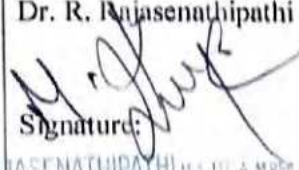
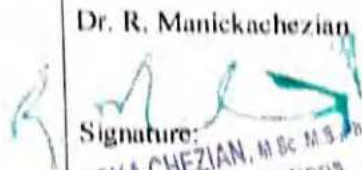
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Lurton and Xavier	An Introduction to Underwater Acoustics: Principles and Applications	Springer, 2nd Edition	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Yang Xiao	Underwater Acoustic Sensor Networks	CRC Press, 1st Edition	2019
2	Dimitri Sotnik, Michael Goetz, et al	Cognitive Underwater Acoustic Networking Techniques	Springer, 1st Edition	2020

Web Resources

1. https://www.youtube.com/watch?v=FYk1tbTKkYI
2. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5539468/
3. https://www.whoi.edu/science/B/people/kamaral/marinemammalacoustics.html
4. https://en.wikipedia.org/wiki/Communication_with_submarines
5. Curtin University : http://cmst.curtin.edu.au/products/underwater/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash	Name: Dr. R. Rajasenthapathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 
Dr. R. JAYAPRAKASH, M.A., M.L.A., M.P.P., P.N.D. Head of the Department Department of Computer Technology Valluvar Engineering College (Autonomous) POLLACHI - 642 001.	Dr. R. RAJASENTHAPATHI, M.A., M.L.A., M.P.P., P.N.D. Head of the Department Department of Computer Technology Valluvar Engineering College (Autonomous) POLLACHI - 642 001.	K. SRINIVASAN, M.C.A. Co-ordinator Curriculum Development Cell (CDC) NGM College (Autonomous) Pollachi - 642 001.	Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.

Course Objective

1. To learn and understand the fundamentals of image processing and its relationship between pixels.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6E6			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	06	Tutorial Hrs./Sem.	04	DSE III, DIGITAL IMAGE PROCESSING	Semester:	VI
					Credits:	5

2. To understand the key concepts of image compression this estimates the degradation function

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand about the fundamentals of digital image processing, Sampling and quantization.	K1/K2
CO2	Acquire image enhancement, histogram processing and Filtering techniques	K2/K3
CO3	Apply image restoration and transformations, color fundamentals and its models	K3
CO4	Analyze the importance of image compression and morphological issues in image processing	K4
CO5	Exploring the concepts of Image segmentation	K5/K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	M	H	H	M	M	H	M
CO3	H	L	H	M	H	M	H	H	M	M	L	M
CO4	M	H	M	H	M	H	M	M	H	H	M	H
CO5	H	M	H	M	L	M	H	H	M	M	H	M

* H-High; M-Medium; L-Low

21UCT6E6

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Introduction: Digital image processing - Fundamental steps in digital image processing - components of image processing system. Digital Image Fundamentals: A simple image formation model - image sampling and quantization - basic relationships between pixels.	18
Unit II	Image Enhancement in the Spatial Domain: Basic gray-level transformation - histogram processing, enhancement using arithmetic and logic operators - basic spatial filtering - smoothing and sharpening spatial filters - combining the spatial enhancement.	18
Unit III	Image Restoration: A model of the image degradation/restoration process - noise models - restoration in the presence of noise-only spatial filtering - Weiner filtering - constrained least squares filtering - geometric transforms; Introduction to the Fourier transform and the frequency domain - estimating the degradation function	18
Unit IV	Color Image Processing: Color fundamentals - color models - pseudo color image processing - basics of full-color image processing - color transforms - smoothing and sharpening - color segmentation. Image Compression: Fundamentals - image compression models - error-free compression - lossy predictive coding - image compression standards	18
Unit V	Morphological Image Processing: Preliminaries - dilation, erosion, open and closing, hit or miss transformation, basic morphologic algorithms. Image Segmentation: Detection of discontinuous - edge linking and boundary detection - thresholding - region-based segmentation. Object Recognition: Patterns and patterns classes - recognition based on decision-theoretic methods.	18
	Total Contact Hrs	90

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallasothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., D.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

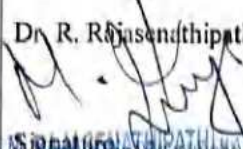
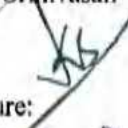
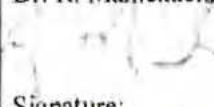
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Rafeal C. Gonzalez, Richard E. Woods	Digital Image Processing	Pearson Education, Fourth Edition	2018
2	S. Sridhar	Digital Image Processing	Oxford University Press	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Jain	Fundamentals of Digital Images Processing	Pearson Education India, 1 st Edition	2015
2	S. Jayaraman, S. Esakkirajan, T. Veerakumar	Digital Image Processing	McGraw Hill, 2 nd Edition	2020

Web Resources

1. https://swayam.gov.in/nd1_noc19_ee55/preview
2. https://nptel.ac.in/courses/117/105/117105079/
3. https://www.coursera.org/learn/digital
4. https://www.tutorialspoint.com/dip/index.htm
5. https://www.electronicsforu.com/videos-slideshows/digital-image-processing

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani	Name: Dr. R. Rajasenthipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Department of Technology
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT622			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	0	Core Course Lab - IX :	Semester:	VI
				FRAMEWORK TECHNOLOGY	Credits:	03

Course Objective

The student learn how to design, code, test and debug programs using VB.Net and ADO.Net.

To utilize .NET framework to build distributed enterprise applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Analyze and apply the VB.NET IDE Framework	K3
CO2	Develop, design and implement VB.Net program using various controls.	K4
CO3	To validate the concept of files and exception handling mechanism	K5
CO4	Implement ADO.Net connectivity	K4
CO5	Create their own applications with reports.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	L	H
CO2	L	M	H	M	H	M	H	L	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	L
CO4	M	H	M	L	M	H	M	H	M	H	M	H
CO5	H	M	H	M	H	M	H	M	H	L	H	M

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A.M.P.H.D., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit 1	Sample Programs VB.NET – Console Application 1. Create a Console Application for a simple stack operation in VB.Net 2. Create a Console Application for a simple queue operation in VB.Net 3. Develop a console application to illustrate the concept of exception handling using VB.Net 4. Develop a console application to illustrate the concept of Hash table using VB.Net 5. Develop a console application to illustrate the concept of Inheritance 6. Develop a console application to illustrate the concept of File handling VB.NET – Windows Application 1. Develop a Windows Form Application to generate the Bio-Data of a student 2. Develop a Windows Form Application to illustrate the concept of Tree-Node Control 3. Develop a Windows Form Application to perform the operations of a calculator 4. Develop a Windows Form Application to calculate and generate a telephone a bill 5. Develop a Windows Forms application to create and generate an E.B. Bill 6. Develop a Windows Form application to perform the operations of a Banking System. 7. Develop a windows forms application to create a notepad. 8. Create a Windows form application to develop a Basic Login form 9. Create a Windows Form application to develop an Employee Pay slip 10. Create a Windows Form application to develop a Vehicle invoice generation System 11. Create a Windows Form application to develop a Library book issue details system.	75
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

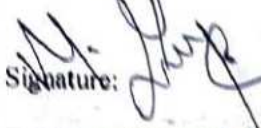
Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.FIN.P.D.
Head of the Department
Kallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi	Name: Dr. R. Rajasenathipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.A., M.C.A., M.Phil., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc.			Programme Title:	Computer Technology	
Course Code:	21UCT623			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	4	Project	Semester:	VI
					Credits:	4

Course Objective

1. To understand and select the task based on their core skills.
2. To get the knowledge about analytical skill for solving the selected task.
3. To get confidence for implementing the task and solving the real time problems.
4. Express technical and behavioral ideas and thought in oral settings.
5. Prepare and conduct oral presentations

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To recollect the programming language concepts to think objectively, analytically, critically in developing industry oriented applications	K3
CO2	To comprehend about the data base connectivity using front end and back end tools	K4
CO3	To validate the application software by various types of testing and its implementation in real environment	K5
CO4	Design engineering solutions to complex problems utilizing a systems approach.	K4
CO5	Demonstrate the knowledge, skills and attitudes of a professional engineer.	K5/K6

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	H	H	M	H	M
CO3	H	M	H	M	H	M	H	H	H	M	H	M
CO4	M	H	M	H	M	H	M	H	H	H	M	H
CO5	H	M	H	M	H	M	H	H	H	M	H	M

* H-High; M-Medium; L-Low

COMPUTER SCIENCE PROJECT and VIVA VOCE

Guidelines

Introduction

The title of the project work and the organization will be finalized at the end of fifth Semester. Each student will be assigned with a Faculty for guidance. The Project work and coding will be carried by using the facility of computer science lab as well as in the organization. Periodical review will be conducted to monitor the progress of the project work. Project report will be prepared and submitted at the end of the semester. External examiner appointed by the Controller of Examination will conduct the viva voce examination along with respective guide.

Area of Work

- Web Based Development
- Mobile app development
- Website development
- IoT Projects
- Big Data and Data Mining Projects
- Cloud Computing Projects
- Networking Projects
- Artificial Intelligence and Machine learning Projects
- Data Analytics Projects using Python, R, Tableau etc..
- System Software
- Web Security Projects
- Image Processing

Methodology

Arrangement of Contents

The sequence in which the project report material should be arranged and bound as follows:

1. Cover Page & Title Page
2. Bonafide Certificates
3. Declaration
4. Acknowledgement
5. Synopsis
6. Table of Contents
7. Chapters
8. Appendix
9. References

Format of Table of Contents

TABLE OF CONTENTS

Chapter No.	Title	Page No.
i	Certificates	
ii	Declaration	
iii	Acknowledgement	
iv	Synopsis	
1.	Introduction	
	1.1 Introduction	
	1.2 Objective of the Project	
	1.3 Company Profile	
	1.4 System Specification	
	1.4.1 Hardware Specification	
	1.4.2 Software Specification	

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N.I., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.N.I., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

2 **System Study**

- 2.1 Existing System
 - 2.1.2 Drawbacks
- 2.2 Proposed System
- 2.3 Planning and Scheduling

3 **System Design**

Course Designed by	Verified by HOD	Checked by	Approved by
--------------------	-----------------	------------	-------------

3.2 **Overview of the Project**

- 3.1 Modules of the Project
- 3.2 Input Design Format
- 3.3 Output Design
- 3.4 Table Design
- 3.5 Supporting Diagrams (ER/DFD/Use Case)

4 **Implementation and Testing**

- 4.1 Coding Methods
- 4.2 Testing Approach
- 4.3 Implementation and Maintenance

5 **Project Evaluation**

- 5.1 Project Outcome
- 5.2 Limitation of the Project
- 5.3 Further Scope of the Project

6 **Conclusion**

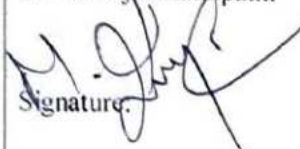
7 **Appendix**

- 7.1 Source Code
- 7.2 Screenshots and Reports

8 **References**

Size of the Project

The Project Report contents should be maximum of not exceeding 70 pages.

Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasenathipathi	Name: Dr. R. Rajasenathipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 

Dr. M. RAJASENATHIPATHI M.A., M.Sc., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6AL			Title	Batch:	2021 – 2024
Lecture Hrs./Week or Practical Hrs./Week	SS	Tutorial Hrs./Sem.	SS	Advanced Learner Course - II :	Semester:	VI
				DATA ANALYTICS	Credits:	04

— Course Objective

To understand the fundamentals of big data analytics and the methodologies used in storing manipulating and analyze large volumes of unstructured data

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	This course prepares students to gather, describe, and analyze data, and use advanced statistical tools to support decision making	K2
CO2	To gather sufficient relevant data, conduct data analytics using scientific methods, and understand appropriate connections between quantitative analysis and real world problems	K3
CO3	Understand the exact scopes and possible limitations of each method to provide constructive guidance in decision making.	K3
CO4	To Use advanced techniques to conduct thorough and insightful analysis, and interpret the results correctly with detailed and useful information.	K4
CO5	To make better decisions by using advanced techniques in data analytics.	K5


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.S., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
 M.A., M.Poll., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	M	H	H	H
CO2	H	M	H	L	H	H	H	M	L	M	H	M
CO3	H	H	M	H	L	H	M	H	H	H	L	H
CO4	H	H	H	M	H	M	H	L	H	M	H	H
CO5	H	H	H	H	M	H	L	H	H	H	H	M

*H-High, M-Medium, L-Low

Units	Content	Hrs
Unit I	Data Definitions and Analysis Techniques: Elements, Variables, and Data Categorization, Levels of Measurement, Data Management and Indexing	SS
Unit II	Descriptive Statistics: Measures of Central Tendency, Measures of Location of Dispersions, Error Estimation and Presentation (Standard Deviation, Variance), Introduction to Probability	
Unit III	Basic Analysis Techniques: Statistical Hypothesis Generation and Testing, Chi-Square Test, T-Test, Analysis of Variance, Correlation Analysis, Maximum Likelihood Test	
Unit IV	Data Analysis Techniques-I: Regression Analysis, Classification Techniques, Clustering Techniques (K-Means, K-Nearest Neighborhood)	
Unit V	Introduction to R Programming: Introduction to R Software Tool, Statistical Computations using R (Mean, Standard Deviation, Variance, Regression, Correlation etc.)	
(*SS – Self Study) Total Contact Hrs		SS

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Ronald E Walppole, Raymond H Myres, Sharon L. Myres and Leying Ye	Probability and statistics for Engineers and Scientists	Prentice Hall Inc, 9 th Edition	2012
2	Travor Hastie Robert Tibshirani Jerome Friedman	The Elements of Statistical Learning, Data Mining, Inference, and Prediction	Springer, 2 nd Edition	2014
3	John M. Chambers	Software for Data Analysis: Programming with R (Statistics and Computing)	Springer, 2 nd Edition	2016

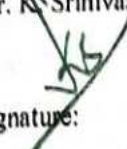
Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Radha Shankarmani , M. Vijayalakshmi,	Big Data Analytics	Wiley, 2 nd Edition	2016
2	Paul Kinley	Data Analytics for Beginners: Basic Guide to Master Data Analytics	CreateSpace Independent Publishing Platform	2016

Web References

1.	https://www.javatpoint.com/what-is-big-data
2.	http://www.guru99.com/bigdata-tutorials.html
3.	https://nptel.ac.in/courses/110/106/110106072/
4.	https://hackr.io/blog/what-is-data-analysis-methods-techniques-tools
5.	https://www.tutorialspoint.com/r/index.htm

21UCT6AL

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

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.H., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	21UCT6VA			Title	Batch:	2021 – 2024
				VAC-II: PC ASSEMBLY AND CCTV INSTALLATION	Semester:	VI
Lecture Hrs./Week or Practical Hrs./Week	02	Tutorial Hrs./Sem.	2		Credits:	2

Course Objective

This course enables the students to understand the fundamentals of PC Assembly and CCTV Installation

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of Assemble/setup and upgrade personal computer systems	K2
CO2	Knowledge of CCTV components with modern equipments	K3
CO3	Identify and Optimize system performance techniques	K3
CO4	Know about Install and connect peripherals among different devices	K4
CO5	Diagnose and isolate faulty components of the devices	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Computer Components – Computer Tools – Computer Case Preparation - Mother Board - Installing a CPU - Installing a Computer Memory. Installing a Mother Board - Installing a Power Supply - Computer Wiring - Installing a Hard Drive – DVD Drive.	10
Unit II	Installing a Graphics Card – Booting the computer – Install Drivers – Installing Windows 7 and 10 – Trouble Shooting – Case Study.	10
Unit III	Electronic Surveillance : Objective : Introduction to Electronic Surveillance - Introducing CCTV - CCTV Technology - Designing of the CCTV System: Objective - Pre-Installation Activities - Customer Requirements and Site Analysis - Selection of Components	10
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

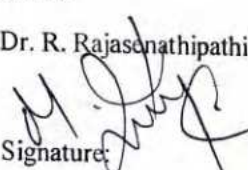
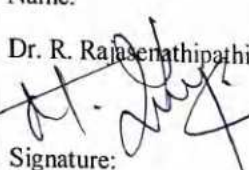
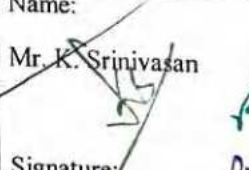
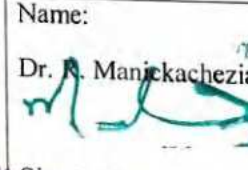
Seminar, Quiz, Assignments, Group Task.

Text Book References

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Prabhu	CCTV Camera Installation Training	1 st ed, CHIP SYSTEMS	2019

Web References

1.	https://www.build-your-own-computer.net/support-files/build-your-own-computer.pdf
2.	CCTV Installation Technician – National Skill Development Corporation – Facilitator Guide
3.	https://nsdcindia.org/sites/default/files/FG-ELEQ4605-CCTV-Installation-Technician-09-03-2018.pdf
4.	https://www.instructables.com/id/How-To-Assemble-A-Basic-Desktop-PC/
5.	https://choosemy pc.net/assemblyguide/
6.	http://ptgmedia.pearsoncmg.com/images/9781587132636/samplechapter/9781587132636_ch03.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Rajasonathipathi	Name: Dr. R. Rajasonathipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature: 	Signature: 	Signature: 	Signature: 
Dr. M. RAJASENATHIPATHI Head of the Department Department of Computer Technology Nallamuthu Counder Mahalingam College (Autonomous) POLLACHI - 642 001	K. SRINIVASAN, M.C.A. Co-ordinator Curriculum Development Cell (CDC) NGM College (Autonomous) Pollachi - 642 001.	Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D. Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.	

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT6S1			Title	Batch:	2021 - 2024	
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC – Naan Mudhalvan II – DATA ANALYTICS (BIG DATA) LAB	Semester:	VI	
					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

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the data analysis using Excel.	K3
CO2	To realize about sorting, cost benefit analysis, calculating mean and standard deviation	K4
CO3	To validate the use of analysis tools to conduct regression and forecasting and calculate descriptive statistics	K5
CO4	Visualize the data using basic graphs and plots	K4
CO5	Dissect the outliers if any in the data set and adapt techniques for handling multi-dimensional data	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Sample Programs 1. Illustrates how to create a basic spreadsheet by entering text, numbers, and formulas. 2. Illustrate 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)	30
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

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 Signature:	Name: Dr. R. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.TECH., P.H.D.
Head of the Department

Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.

Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.TECH., P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Objective

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology		
Course Code:	21UCT6S2			Title	Batch:	2021 - 2024	
					Semester:	VI	
Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC – Naan Mudhalvan II - DREAMWEAVER LAB	Credits:	02	

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Identify the basic tools and components of a multimedia project.	K2
CO2	Create a website that adheres to current HTML and CSS	K3
CO3	Realize appropriate terminology to describe both web development and basic programming concepts	K4
CO4	Apply programs by implementing PHP, CSS, JavaScript, JSP, HTML in Dream Weaver	K5
CO5	Design and develop advanced aspects of the Dreamweaver interface and paradigm	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	M	H
CO2	H	M	H	L	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	M	H	L	H	L	H	M	H	H	H	H	H
CO5	H	H	H	H	M	H	H	H	H	M	L	H

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.H., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Sample Programs	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. Create Submit buttons 9. Create Links without an Underline using CSS 10. Create a program using CSS 11. Working PHP, CSS, JavaScript, JSP, HTML in Dream Weaver.	30
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

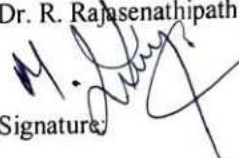
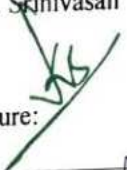
Assessment Methods

Seminar, Quiz, Assignments, Group Task.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
 M.A., M.Poll., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

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 Signature: 	Name: Dr. R. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.E.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

D. P. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

SEMESTER- III

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT307			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	06	Core Course	Semester:	III
				V: ADVANCED JAVA PROGRAMMING	Credits:	03

Course Objective

To inculcate the students to understand the advanced JAVA concepts and develop Java based applications by applying these advanced concepts to implement in web based applications.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Create Applications using Swing Components.	K4
CO2	Understand about Servlets and Server Side Includes	K2
CO3	Implement JDBC connectivity and Java Server Pages	K3
CO4	Review the various types of beans	K4
CO5	Understand and apply Well-Formed XML and different types of XML Schemas	K5

Mapping

PO/PSO CO	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

Units	Content	Hrs
Unit I	Tour of Swing: JApplet- Icons and Labels – JText Fields – JButtons – JCombo Boxes – JTabbed Panes – JScroll Panes – JTrees – JTables– Exploring Swing.	15
Unit II	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.	15
Unit III	JSP –Conditions – Directives – Declarations- Implicit Variables – Scriptlets – Expressions. Servlet Sessions: Session Tracking – Working with Cookies.	15
Unit IV	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.	15
Unit V	Servlets and JDBC– Two and Three-tier Database Access Models – JDBC Driver Types – JDBC Basics – A Basic JDBC Servlet – JDBC RMI.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., D.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Herbert Schildt	JAVA 2: The Complete Reference	5 th Edition, Tata-McGraw Hill, ISBN-13: 9780070495432	2017
2	James Goodwill	Developing Java Servlets	2 nd Edition, Tech media, ISBN-13 : 978-0672321078	2014
3	Rima Patel Sriganesh, Gerald Brose, Micah Silverman.	Mastering Enterprise Java Beans 3.0	Wiley India Edition, Wiley India Pvt. Ltd, ISBN-13 : 978-0471785415	2011

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Subrahmanyam Allaramaju, Cedric Buest , Marc Wilcox, Sameer Tyagi	Professional Java Server Programming J2EE	1.3 Edition, WROX Press Ltd, ISBN-13: 9781861005373	2001
2	Jayson Falkner and Kevin Jones.	The J2EE Technology Web Tier	1 st Edition, Addison-Wesley Professional ISBN: 0321136497.	2004

Web References

1. https://www.tutorialspoint.com/javascript
2. https://www.w3schools.com/
3. https://www.swayaminfotech.com/blog/tag/j2ee/
4. https://onlinecourses.nptel.ac.in/noc19_cs84/preview
5. https://www.tutorialspoint.com/listtutorial/Web-Application-J2EE-perspective/3142

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

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT308			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	08	Core Course VI: DATABASE MANAGEMENT SYSTEM	Semester:	III
					Credits:	03

Course Objective

The learner would have to understand the fundamental concepts of database systems & use the features available in a DBMS package

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind Queries in a DBMS, Structure of a DBMS attributes and entity sets	K1
CO2	Comprehend deep knowledge about the basics of Relational Model and ACID properties	K2
CO3	Apply joins and set operators, control structures and embedded SQL for data management and retrieval techniques	K3
CO4	Analyze the basic issues of transaction processing, concurrency control and understand the importance of Normalization	K4
CO5	Familiarity on Parallel, Object Oriented & Distributed databases	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	H
CO3	H	M	H	M	H	M	H	M	H	M	H	L
CO4	M	H	M	H	L	H	M	H	L	H	M	M
CO5	H	L	H	L	H	M	H	L	H	M	H	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Database Concepts – A Relational approach: Database – Relationships – DBMS – The Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De Normalization.	12
Unit II	Oracle9i: An Overview: Personal Database – Client/Server Databases - Oracle9i: An Introduction – The SQL *Plus Environment – SQL – Sample Databases. Oracle Tables: Data Definition Language (DDL): Naming Rules and Conventions – Data Types – Constraints – Create, Display, Alter, Drop, Rename and Truncating Oracle Table*.	12
Unit III	Working with Tables: Data Management and Retrieval: DML – Adding a New Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – Retrieving Data from a Table – Arithmetic Operations – Restricting Data with a WHERE clause – Sorting. Functions and Grouping: Built-In functions – Grouping Data.	12
Unit IV	Multiple Tables: Joins and Set operators: Join – Set Operators. PL/SQL – A Programming Language: History – Fundamentals of PL/SQL – PL/SQL Block Structure – Comments – Data Types – Other Data Types* – Variable Declaration – Anchored Declaration – Assignment Operation – Substitution Variables – Printing – Control Structures and Embedded SQL: Control Structures – SQL in PL/SQL – Data	12

	Manipulation – Transaction Control Statements.	
Unit V	PL/SQL Exceptions and Composite Data Types: Cursors: Types of Cursor – Implicit cursor – Explicit cursor- Action on Explicit cursors - Exceptions – Types of Exceptions. Composite Data Types – PL/SQL Records – PL / SQL Tables . Named Blocks: Procedures – Functions – Packages – Triggers. Case study: Connection of front end VB 6.0 and Back end Oracle 9i.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

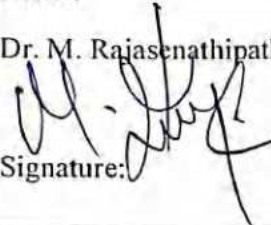
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Nilesh Shah	Database Systems Using Oracle	Second edition, PHI Publication. Indian Reprint	2014

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	ArunMajumdar and Pritimoy Bhattacharya	Database Management Systems	1 st Edition, TMH, ISBN-13: 978-0074622391.	2017
2	Gerald V. Post	Database Management Systems	3 rd Edition, TMH Publication, ISBN-13: 9780070635265	2018
3	Jonathan Gennick	Oracle SQLPlus Pocket Reference	2 nd Edition, E.H. J. Pallett Publication, ISBN-13: 978-0596526887.	2019

Web References

1. http://freecomputerbooks.com/An-Introduction-to-Relational-Database-Theory.html
2. https://swayam.gov.in/nd2_ccc19_cs05/preview
3. https://www.featuredcustomers.com
4. https://onlinecourses.nptel.ac.in/noc19_cs46/preview
5. https://www.slideshare.net/NILFSHX/database-management-system-28774171

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature:  Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
NGM College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT 3A3			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	05	Tutorial Hrs./Sem.	06	GE III: ALLIED III: SOFTWARE ENGINEERING	Semester:	III
					Credits:	04

Course Objective

To enhance the basic software engineering methods and practices and to learn the techniques for developing software systems

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind layers of process models, Requirement gathering phases design concepts and testing strategies	K1
CO2	Picture out the main aspects of software engineering and evaluate requirements for a software system and analyzing the requirements through modeling	K2
CO3	Apply the process of analysis and design using the object-oriented approach	K3
CO4	Interpret the design engineering and various Testing tactics	K4
CO5	Inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	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.	15
Unit II	System Engineering: Computer-Based Systems – The system engineering Hierarchy. Requirements Engineering: A bridge to design and construction- Requirements Engineering Tasks – Initiating the Requirements Engineering Process - Eliciting Requirements – Building the Analysis Model.	15
Unit III	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.	16
Unit IV	Design Engineering: Design process and Design quality - Design concepts - the design model. Creating an architectural design: Software architecture - Data design - Architectural Design.	13
Unit V	Testing Strategies: Software Testing Lifecycle- Test strategies for conventional software, Validation testing, System testing - The art of Debugging. Testing Tactics: Black - Box and White-Box Testing - Basis path Testing – Control Structure Testing - Black-Box Testing. Testing for Web Apps: Performance testing: Performance testing objectives - Load testing – Stress Testing	16
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., MCA, MPhil, Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., MPhil, B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

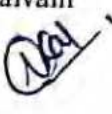
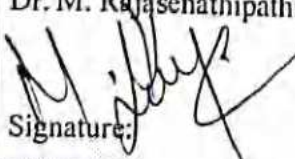
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Roger S. Pressman	Software Engineering, A Practitioner's Approach	7 th Edition, TATA McGraw-Hill Publications, ISBN-13 : 978-0071267823	2018

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Ian Sommerville	Software Engineering	9 th Edition, Addison Wesley, ISBN-13: 978-0137035151	2017
2	Stephen Schacht	Software Engineering	7 th Edition, New Delhi, Tata McGraw Hill Publishing Company, ISBN-13: 9780070647770.	2012

Web References

1. https://nptel.ac.in/courses/106/105/106105218/
2. https://swayam.gov.in/nd1_noc19_cs70/preview
3. https://freevideolectures.com/course/4071/nptel-software-project-management
4. https://www.nptelvideos.com/video.php?id=918
5. https://www.w3schools.in/sdlc-tutorial/software-development-life-cycle-sdlc/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI M.A., M.C.A., Ph.D.,
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT309			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	0	Core Course Lab – III – ADVANCED JAVA PROGRAMMING LAB	Semester:	III
					Credits:	02

Course Objective

To build GUI applications and connect to JDBC, create Web applications using server side programming languages – Servlets, JSP and Java beans.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the concept of Swing Components and cookies	K3
CO2	Understand and integrate Servlets, JDBC and JSP to develop web applications	K4
CO3	Validate the idea of Java Beans to build enterprise applications	K3
CO4	Develop an request object method using enterprise applications	K4
CO5	Illustrate the concept of Server-side Includes and Servlet chaining	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

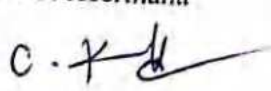
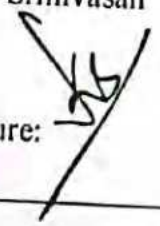
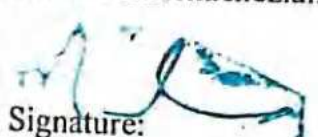
Content	Hrs
Sample Programs 1. Create a program to illustrate the concept of Introspection. 2. Create a bean program to design a simple property of the bean. 3. Create a java program to illustrate the concept of Generic Servlet. 4. Create a java program to illustrate the concept of Http Servlet. 5. Create a java program to illustrate the concept of Servlet chaining. 6. Create a java program to illustrate the concept of Server-side Includes. 7. Create a java program to illustrate the concept of Request Object Method. 8. Create a java program to illustrate the concept of JDBC Connectivity. 9. Create a jsp program to illustrate the concept of Implicit Objects. 10. Create a program to illustrate the concept of Sessions in JSP.	60
Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

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

Dr. M. RAJASENATHIPATHI
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

45
K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

DR. R. MANICKACHEZIAN
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)		
Course Code:	22UCT310			Title	Batch:	2022 – 2025	
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.		Core Course Lab- IV- DATABASE MANAGEMENT SYSTEM LAB	Semester:	III	
					Credits:	02	

Course Objective

To enable the students to know about database concepts with practical Knowledge

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Recollect the basic commands such as DDL, DML, TCL	K3
CO2	Understand about various set, join operations and group functions in PL/SQL	K4
CO3	Develop various set and join operation in SQL	K4
CO4	Use PL/SQL stored procedure, stored functions, cursors and packages to query the database.	K4
CO5	Validate the PL/SQL cursors, GROUPBY clauses	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	H	H	M	H	M	H	H	M	H
CO3	H	M	H	H	H	M	H	M	H	L	M	H
CO4	M	H	L	M	M	H	L	H	M	M	H	M
CO5	H	L	H	H	H	L	H	M	H	H	M	H

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs Sample Programs 1. Write a query for DDL and DML commands. 2. Write a query for TCL commands. 3. Write a query for NOT NULL, CHECK, UNIQUE constraints. 4. Write a query to implement functions in SQL. 5. Write a query for JOIN operations. 6. Write a query to implement set operator 7. Write a SQL program for user-defined exception 8. Write a SQL block to delete and update using trigger. 9. Write a query for the HAVING clause. 10. Write a query for GROUP BY clause	60
Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

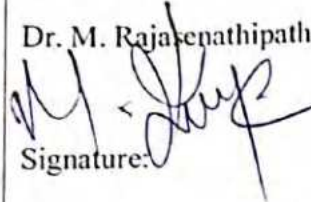
Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
 Head of the Department
 Department of Computer Technology
 Nallaamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI M.A.MCA.MPhil.Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI M.A.MCA.MPhil.Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT3N1			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	01	Tutorial Hrs./Sem.	04	Skill Based NON-MAJOR ELECTIVE I - HTML LAB	Semester:	III
					Credits:	02

Course Objective

To understand the principles of creating an effective web page using HTML.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind the concept of Basic HTML tags	K3
CO2	Understand about ordered list and unordered list, creation of table, creations of forms	K4
CO3	Validate the creation of a simple webpage using basic HTML	K4
CO4	Use scripting Techniques for dynamic effects and to validate form input entry	K3
CO5	Analyze to Use appropriate client-side or Server-side applications	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallasothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

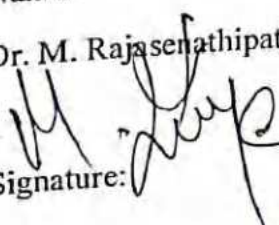
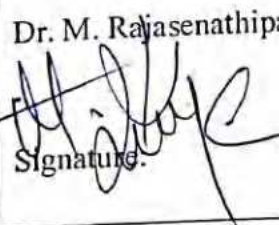
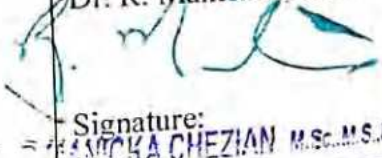
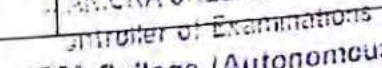
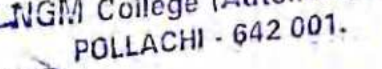
Content	Hrs
Sample Programs 1. Create a HTML document using basic HTML tags. 2. Create a HTML program with text formatting tags. 3. Create a HTML program to set the background color. 4. Create a link by using HTML tags. 5. Create a HTML program to insert an image in a document. 6. Create a HTML program to create a table. 7. Create a HTML program to implement ordered list with numbers. 8. Create a HTML program to implement ordered list with alphabets. 9. Create a HTML program to implement unordered list. 10. Create a Form with input box and submit button.	15
Total Contact Hrs	15

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manikachezian Signature:  Signature:  Signature: 

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.

K. SRINIVASAN, M.C.A. NGM College (Autonomous)
 Co-ordinator
 Curriculum Development Cell (CDC)
 NGM College (Autonomous)
 Pollachi - 642 001.

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT3N2			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	01	Tutorial Hrs./Sem.	0	Skill Based NON- MAJOR ELECTIVE I - MULTIMEDIA LAB	Semester:	III
					Credits:	02

Course Objective

To offer the knowledge of creating and working with digital images and to manipulate them and to develop a presentation package using multimedia tools

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind the concept of Basic Multimedia Techniques	K3
CO2	Discuss the application of multimedia concepts in the development of information visualization and business applications.	K4
CO3	Validate the creation of a simple applications using multimedia tools	K4
CO4	Use scripting Techniques for dynamic effects and to validate form input entry	K3
CO5	Comprehend and analyse the fundamentals of animation, virtual reality, underlying technologies, principles and applications.	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.N., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

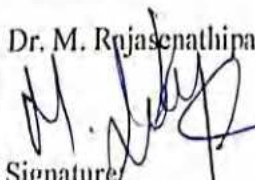
Content	Hrs
Sample Programs 1. Cropping images using Lasso Tool 2. Designing Pictures using Paint Tools 3. Designing Text using Text Tools 4. Applying Layer Effects to Images and Texts 5. Designing an Employee or Student ID card 6. Designing a seasonal greetings 7. Design a photograph applying Filter effects 8. Design an invitation for a conference 9. Design a brochure or poster for a technical symposium 10. Designing a Flexible banner for your college	15
Total Contact Hrs	15

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. C. Keerthana  Signature:	Name: Dr. M. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature:	Name: Dr. R. Manickachezian  Signature:
Dr. M. RAJASENATHIPATHI MA, MCA, M Phil, Ph.D. Head of the Department Department of Computer Technology Nallamuthu Gounder Mahalingam College (Autonomous) POLLACHI - 642 001.		K. SRINIVASAN, MCA Co-ordinator Curriculum Development Cell (CDC) NGM College (Autonomous) 52 Pollachi - 642 001.	Dr. R. MANICKACHEZIAN M.Sc., M.S. Ph.D. Controller of Examinations NGM College (Autonomous) POLLACHI - 642 001.

SEMESTER- IV

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT411			Title	Batch:	2022-2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	04	Core Course VII: PYTHON PROGRAMMING	Semester:	IV
					Credits:	04

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for core python and data types using objects and functions.	K4
CO2	To develop python programs for List, Stack, Queues.	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	To manage Errors and Exceptions and summarize the Network Programming.	K4
CO5	Understand and apply Well-Formed Object Oriented Features.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Basics: Python- Variables- Executing Python From the Command Line- Editing Python Files-Python Reserved Words-Basic Syntax-Comments-Strings And Numeric Data Types-Simple Input and Output.	12
Unit II	Control Statements: Control Flow and Syntax-Indenting- If Statement- Relational Operators- Logical Operators- Bit Wise Operators- While Loop- Break and Continue- For Loop-Lists-Tuple -Sets-Dictionaries.	12
Unit III	Functions: Definition- Passing Parameters to a Function-Variable Number of Arguments- Scope-Passing Functions to a Function- Mapping Functions in a Dictionary-Lambda-Modules- Standard Modules- Sys-Math- Time- Dir Function.	12
Unit IV	Error Handling: Run Time Errors-Exception Model-Exception Hierarchy-Handling Multiple Exceptions-Data Streams-Access Modes Writing-Data to a File Reading-Data From a File-Additional File Methods-Using Pipes as Data Streams-Handling IO Exceptions-Working With Directories.	12
Unit V	Object Oriented Features: Classes Principles of Object Orientation-Creating Classes- Instance Methods-File Organization-Special Methods-Class Variables- Inheritance- Polymorphism-Type Identification-Simple Character Methods-Special Characters- Character Classes-Quantifiers-Dot Character-Greedy Matches-Grouping-Matching at Beginning or End-Match Objects-Substituting-Splitting a String-Compiling Regular Expressions.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS\ EDITION	YEAR OF PUBLICATION
1	Mark Summerfield	"Programming in Python 3 ", A Complete Introduction to the Python Language"	2 nd Edition, Addison-Wesley Professional	2019
2	Anurag Gupta, G P Biswas	Python Programming	McGraw Hill Education	2020

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS\ EDITION	YEAR OF PUBLICATION
1	Allen Downey, Jeffrey Elkner, Chris Meyers	Learning With Python	Green Tea Press, Wellesley, Massachusetts	2016
2	Wesley J Chun	Core Python Application Programming.	3rd Edition, Prentice Hall Press Upper Saddle River, NJ, USA	2012

Web References

1. http://docs.python.org/3/tutorial/index.html .
2. http://interactivepython.org/courselib/static/pythonds .
3. http://www.ibiblio.org/g2swap/byteofpython/read/
4. https://www.edureka.co/blog/polymorphism-in-python
5. https://www.programiz.com/python-programming/inheritance

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phil.Phd.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN M.Sc.M.S.Phd.
Co-ordinator of Examinations
Curriculum Development
NGM College (Autonomous)
Pollachi - 642 001.

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phil.Phd.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A.M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UC1412			Title:	Batch:	2022-2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	4	CORE VIII: LINUX AND SHELL PROGRAMMING	Semester:	IV
					Credits:	03

Course Objective

This course introduces basic understanding of Linux OS, Linux commands and File system and to Familiarize students with the Linux environment.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the operating system architecture and low level interfaces that are required to build Linux systems	K1
CO2	Understand different commands used by system administrator and file related commands	K2
CO3	Apply various Linux operating system commands and utilities in Linux systems	K3
CO4	Evaluate the shell scripts with different programming goals	K4
CO5	Analyze different types of shell associated commands	K5

Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	H	M	H
CO3	H	M	H	M	H	M	H	M	H	H	M	H
CO4	M	H	L	H	M	H	L	H	M	M	H	L
CO5	H	L	H	M	H	L	H	M	H	H	L	H

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction: Hardware Requirements for Linux – Salient Features – Multiuser Capability, Multitasking Capability, Communication, Security, Portability –Linux System Organization – Types of Shells – Bourne Shell, C shell, Korn Shell – Unix Commands. Unix File System: Creating Files – Indulging in File Play – Listing Files and Directories – Masking File Permissions – Directory Permissions – Removing File Forcibly – Directory Related Commands – Miscellaneous Commands.	12
Unit II	File System: The Boot Block, The Super Block, The Inode Table, Data Blocks – Storage of Files – Disk Related Commands – Disk Usage. Essential Linux Commands: Password – cal command – banner command –touch command – file command – Links with DOS – File Related Commands –wc, sort, cut, grep, dd – Viewing Files – File Compression.	12
Unit III	VI Editor: Modes of Operations – Learning the Ropes – Adding Text, Delete Text, Overwriting Text, Quitting vi – Block Commands – Search Strings – Find and Replace, Delete and Paste, Yank and Paste – Set Command – Customizing vi Environment – Multiple File Editing in vi. Processes in Linux: ps command – Background Process – The nohupCommand Killing a Process – Changing Process Priorities – Scheduling of Processes – ‘at’ command – ‘batch’ command – ‘crontab’ command.	12
Unit IV	Programming with Shell: Introduction to shell script-creation and execution-system variables-profile-read statement-command line arguments-logical operators && and -exit-if conditional-case-while statement-for set-shift-trap statement-shell variables-cd command-merging stream-expr command-eval command-shell programs.	12
Unit V	System Administration: System Administrator-Booting and shutting down-super user status (su) - security-user services - disk management (fsck) - operation -file system administration-backups utilities - cpio- afio- shutdown – mount –unmount – df - find commands-creating device files-installing and managing printers.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Yashavant Kanetkar	UNIX Shell Programming (Unit I – III)	BPB Publications, 3 rd Edition	2016
2	Sumitabha das	UNIX System Concepts and Applications (Unit IV, V)	Tata McGraw - Hill, Fourth edition	2014

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Mark G. Gobbell	Red Hat LINUX-Reference Manual	Pearson education	2014

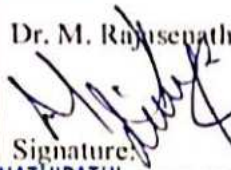
Web References

1. https://www.tutorialspoint.com/unix
2. https://lecturenotes.in/subject/455/linux-programming-lp
3. https://linux.config.org/linux-command-line-tutorial
4. https://www.guru99.com/unix-linux-tutorial.html
5. https://onlinecourses.swayam2.ac.in/aic20_sp26/preview

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI MA MCA MPhil Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN M.Sc. M.S. Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001

K. SRINIVASAN, MCA.
Coordinator
Curriculum Design and Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.


Dr. M. RAJASENATHIPATHI MA MCA MPhil Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT4A4			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	03	GE IV; Allied IV: DATA COMMUNICATION AND NETWORKS	Semester:	IV
					Credits:	03

Course Objective

1. To identify various components in a data communication system and understand state-of-the-art in network protocols, architectures and applications.
2. To enable students through the concepts of computer networks, different models and their involvement in each stage of network communication.
3. To educate the concepts of terminology and concepts of the OSI reference model and the TCP/IP reference model and protocols such as TCP, UDP and IP.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember the organization of computer networks, factors influencing computer network development and the reasons for having variety of different types of networks.	K1
CO2	Understand Internet structure and can see how standard problems are solved and the use of cryptography and network security.	K2
CO3	Apply knowledge of different techniques of error detection and correction to detect and solve error bit during data transmission.	K3
CO4	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies	K4
CO5	Knowledge about different computer networks, reference models and the functions of each layer in the models	K5

Mapping

PO TSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	H	M
CO3	H	M	H	M	H	H	M	H	M	H	L	M
CO4	M	H	L	H	M	M	H	L	H	M	M	H
CO5	H	L	H	M	H	H	L	H	M	H	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Introduction to Data Communications and Networking: Data Communications- Protocols - Analog and Digital Signals. Analog and Digital Transmission Methods - Modes of Data Transmission and Multiplexing.	12
Unit II	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.	12
Unit III	Network Protocols and OSI Model: OSI layer Functions. Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) -Frame Relay.	12
Unit IV	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.	12
Unit V	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.	12
	Total Contact Hrs	60

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phl.P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Pol., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Achyut S.Godbole	Data Communications and Networks	2 nd ed. Tata McGraw-Hill Publishing Company Limited, ISBN-13: 978-0-07-047297.	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Behrouz A. Forouzan	Data Communications and Networking	4 th Edition, Tata McGraw-Hill Publishing Company Limited, ISBN-13: 978-0070634145.	2017
2	Andrew S. Tanenbaum	Computer Networks	5 th Edition, Prentice Hall, ISBN-13: 978-9332518742	2013

Web References

1. https://onlinecourses.swayam2.ac.in/cec19_cs07/preview
2. https://www.tutorialspoint.com/data_communication_computer_network/index.htm
3. http://www.engppt.com/2009/12/networking-fourouzan-ppt-slides.html
4. https://www.slideshare.net/SalihNirbhoy/basic-computer-networking-tutorial
5. https://www.slideshare.net/HarpreetDhaliwal/presentation-on-data-communication

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.H., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COI:
Name: Dr. M. Rajasenathipathi	Name: Dr. M. Rajasenathipathi	Name: Mr. K. Srinivasan	Name: Dr. R. Manickachezian
Signature:	Signature:	Signature:	Signature:

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Center
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT413			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem.	0	CC LAB - V: PYTHON PROGRAMMING LAB	Semester:	IV
					Credits:	02

Course Objective

The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To develop python programs for list and control statements and understand the Different loops such as “for”, “while” and “do-while”.	K1
CO2	To Manage Errors and Exception and summarization of networks	K2
CO3	To implement File Objects and Object-Oriented Programming using python.	K3
CO4	Analyze the use control structures in programming.	K4
CO5	Design Python scripting language to develop innovative real time applications.	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	H	H	H	H	H	H	M	H	L	H	H
CO3	H	M	H	H	M	H	L	H	M	H	H	H
CO4	H	H	M	H	H	L	H	H	L	M	H	H
CO5	H	H	H	M	H	H	H	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Content	Hrs.
List of Programs 1. Write a program to display the following information: Your name, Full address, Mobile number, College name, Course. 2. Write a program to find the largest three integers using if-else and conditional operator. 3. Write a program to find first n prime numbers. 4. Write a program to find the product of two matrices. 5. Write a program to find the GCD of two integers. 6. Write a program to print the Fibonacci sequence. 7. Write a GUI program that converts Celsius temperature to Fahrenheit temperature. 8. Write a GUI program that displays your details when a button is clicked. 9. Write a program that opens a specified text file and then displays a list of all unique words Found in the file. 10. Write a program that opens a specified text file and then displays the most frequent words in a text read from a file.	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

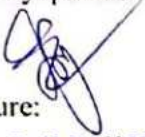
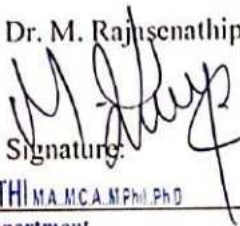
Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
 Head of the Department
 Department of Computer Technology
 Kallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
 M.A., M.Phil., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI MA, MCA, MPhil, PhD

Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI MA, MCA, MPhil, PhD
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
MA, MPhil, B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT		Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT414		Title	Batch:	2022 – 2025
			CC LAB VI: LINUX AND SHELL PROGRAMMING LAB	Semester:	IV
Lecture Hrs./Week or Practical Hrs./Week	04	Tutorial Hrs./Sem 0		Credits:	02

Course Objective

To enable the students to write program in Linux for solving specified problems.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Apply the various Linux distributions.	K3
CO2	Evaluate the basic set of commands and utilities in Linux systems.	K4
CO3	Validate various shell scripts with different programming concepts.	K3
CO4	Apply and change the ownership and file permissions using advance Unix commands.	K4
CO5	Create shell scripts for real time applications.	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	H	H	H	H
CO2	H	M	H	M	H	M	H	M	H	M	H	M
CO3	H	M	H	M	H	M	H	M	H	M	H	M
CO4	M	H	L	H	M	H	L	H	M	H	L	H
CO5	H	L	H	M	H	L	H	M	H	L	H	M

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Content	Hrs.
List of Programs 1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split 2. Write a Shell Script to implement the following: pipes, Redirection and commands. 3. Write a shell script for displaying current date, user name, file listing and directories by getting user choice. 4. Write a shell script to implement the filter commands. 5. Write a shell script to remove the files which has file size as zero bytes. 6. Write a shell script to find the sum of the individual digits of a given number. 7. Write a shell script to implement command line arguments. 8. Write a shell script for executing control statements 9. Write a shell script to print the multiplication table of the given argument using for loop. 10. Write a shell script to show the following system configuration : a. currently logged user and his log name b. current shell , home directory , Operating System type , current Path setting c. show currently logged number of users, show all available shells d. show CPU information like processor type , speed e. show memory information	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

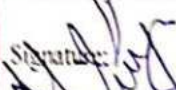
Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI W.A.M.C.A.M.Phil.P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Sallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.C.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.Ed., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Sallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	22UCT451			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC II: Naan	Semester:	IV
				Mudhalvan : Desktop Publishing Lab	Credits:	02

Course Objective

To provide the students understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the formatted text and graphics.	K3
CO2	To realize about the Print Industry, Printing technology	K4
CO3	To validate the Designing standards, Print layout Design and creative visualization for intuitive layout	K5
CO4	Visualize the special effects, Exporting drawings, outlining & filling objects	K4
CO5	Drawing lines, shapes .inserting pictures, objects, tables, templates	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Sample Programs 1. Bokeh Effect / Blur Background using photoshop 2. To create a Visiting card using Adobe Photoshop tools. 3. To draw a frame using Custom Shape Tool in Shape preset. 4. Convert a color photo to black and white photo. 5. Explain the procedure to Creating a Cover Page for a text book 6. Explain the steps for Designing a Passport Size Photo on a Max Size Paper 7. Explain the elements of Adobe Photoshop window 8. Layers in Photoshop	30
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Pol., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A.M.Pol., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Computer Technology	
Course Code:	22UCT4S2			Title	Batch:	2022 - 2025
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem	0	SEC II: Naan Mudhalvan : PC Hardware & Troubleshooting	Semester:	IV
					Credits:	02

Course Objective

To provide the students understanding of the techniques essential to build their career in desktop publishing using suitable hardware and software tools.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To keep in mind about the formatted text and graphics.	K3
CO2	To realize about the Print Industry, Printing technology	K4
CO3	To validate the Designing standards, Print layout Design and creative visualization for intuitive layout	K5
CO4	Visualize the special effects, Exporting drawings, outlining & filling objects	K4
CO5	Drawing lines, shapes .inserting pictures, objects, tables, templates	K6

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	M	H	H	H	H	M	H	H	H	H
CO2	H	H	H	H	H	H	H	H	L	H	H	M
CO3	H	H	H	M	H	L	H	H	H	M	H	H
CO4	L	H	L	H	L	H	M	M	L	H	M	H
CO5	H	H	H	H	M	H	H	H	H	M	H	L

* H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.FM., P.D.
Head of the Department
Department of Computer Technology
Kallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.FM., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Fundamentals of PC technology: Fundamental Building Blocks of the PC – Principles of CPU Operations - CPU family & operation.	6
Unit II	Motherboards: Motherboard Controllers and System Resources – The I / O System Bus – Onboard I / O Devices Power Supply , cooling.	6
Unit III	Protection : The Power Supply – Ventilation and Cooling Protection – Power Production and Backup.	6
Unit IV	Magnetic Storage –Hard Disk Drives – Optical Storage Devices :Optical Storage Media – CD-ROM Drives – DVD-ROM Drives	6
Unit V	I/O Ports and Devices : Serial Ports – Parallel Ports – Universal Serial Bus. Keyboards and Pointing Devices : - Keyboards – Pointing Devices Modems.	6
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Craig Zacker, John Rourke	The Complete Reference PC Hardware	Tata McGrawHill,	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Govindaraju lu. B	IBM PC and clones : Hardware, Trouble shooting and Maintenance.	Second edition, Tata-McGraw Hill (ISBN 0-07-048286-1)	2017
2	Rosch. Winn L.	Hardware bible	Sixth edition, Que/Techmedia publishers, (ISBN 81-7635-696-4)	2003

Web References

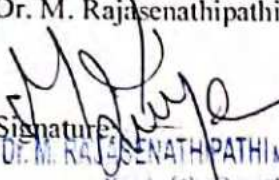
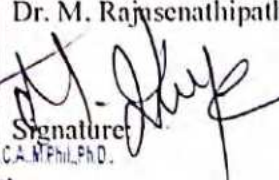
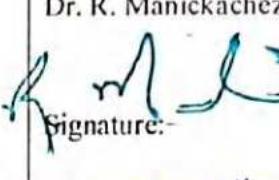
1. https://www.tutorialspoint.com/computer_fundamentals/computer_hardware.htm
2. https://www.w3schools.blog/hardware
3. https://www.geeksforgeeks.org/computer-hardware/
4. https://www.studocu.com/row/document/university-of-nairobi/sociological-theories/computer-hardware-lecture-notes-10/4256736
5. https://testbook.com/blog/basic-computer-hardware-notes-pdf/

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

22UCT4S2

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi  Signature: Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D., Head of the Department	Name: Dr. M. Rajasenathipathi  Signature: Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D., Head of the Department	Name: Mr. K. Srinivasan  Signature: K. SRINIVASAN, M.C.A., Co-ordinator	Name: Dr. R. Manickachezian  Signature: Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations

Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.,
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT4N3			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	01	Tutorial Hrs./Sem.	0	Skill Based NON-MAJOR ELECTIVE II – OFFICE AUTOMATION LAB	Semester:	IV
					Credits:	02

Course Objective

To familiarize the students in preparation of documents and presentations with office automation tools

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind about the menus and icons functionalities in MS Word	K3
CO2	Understand and apply mathematical functions to calculate mean, median and standard deviation using Excel	K3
CO3	Apply different build in functions and their usage.	K4
CO4	Prepare a power point presentation for a range of events	K4
CO5	Include graphs, tables and images to power point presentation	K3

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Content	Hrs.
MS WORD 1. Type the text, check spelling and grammar, bullets and numbering list items, align the text to left, right, justify and centre. 2. Prepare a job application letter enclosing your bio-data. 3. Performing mail merge operation and preparing labels. 4. Preparing a neatly aligned, error free document, add header and footer, also perform find and replace operation. 5. Prepare a document in newspaper column layout.	15
MS EXCEL 6. Worksheet Using formulas. 7. Worksheet Manipulation for electricity bill preparation. 8. Drawing graphs to illustrate class performance. 9. An excel worksheet contains monthly Sales Details of five companies.	
MS POWER POINT 10. Prepare a power point presentation for Department inaugural function.	
Total Contact Hrs.	15

Dr. M. RAJASENATHIPATHI B.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Kallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



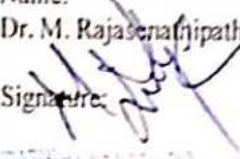
Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickavasagam Signature: 

Dr. M. RAJASENATHIPATHI B.A., B.C.A., M.PHIL., P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN
Coordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKAVASAGAM B.A., B.C.A., M.PHIL., P.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI B.A., B.C.A., M.PHIL., P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN
M.A., M.Phil., B.Ed., Ph.D.
PRINCIPAL
NGM College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc. CT			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	22UCT4N4			Title	Batch:	2022 – 2025
Lecture Hrs./Week or Practical Hrs./Week	01	Tutorial Hrs./Sem.	0	NON-MAJOR ELECTIVE	Semester:	IV
				II - CORELDRAW LAB	Credits:	02

Course Objective

To equip the students with the basic knowledge of CorelDraw graphics suites

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Keep in mind about CorelDraw workspace, tools and panels	K3
CO2	Comprehend a variety of images using crop tools, zooming, curve and smart fill tools	K4
CO3	Validate the animation works using CorelDraw	K3
CO4	Develop different animations with help of Corel tools	K4
CO5	Create variety of techniques for designing methods	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., B.Ph., P.D.
Head of the Department
Department of Computer Technology
Kallamothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHURUNARAN,
M.A., M.Phil., D.Ed., Ph.D.,
PRINCIPAL
K.G.M. College, Pollachi - 642 001
Coimbatore District

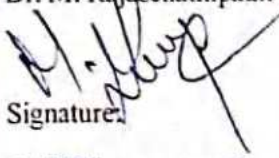
Content	Hrs.
1. Create a program using drawing tools. 2. Create a program to work with layers 3. Develop a program for Text tools 4. Create a program to work with frames 5. Create a model using Freehand Tool 6. Create a program for masking a picture 7. Create a program using bitmap files 8. Create a program to develop a layers 9. Create a program for transformation of an object 10. Create a program for animation effects	15
Total Contact Hrs.	15

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.H.D.
 Head of the Department
 Department of Computer Technology
 Autonomous Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
 Co-ordinator
 83 Curriculum Development Cell (CDC)
 NGM College (Autonomous)
 Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S.P.H.D.
 Controller of Examinations
 NGM College (Autonomous)
 POLLACHI - 642 001.

**NALLAMUTHU GOUNDER MAHALINGAM
COLLEGE (AUTONOMOUS)**



**U.G. DEPARTMENT OF COMPUTER TECHNOLOGY
(C.T.)**



SYLLABUS

2023 – 2026 Batch

(With Effect From 2023-2026 Batch and Onwards)

DEPARTMENT OF COMPUTER TECHNOLOGY

Syllabus

BATCH: 2023 – 2026

Faculty Members

Dr. M. Rajasenathipathi, M.C.A., M. Phil., Ph.D.,

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

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

Dr. 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 – 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

Program Educational Objectives:

PEO1	Demonstrating the concepts and technologies of Software Industry
PEO2	Motivate to select one domain knowledge and develop smart software solutions as per industry standard
PEO3	Focus to solve real time problems in terms of various technologies.
PEO4	Understand the concepts of software project life cycle during software development.
PEO5	Apply the knowledge of various levels of security in computer field.

Program Outcomes:

PO1	<i>Problem solving</i> : Under Graduate students are to apply, algorithmic, real time and Industry standard reasoning to a variety of computational problems.
PO2	<i>Problem solving</i> : Understand the fundamental knowledge of various domains in IT Industry and change their carrier as per industry Demand.
PO3	<i>Self-directed learning</i> : Combine the knowledge of mathematics and Software Technologies in the field of Software project development
PO4	<i>Information/digital literacy</i> : Implement industry standard projects of their own choice using latest tools.
PO5	<i>Analytical reasoning</i> : Improve the aptitude skill to clear various levels of entrance exams in their carrier.
PO6	<i>Physical and mental wellness</i> : The Under Graduate students are recognize the Human Excellence and ethical responsibilities through yoga in various disciplines
PO7	<i>Reflective thinking and Communication Skills</i> : Demonstrate global Industry demand related subjects and transferable skills that a relevant to global industry and employment opportunities
PO8	<i>Self-directed learning</i> : Graduates will recognize the need for self-motivation and lifelong learning to update in technologies to be in par with changing technology
PO9	<i>Cooperation/Team work</i> : Ability to analyze the local and global impact of computing on individuals, organizations and society.
P10	<i>Multicultural competence</i> : Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Program Specific Outcomes:

PSO – 01	Academic skills and abilities: Acquire academic excellence with professional skill for employment and higher studies.
PSO – 02	Explore Software Development Solutions: Create, select and apply modern tools and techniques to analyze and develop successful software in IT Industry.

Mapping

PEO PO	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	H	M	M	M	L
PO2	H	L	H	M	M
PO3	H	H	M	M	L
PO4	H	M	H	H	H
PO5	M	H	L	H	M
PO6	H	M	H	M	L
PO7	H	L	H	H	M
PO8	M	H	M	H	M
PO9	H	M	M	H	H
PO10	M	M	L	H	H
PSO-01	H	H	H	H	H
PSO-02	H	H	H	H	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A.M.P.H.D., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

B.Sc.– For Computer Technology

(FOR THE CANDIDATES ADMITTED FROM THE ACADEMIC YEAR 2023 - 2024 ONWARDS)

I to VI SEMESTERS

SCHEME OF EXAMINATIONS

SEMESTER - I										
Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P	T		Internal	External		
I	23UTL1C1	Tamil Paper-I	5	-	-	3	25	75	100	3
	23UHN1C1	Hindi Paper-I								
	23UFR1C1	French Paper-I								
II	23UEN101 / 23UEN102	Communication Skills – I (Level I) / Communication Skills – I (Level II)	5	-	-	3	25	75	100	3
III	23UCT101	CC I: Programming in C	4			3	25	75	100	4
	23UCT102	CC II: Digital Fundamentals and Computer Organization	5			3	25	75	100	4
	23UCT1A1/ 23UCT1A2	GE I – Allied I: Mathematics - I: Mathematical Structures For Computer Science / Discrete Mathematics	5			3	25	75	100	4
	23UCT103	CC Lab I: Programming in C		4			20	30	50	2
IV		AECC I: Environmental Studies	1	-	-	-	-	-	-	-
	23HEC101	Human Excellence - Personal Values & SKY Yoga Practice - I	1	-	-	2	20	30	50	1
V		Extension Activities – Annexure I	-	-	-	-	-	-	-	-
EC		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			30				165	435	600	21

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course.

CC – Core Course; GE – Generic Elective; AECC - Ability Enhancement Compulsory Course

SEMESTER - II

Part	Subject Code	Title of the Paper	Hrs. / Week		Hrs. / Sem.	Exam Hrs.	Maximum Marks		Total Marks	Credits
			L	P			Internal	External		
I	23UTL2C2	Tamil Paper-II	5	-	-	3	25	75	100	3
	23UHN2C2	Hindi Paper-II								
	23UFR2C2	French Paper-II								
II	23UEN202 / 23UEN203	Communication Skills – II (Level I) / Communication Skills – II (Level II)	5	-	-	3	25	75	100	3
III	23UCT204	CC III: Java programming	4			3	25	75	100	4
	23UCT205	CC IV: Data Structures	4			3	25	75	100	4
	23UCT2A1 / 23UCT2A2	GE II – Allied II: Mathematics II – Operations Research / Statistics	4			3	25	75	100	4
	23UCT206	CC Lab II: Java programming Lab		4		3	20	30	50	2
	23UCT2S1/ 23UEL2S1	SEC I: Naan Mudhalvan : Advanced Excel Lab/ Professional Skills		2		2	20	30	50	2
IV	23EVS201	AECC I: Environmental Studies	1			2	-	50	50	2
	23HEC202	Human Excellence - Family Values & SKY Yoga Practice - II	1			2	20	30	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
EC	23CMM201	Manaiyiyal Mahathuvam - I			15 Hrs.	2	-	50	50	Grade
	23CUB201	Uzhavu Bharatham - I			15 Hrs.	2	-	50	50	Grade
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)								Grade
Total			30				185	515	700	25

EC – Extra Credit Course / Certificate Course / Co-scholastic Course / Job Oriented Course

CC – Core Course; GE – Generic Elective; AECC - Ability Enhancement Compulsory Course;

SEC – Skill Enhancement Course

SEMESTER I

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT101			Title	Batch:	2023 - 2026
				Title	Semester:	I
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	CC I: Programming in C	Credits:	4

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember data types, identifier, arrays, strings and pointers	K1
CO2	To understand how to write and use control statements and functions in C	K2
CO3	To implement the concept of pointers, structure and union	K3
CO4	To evaluate string functions and file Operations in C programming for a given application	K4
CO5	To evaluate random file operations, preprocessor and command line arguments	K5

Mapping

PO / PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	M	M	M	M	M
CO2	H	L	H	M	M	M	L	M	M	M	M	M
CO3	H	H	M	M	L	H	H	H	L	H	M	H
CO4	H	M	H	H	H	M	H	H	H	H	L	H
CO5	M	M	L	H	M	H	M	M	M	M	H	M

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Introduction to C : Overview of C – History and Importance of C – Basic Structure of C programs -Development of program logic skills through Flowchart and Algorithm – Programming Style– Executing a 'C' program – Character set – C Tokens – Keywords – Identifiers – Constants– Variables – Rules for defining variables– Data types , – Declaring and initializing variables– Operators & Expressions – Precedence of arithmetic – Type conversion in expressions– Mathematical functions – Managing Input and output operations : Introduction – Reading a character–Writing a character Formatted input-Formatted output Simple Programs	12
Unit II	Control Statements : IF, IF..ELSE Statements, ELSE...IF ladder – Switch Statement – GOTO Statement – WHILE Statement – Do Statement – FOR Statement.–Jumps in loops. Arrays : One dimensional Arrays – Two Dimensional Arrays –simple Structures: Arrays within Structures–Union.	12
Unit III	Functions : User-defined functions- -Elements of user defined function, definition of function - Return value &their types, function calls &declarations-Category of functions: No arguments & No return values-arguments that No return values – Arguments with return values-No arguments that return a value-Nesting of functions-Recursion	12
Unit IV	String manipulation : Introduction- Declaring & Initializing String variables –Reading string from terminal, Writing string to screen – String handling Functions . Pointers : Introduction - Accessing, Declaring & Initializing pointer Variables	12
Unit V	Files : Defining and opening a file – Closing a file –I/O operations on sequential file– Command line arguments- Programs using Files and CommandLine Arguments	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phil.P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Text Book

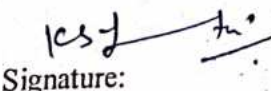
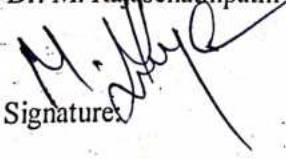
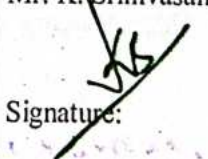
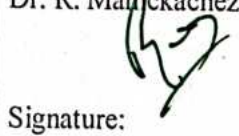
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	F. Balagurusamy	Programming in ANSI C	Tata McGraw-Hill Publishing Co&Ltd., Eighth Edition	2019

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Greg Perry, Dean Miller	C Programming – Absolute Beginner's Guide	Third Edition	2013
2	Yashvant Kanetkar	Let us C	17th Edition	2020

Web References

1. https://www.javatpoint.com/data-types-in-c
2. https://www.tutorialspoint.com/cprogramming/c_arrays.html
3. https://www.programiz.com/c-programming/c-functions
4. https://www.programiz.com/c-programming/c-pointers
5. https://www.geeksforgeeks.org/basics-file-handling-c/

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

K. SRINIVASAN, M.C.A.
Co-ordinator
Head of the Department of Curriculum Development Cell
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT102			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Semi.	-	Title	Semester:	I
				CC II: Digital Fundamentals and Computer Organization	Credits:	4

Course Objective

To convert 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

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To recollect number system, Binary Codes concepts	K1
CO2	To understand the concepts of Boolean laws, logic gates, Karnaugh map for Minimization of POS and SOP form of Boolean expressions.	K2
CO3	To apply arithmetic and logic circuits, different sequential circuits with flipflops, registers.	K3
CO4	To analyze the concept of Register Organization, Data Transfer and Manipulation, Registers and Memory Organization.	K4
CO5	To evaluate memory hierarchy and types of memory	K5

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phil.P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	M
CO2	H	L	H	M	M	M	L	M	M	M	H	M
CO3	H	H	L	M	L	M	H	H	L	H	M	H
CO4	H	L	H	H	H	M	H	M	H	H	L	H
CO5	M	M	L	H	M	H	M	M	M	M	H	L

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	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.	15
Unit II	Boolean Algebra-Logic Gates– Karnaugh Map and Minimization: Boolean Algebra – Gates – Inverter or NOT Gate – OR Gate – AND Gate – NOR Gate – NAND Gate – De Morgan'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.	15
Unit III	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.	15
Unit IV	Central Processing Unit: General Register Organization – Stack Organization – Instruction Formats – Data Transfer and Manipulation – Reduced Instruction Set Computer (RISC).	15
Unit V	Memory Organization: Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory.	15
	Total Contact Hrs	75

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Puri.V.K	Digital Electronics Circuits and Systems	22 nd Reprint, TATA McGraw Hill Publications, ISBN-13: 978-0074633175	2017
2	Morris Mano. M	Computer System Architecture	3 rd Edition	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Donald P Leach, Albert Paul Malvino, Gautam Saha	Digital Principles and Applications	8 th Edition, TATA McGraw-Hill Publications.	2014
2	Mandal S K	Digital Electronics: Principles and Applications	1 st Edition, ISBN-13:978-0070153820.	2017
3	Saini S.P.S	Computer System Architecture and Organization	S. K. Kataria & Sons Publication, ISBN-13:978-8189757731	2015
4	Hamacher.C, Zvonko.V, Zaky.S	Computer Organization	5 th Edition Tata McGraw Hill Publication, ISBN-13:9781259005275	2017

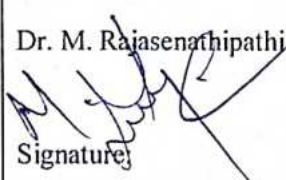
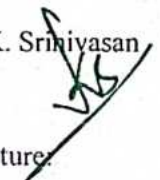
Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.H.D., F.D., F.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Web References

1. https://circuitglobe.com/number-system-in-digital-electronics.html
2. https://www.tutorialspoint.com/digital_circuits/digital_circuits_logic_gates.html
3. https://www.tutorialspoint.com/digital_circuits/digital_circuits_flip_flops.html
4. https://www.tutorialspoint.com/computer_fundamentals/computer_cpu.htm
5. https://www.tutorialsmate.com/2020/04/types-of-computer-memory.html

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

K. SRINIVASAN, M.C.A.,

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Co-ordinator
Head of the Department Curriculum Development Cell (CDC)
Department of Computer Technology
N.G.M. College (Autonomous)
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.


Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT1A1			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	—	GE I – Allied I:	Semester:	I
				Mathematics - I: Mathematical Structures For Computer Science	Credits:	4

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember an in-depth knowledge in Matrices, Determinants, Inverse of a matrix, Rank of a Matrix and Eigen value Problems	K1
CO2	To understand the concepts of numerical differentiation and integration	K2
CO3	To apply an appropriate numerical method for solving algebraic	K3
CO4	To figure out the concept of Mean, Median, Mode, Measures of dispersion and the law relating to Correlation and Regression	K4
CO5	To evaluate the concept of correlation and correlation evaluation regression	K5

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	H	H	M	M	M
CO2	M	H	H	M	M	M	L	M	H	H	H	M
CO3	H	H	L	H	L	M	H	H	L	H	L	H
CO4	L	L	H	H	H	M	H	M	H	H	L	H
CO5	M	M	L	L	M	H	M	M	H	M	H	L

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Matrices – Introduction – Determinants – Inverse of a matrix – Rank of a Matrix – Eigen Value problems	15
Unit II	System of Simultaneous Linear algebraic Equation: Gauss elimination, Gauss Jordan. The solution of Numerical Algebraic and Transcendental equation – Bisection method – Newton Raphson method.	15
Unit III	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.	15
Unit IV	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.	15
Unit V	Correlation: Karl Pearson's coefficient of correlation – Rank correlation regression: Regression Equations – Difference between Correlation and Regression.	15
	Total Contact Hrs	75

Dr. M. RAJASENATHIPATHI M.A.MCA.MPHI.PH.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

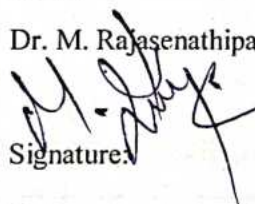
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Dr. Venkataraman. M. K	Engineering Mathematics	Volume II, Third Edition, NPC – (Unit I).	2001
2	Kandasamy.P, Thilagavathi.K, Gunavathi. K	Numerical Methods	Revised Edition, New Delhi, S. Chand and Company Ltd, ISBN-13: 9788121914383.	2013
3	Pillai.R.S.N, Bagavathi.V	Statistical Methods	New Delhi, Sultan Chand and Sons Company Limited, (Unit IV &V): ISBN-13: 978-9352533091	2016

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	N. P. Bali., Dr. Manish Goyal	A text book of Engineering Mathematics	Voll, 9th edition, University science Press, New Delhi. ISBN 13:- 9788131808320.	2013
2	Gupta .S.C, Kapoor .V.K	Fundamental of Mathematical Statistics	Sultan Chand and Sons-Tb, ISBN-13: 9788180549687.	2018

Web references:

1. https://www.vedantu.com/maths/types-of-matrices
2. https://byjus.com/maths/gauss-elimination-method/
3. http://www.math.pitt.edu/~sparling/052/23052/23052notes/23052notestojan14th/node3.html
4. https://statistics.laerd.com/statistical-guides/measures-central-tendency-mean-mode-median.php
5. https://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one/11-correlation-and-regression

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
 Co-ordinator
 Curriculum Development Cell (CDC)
 N.G.M. College (Autonomous)
 Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
 Controller of Examinations
 NGM College (Autonomous)
 POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
 M.A., M.P.H., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT1A2			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	5	Tutorial Hrs./Sem.	–	GE I – Allied I:	Semester:	I
				Mathematics - I: Discrete Mathematics	Credits:	4

Course Objective

To instruct the concepts of Set Theory, Relations, Languages 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

[15 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-Inclusion and Exclusion principle.

Unit – II

[15 Hours]

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

Unit – III

[15 Hours]

Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation –
Equivalence relation – Composition of relations – Functions – Types of functions – Invertible

functions – *Composition of functions**,

Unit – IV

[15 Hours]

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

Unit – V

[15 Hours]

Representation of graphs in computer memory – Eulerian Graph and Hamiltonian Graph – Shortest path problems: Unweighted Graph and Weighted Graph – Planar Graph.

Note: Note: **Italicized* texts are for self study

Power Point Presentations, Quiz, Assignment, Case Study

Books for Study

1. Sharma J. K, (2020) "Discrete Mathematics", 3rd Edition, MacMillan India Ltd, ISBN-13: 9780230322301.

Books for Reference

1. Tremblay J.P, Manohar R, (2017), "Discrete Mathematics Structures with Applications to Computer Science", TATA McGraw-Hill Publications.
2. Dr. Venkataramen .M.K, Dr Sridharan .N, Chandarasekaran .N, (2003) "Discrete Mathematics" The National publishing Company Chennai. ISBN-13: 9788172863722.
3. <http://pdfbooklibrary.com/ebooks/discrete-mathematics-book-download.pdf>


Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.Phil.P.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

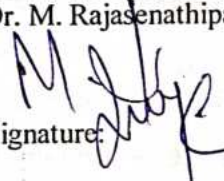
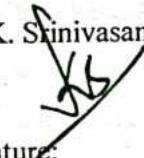
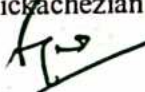



Dr. R. MUTHUKUMARAN,
M.A.M.Phil.,B.Ed.,Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Mapping

CO \ PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	H	M	M	M	H
CO2	S	H	H	S	M
CO3	H	S	M	L	H
CO4	S	H	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	Co-ordinator CDC	COE
Name: Ms. A. Kalaivani Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
NGM College, Pollachi - 642 001
Coimbatore District

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT103			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	CC Lab I: Programming	Semester	I
				in C	Credits:	2

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

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember the concept of data types, decision making and looping control statements	K1
CO2	To get the idea of array, strings and functions in C	K2
CO3	To access the file information through open/close and reading/writing operations in a file	K3
CO4	To remember the concept of pointers	K4
CO5	To get the idea of file functions	K5

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.H.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	M	M	L	H	M	H	H	M	H	M
CO2	M	M	H	L	M	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	H	L	H	L	H
CO4	L	H	H	H	H	H	H	M	H	H	L	H
CO5	M	M	L	L	M	H	M	L	H	M	H	L

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a C program to illustrate the concept of operators in C. 2. Write a C program to illustrate the concept of conditional and unconditional control statements. 3. Write a C program to illustrate the concept of Arrays. 4. Write a C program to illustrate the concept of string and its functions. 5. Write a C program to illustrate the concept of Functions. 6. Write a C program to illustrate the concept of call by value. 7. Write a C program to illustrate the concept of call by reference. 8. Write a C program to illustrate the concept of pointers. 9. Write a C program to illustrate the concept of File and its Operations. 10. Write a C program to illustrate the concept of Command line Arguments.	60
Total Contact Hrs	60

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallasothu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



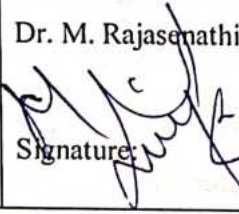
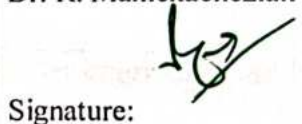
Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell
N.G.M. College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.
Controller of Examinations
N.G.M. College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

SEMESTER- II

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT204			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	CCIII: Java programming	Semester:	II
					Credits:	4

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Remember about classes, objects, members of a class and relationships among them needed for a specific problem	K1
CO2	Comprehend the concepts of inheritance, interface and package	K2
CO3	Examine error handling techniques using exception handling	K3
CO4	Evaluate the concepts of thread, applet and files	K4
CO5	Developed skills in designing abstract window toolkit	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	H	H	H	H	H	L	H	H	H
CO2	H	M	H	M	H	H	M	H	M	H	M	L
CO3	H	M	H	M	H	L	M	H	M	H	M	H
CO4	M	H	L	H	M	M	H	M	H	M	H	M
CO5	H	L	H	M	H	H	M	H	M	L	M	H

*H-High; M-Medium; L-Low

Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.P.H., Ph.D.
Head of the Department
Department of Computer Technology
Kallanathu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
R.G.M. College, Pollachi - 642 001
Coimbatore District

Units	Content	Hrs
Unit I	Fundamentals of Object – oriented programming – Introduction – Object-object oriented programming – Objects and Classes – Data abstraction and Encapsulation – Inheritance – Polymorphism – Dynamic Binding – Message Communication – Benefits of OOP – Applications of OOP – Java Evolution – History – Java features – How java differs from C and C++ – Java and the Internet – Java and World Wide Web – WebBrowsers – Java Environment – Overview of Java Language – Simple Java Program – Java Program Structure – Java Tokens – Java Statements – Implementing Java – Java Virtual Machine – Command Line Arguments.	12
Unit II	Constants, Variables and Data Types – Declaration of variables – Scope of Variables – Symbolic Constants – Type Casting – Operators and Expressions – Arithmetic Operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operator – Bitwise operator – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity – Decision Making and Branching – Decision Making with If statement – Simple If statement – if-Else statement – Nesting of if-Else statement – The Else if ladder – the switch statement – the ?: operator.	12
Unit III	Decision Making and Looping – The While Statement – the Do statement – The For statement – Jumps in Loops – Labeled Loops – Classes, Objects and Methods – Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Objects – Constructors – Method Overloading – static members – Nesting of Methods – Inheritance – Overriding methods – Final Variables – Final Classes – Finalizer Methods – Abstract Methods and classes – Methods with Varargs – Visibility Control – Arrays and Strings – Wrapper classes – Enumerated types.	12
Unit IV	Interfaces – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface variables – Packages – Java API Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a class to a package – Hiding classes – static import – Multithreaded	12

	Programming – Creating Threads – Extending the Thread classes – Stopping and Blocking a Thread – Lifecycle of Thread – Using Thread methods	
Unit V	Types of Errors – Exception – Syntax of Exception handling code – Multiple catch statements – Using Finally statement – Throwing our own Exceptions - Applet Programming – How Applet differs from Applications – Building Applet Code – Applet Lifecycle – Creating an Executable Applet – Concept of Streams – Stream Classes – Byte-Stream classes – Character Stream classes – Using Streams – other useful I/O classes – Using the file class – I/O functions – Creating of files – Reading / Writing characters – Reading /writing bytes – Handling Primitive data types – Random Access files – Interactive I/O – Other stream classes.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Balagurusamy. E	Programming With JAVA A Primer	6 th Edition, Tata McGraw Hill Publications, ISBN-13: 9780070141698.	2019

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.PH.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



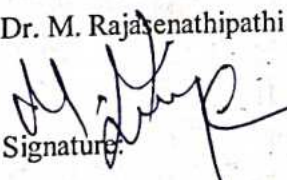
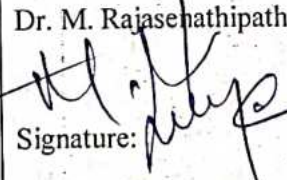
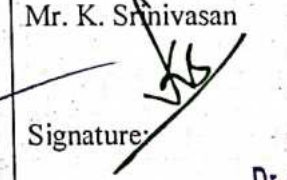
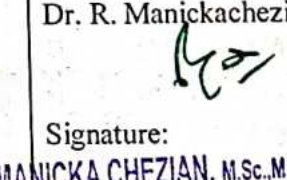
Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	John R. Hubbard	Programming with Java	2 nd Edition, Schaum's Outline Series, Tata McGraw Hill Publications, ISBN-13: 9780070589421.	2013
2	Timothy Budd	Understanding Object Oriented Programming with Java	2 nd Edition, Pearson Education, ISBN-13: 9780201308815.	2016
3	Deitel&Deitel	Java TM: How to Program	9 th Edition, PHI, ISBN-13: 9780136123712	2013

Web references:

1. iiti.ac.in/people/~tanimad/JavaTheCompleteReference.pdf
2. http://www.onlineprogrammingbooks.com/learning-java-4th-edition/
3. https://www.javatpoint.com/serialization-in-java
4. https://www.journaldev.com/2452/serialization-in-java
5. https://www.tutorialspoint.com/java/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
Pollachi - 642 001.

K. SRINIVASAN, M.C.A.
Co-ordinator
Curriculum Development Cell (CDC)
NGM College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

Programme Code:	B.Sc.		Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT205		Title	Batch:	2023 – 2026
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	CC IV: Data Structures	Semester:	II
				Credits:	4

Course Objective

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

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember arrays, stack/queue operations and trees	K1
CO2	To understand and develop skills to analyze simple linear and non linear datastructures	K2
CO3	To apply the concept of linked lists, graphs and trees for the realworldproblems	K3
CO4	To evaluate file organizations, various searching and sorting methodologies	K4
CO5	To apply the concept of Binary trees	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	M
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	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	12
Unit II	Stacks : Introduction – Stack Operations – Applications. Queues : Circular Queues – Other types of Queues – Applications.	12
Unit III	Linked Lists : Introduction – Singly Linked Lists – Circular Linked Lists – Doubly Linked Lists – Applications.	12
Unit IV	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.	12
Unit V	File Organizations : Introduction – Files - Keys – Basic File Operations – Sequential File Organizations – Indexed sequential File Organizations – Direct File Organizations. Searching : Linear search– Binary search. Sorting : Merge sort and Quick sort.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	GAV Pai	Data Structures and Algorithms – Concepts, Techniques and Applications	Tata MCGrawHill Publications ISBN-10: 0070667268	2017

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Aaron M Tanenbaum, Yedidyeh Langsam, Moshe J Augenstein,	Data Structure using C	Facsimile Edition, Pearson India, ISBN-13:978-8131702291.	2018
2	Ashok N Kamthane	Programming and Data Structures	Pearson Education, 1 st Indian Print, ISBN-13:978-131724224.	2009

Web references:

1. https://www.w3schools.in/cplusplus-tutorial/working-with-files/
2. https://www.javatpoint.com/ds-stack-vs-queue
3. https://www.javatpoint.com/ds-linked-list
4. https://www.javatpoint.com/binary-tree
5. https://www.javatpoint.com/bubble-sort

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. R. Jayaprakash Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.N., Ph.D.,
Head of the Department
Department of Computer Curriculum Development Cell (CDC)
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Mr. K. SRINIVASAN, M.C.A.,
Co-ordinator
Curriculum Development Cell (CDC)
N.G.M. College (Autonomous)
Pollachi - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
N.G.M. College (Autonomous)
POLLACHI - 642 001.

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.P.N., Ph.D.,
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Pol., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

Programme:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT2A1			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	GE II – Allied II: Mathematics II – Operations Research	Semester:	II
					Credits:	4

Course Objective

Every industrial organization faces multifaceted problems to identify best possible solution to their problems. OR aims to help the executives to obtain optimal solution with the use of OR techniques and to locate best or optimal solution.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To recollect the modeling tools and computational tools as well as analytic skills to evaluate the problems.	K1
CO2	To understand how to translate real world problem given in words into a mathematical formulation.	K2
CO3	To apply mathematical optimization techniques, existing optimization tool kits to write computer programs and to implement algorithms and solve problems.	K3
CO4	To analyze the problem situation leading to better control, better co-ordination, better systems and finally better decisions.	K4
CO5	To analyze the concept of CPM and PERT	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	H
CO2	M	M	H	L	MH	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	L	L
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Linear Programming Problem: Graphical Solution Method- General Linear Programming Problem (Definition alone) - Canonical and Standard forms of LPP. Simplex Method: Basic Solution and Degenerate Solutions to Linear Equation- Simplex Method.	12
Unit II	Transportation Problem: North West Corner Method- Least Cost Method- Vogel's Approximation Method- Moving towards optimality UV Method. Assignment Problem: Definition- Assignment Algorithm.	12
Unit III	Inventory Control: Introduction – Types of Inventory – Inventory Decision- Economical Order Quantity (EOQ) – Deterministic Inventory Problems.(Simple Problems)	12
Unit IV	Sequencing Problems: Introduction- Problems with n Jobs and 2 Machines- Problems with n Jobs and k Machines.	12
Unit V	Network Scheduling: Introduction- Network and Basic Components- Rules of Network Construction- Time calculation in Networks-CPM-PERT- PERT Calculations- Difference between CPM and Pert Network.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

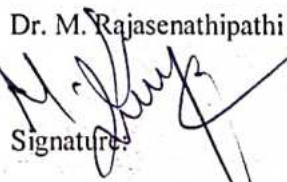
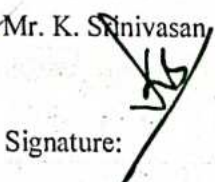
S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	KantiSwarup, P.K.Gupta, Man Mohan	Operations Research	Sultan Chand & Sons, Seventh Edition ISBN-13: 978-8180547713	2010

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	R. Paneer Selvam,	Operation Research	Prentice Hall of India Pvt Ltd, second edition	2016

Web references:

1. https://ncert.nic.in/ncerts/l/lemh206.pdf
2. https://www.mygreatlearning.com/blog/transportation-problem-explained/
3. https://www.researchgate.net/publication/245280760_Deterministic_Inventory_Models_for_Variable_Production
4. https://link.springer.com/chapter/10.1007%2F978-3-662-08011-5_10
5. https://en.wikipedia.org/wiki/Network_congestion

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, Head of the Department of Computer Curriculum Development, Nallamathu Gounder Mahalingam College, NGM College (Autonomous), POLLACHI - 642 001.

K. SRINIVASAN, Co-ordinator, NGM College (Autonomous), POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D., Controller of Examinations, NGM College (Autonomous), POLLACHI - 642 001.

Programme:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT2A2			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	-	GE II – Allied II: Mathematics II – Statistics	Semester:	II
					Credits:	4

Course objective

Learning various statistical methods like central tendency, dispersion, correlation and regression, probability and sampling theory.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To remember the formula of different Means, Median, Mode, Deviations, Correlation, Regression, Probability, Chi square test, Degree of Freedom, etc..	K1
CO2	To understand the concepts Central tendency, Dispersion, Correlation and regression, Probability and Sampling theory.	K2
CO3	To solve the problems by using formula to apply the programs.	K3
CO4	To analyze the solution is right or wrong.	K4
CO5	To evaluate the results through the program outputs	K5

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	M	L	H	M	H	H	M	M	H
CO2	M	M	H	L	MH	M	L	H	H	H	H	M
CO3	H	H	L	H	H	M	H	M	L	H	L	H
CO4	L	H	M	H	H	H	H	M	H	H	L	L
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	Measures of central tendency: Mean: Arithmetic Mean, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation between mean, median and mode.	12
Unit II	Dispersion: Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	12
Unit III	Correlation: Karl Pearson's Coefficient of Correlation – Rank correlation. Regression: Regression Equations - Difference between correlation & Regression	12
Unit IV	Probability: Permutation and Combination- Important terms in probability Measurement of Probability: Classical Approach- Relative Frequency theory of probability – Personalistic view of probability – Axiomatic Approach of probability. Theorems of probability: Addition – Multiplication – Odds.	12
Unit V	Sampling Theory and Test of Significance: Introduction – Estimation theory – Testing of hypothesis – Testing if significance for large samples and small samples. Chi Square Test: Introduction – χ^2 test, Degrees of freedom, Test of goodness of fit, Test of Independence.	12
	Total Contact Hrs	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Text Book

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Pillai R. S. N. Bagavathi V,	Statistical Methods	8th Edition, Sultan Chandand Sons & Company Ltd. New Delhi.	2019

Reference Books

S.NO	AUTHOR	TITLE OF THE BOOK	PUBLISHERS \ EDITION	YEAR OF PUBLICATION
1	Gupta. S.C. Kapoor. V.K.	Fundamentals of Mathematical Statistics.	11th edition. S. Chand and Sons.	Reprint 2014

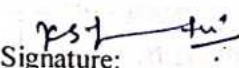
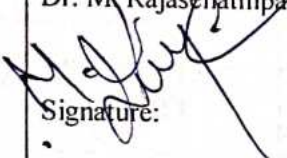
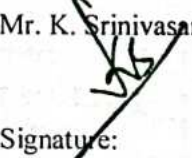
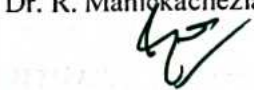
Web references:

1. Statistics Tutorial Tutorialspoint
2. A Complete Tutorial On Statistics And Probability Edureka
4. https://books.google.co.in/books?id=FmuH3lcYIRYC&printsec=frontcover&source=gbg_ge_summary_r&cad=0#v=onepage&q&f=false
4. https://content.kopykitab.com/ebooks/2016/07/8069/sample/sample_8069.pdf
5. https://www.gacwrmd.in/learning/Maths/STATISTICS-I-%207BMA5C2.pdf

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.HI.Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.P.H.I., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

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 Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Ph.D.,
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
 Co-ordinator
 Curriculum Development Cell (CDC)
 NGM College (Autonomous)
 POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI, M.A., M.C.A., M.Ph.D.,
 Head of the Department
 Department of Computer Technology
 Nallamuthu Gounder Mahalingam College (Autonomous)
 POLLACHI - 642 001.




Dr. R. MUTHUKUMARAN,
 M.A., M.Fil., B.Ed., Ph.D.,
 PRINCIPAL
 N.G.M. College, Pollachi - 642 001
 Coimbatore District

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)		
Course Code:	23UCT206			Title	Batch:	2023 - 2026	
				CC Lab II: Java programming Lab	Semester:	II	
Lecture Hrs./Week or Practical Hrs./Week	4	Tutorial Hrs./Sem.	–		Credits:	2	

Course Objective

To utilize java programming concepts for developing, compiling and running java applications and applets.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Understand the basic concepts of Java Programming with emphasis on ethics and principles of professional coding	K3
CO2	Demonstrate the creation of objects, classes and methods and the concepts of constructor, methods overloading, Arrays, branching and looping	K4
CO3	Create data files and Design a page using AWT controls and Mouse Events in Java programming Implement the concepts of code reusability and debugging.	K3
CO4	Develop applications using Strings, Interfaces and Packages and applets	K4
CO5	Construct Java programs using Multithreaded Programming and Exception Handling	K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	L	H	M	M	H	M	M	H
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	M	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Content	Hrs
Sample Programs 1. Write a java program to illustrate the concept of Package creation. 2. Write a java program to illustrate the concept of threading. 3. Write a java program to illustrate the concept of synchronization. 4. Write a java program to illustrate the concept of Exception Handling Mechanism. 5. Write a java program to develop an Applet. 6. Write a java program to implement to the concept of decision making statements. 7. Write a java applet program to illustrate the concept of multithreading. 8. Write a java program using file concept. 9. Write a java program to illustrate the concept of control statements 10. Write a java program to illustrate the concept of Useful I/O Classes	60
Total Contact Hours	60

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature:	Name: Dr. M. Rajasenathipathi Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

Dr. M. Rajasenathipathi
Head of the Department
Department of Computer Science
Nallamilli Mahavidyalaya
Pollachi - 642 001.

Co-ordinator

Curriculum Development

Nallamilli Mahavidyalaya

Pollachi

Dr. R. Manickachezian, M.Sc., M.S., Ph.D.
Controller of Examinations
NGM College (Autonomous)
Pollachi - 642 001.

Programme Code:	B.Sc.		Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT2S1		Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem.	–	SEC I: Naan	Semester: II
				Mudhalvan : Advanced Excel Lab	Credits: 2

Course Objective

To develop understanding of machine learning through optimal data processing and structured representation.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	To optimize the use of MS-Excel for powerful data analysis	K3
CO2	To apply correct data visualization technique to gain optimal presentation of data	K4
CO3	To apply enhanced features of MS-Excel.	K3
CO4	Develop applications using Workbook and worksheets	K4
CO5	Construct programs using Charts types and uses, Chart depiction	K4

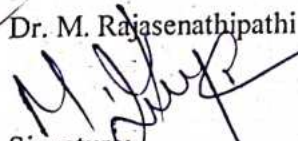
Mapping

PO / PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	L	H	M	M	H	M	M	H
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	M	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Direct Instruction, Flipped Class, Digital Presentation

Seminar, Quiz, Assignments, Group Task.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi  Signature:	Name: Dr. M. Rajasenathipathi  Signature:	Name: Mr. K. Srinivasan  Signature: K. SRINIVASAN, M.C.A., Co-ordinator	Name: Dr. R. Manickachezian  Signature: Dr. R. Manickachezian, M.Sc., M.S., Ph.D., Coordinator

Dr. M. RAJASENATHIPATHI **Curriculum Development**
Head of the Department **NGM College**
Department of Computer Technology **Pollachi**
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

B. MANICKA CHEZIAN, M.Sc. M.S. Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.

Programme Code:	B.Sc.			Programme Title:	Bachelor of Science (Computer Technology)	
Course Code:	23UCT2S2			Title	Batch:	2023 - 2026
Lecture Hrs./Week or Practical Hrs./Week	2	Tutorial Hrs./Sem.	–	SEC I: Naan	Semester:	II
				Mudhalvan : Fundamentals of IT	Credits:	2

Course Objective

To understand the concept of Hardware Fundamentals, Operating Systems, Fundamentals of Network.

Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1	Know the basic components of computer and its functionality	K3
CO2	Know the concept of Windows operating systems	K4
CO3	Know the concept of networking and their techniques	K3
CO4	Know the basic concepts of Storage devices	K4
CO5		K4

Mapping

PO /PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	H	H	M	L	H	M	M	H	M	M	H
CO2	M	H	H	L	H	M	L	H	H	M	H	M
CO3	H	H	L	H	H	L	H	M	L	H	L	H
CO4	L	H	M	M	H	H	H	M	H	H	M	H
CO5	M	M	L	L	M	H	M	L	H	M	H	M

*H-High; M-Medium; L-Low

Units	Content	Hrs
Unit I	About PC data: Introduction - The PC system board -Introduction to the PC - Boot process, system bus - I/O busses, ISA bus - Chip sets - RAM About CPU's: - CPU - CPU improvements - CPU 5th & 6th generation - Over clocking the CPU's .	6
Unit II	About drives and other storage media:-Drives - Hard disks - Optic storage media - MO and ZIP drives - Tape streamers.	6
Unit III	About expansion cards and interfaces: - Adapters and expansion cards - About interfaces: EIDE, Ultra DMA and AGP - SCSI, FireWire and USB .	6
Unit IV	About operating and file systems:-File systems - Running and maintaining Windows 2000, XP, Win7, Win8.1- Relationship between operating system and hardware (BIOS, driver programs, etc.)	6
Unit V	Fundamentals of Network: Introduction to Networking -Networking Fundamentals - Application layer functionality and Protocols.	6
	Total Contact Hrs	30

Pedagogy

Direct Instruction, Flipped Class, Digital Presentation

Assessment Methods

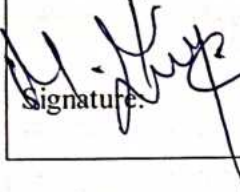
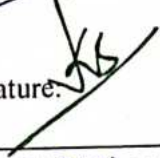
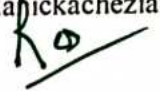
Seminar, Quiz, Assignments, Group Task.

Dr. M. RAJASENATHIPATHI M.A.M.C.A.M.P.N., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.



Dr. R. MUTHUKUMARAN,
M.A., M.Poll., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District

23UCT2S2

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	Co-ordinator CDC	COE
Name: Dr. M. Rajasenathipathi Signature: 	Name: Dr. M. Rajasenathipathi Signature: 	Name: Mr. K. Srinivasan Signature: 	Name: Dr. R. Manickachezian Signature: 

K. SRINIVASAN, M.C.A. Co-ordinator
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.

Dr. R. MANICKACHEZIAN, M.Sc., M.S., Ph.D.,
Controller of Examinations
NGM College (Autonomous)
POLLACHI - 642 001.


Dr. M. RAJASENATHIPATHI M.A., M.C.A., M.Phil., Ph.D.
Head of the Department
Department of Computer Technology
Nallamuthu Gounder Mahalingam College (Autonomous)
POLLACHI - 642 001.


Dr. R. MUTHUKUMARAN,
M.A., M.Phil., B.Ed., Ph.D.,
PRINCIPAL
N.G.M. College, Pollachi - 642 001
Coimbatore District