Department of Information Technology

Vision

The Vision of our Department is to assist the student in becoming proficient in using latest Technologies, and critical thinking being prepared for the next level of education and successfully attaining the skills and proficiencies required of today's work force.

Mission

The Information Technology department is committed to providing the highest quality technology services and support, thereby enhancing the operation, and educational capabilities among the students.

Program Educational Objectives:

PEO1	Prepare the students to engage in independent learning for developing the Applications based on industry and social needs.
PEO2	To train students to a level where they can readily compete for the higher educational programs.
PEO3	To make students as computer professionals, who can be directly employed or start their own work as Programmer, Web Designer, Database User, Testing professional, Designer of a System and Network administrator or implementer.
PEO4	To familiar with the contemporary issues, latest trends in technological development and there by innovate new ideas and solutions to existing problems.
PEO5	To participate effectively as a member of a development team and undertake leadership roles in appropriate arena.

Program Outcomes:

PO1	Ability to apply the knowledge of mathematical fundamentals and programming ability to solve complex problems in the field of Information Technology.
PO2	Exhibit the knowledge of emerging technologies and tools to create need based customized applications for Industrial Automations.
PO3	Ability to become Entre preneurby acquiring skills related to their domain and to address the industry and social needs with Environmental considerations.
PO4	Ability to cultivate research-based knowledge for innovating new ideasand solutions to contemporary issues by linking knowledge of Computer Science with other domains.
PO5	Exhibit professional ethics on usage of digital data.
PO6	Knack to pursue higher studies of specialization courses by clearing entrance exams in top institutions.
PO7	Aptitude to analyse, design and implement tools and applications to solve real world hitches.
PO8	Ability to handle different types of networks, hardware and other resources in large scale platform for Industry 4.0.
PO9	Capability of presenting and securing voluminous data with emerging tools and techniques.
PO10	Skill enrichment to provide Web based solutions using recent technologies and tools.

Program Specific Outcomes:

PSO1	To identify and utilize latest updation on recent technologies by applying knowledge on Artificial Intelligence, Internet of Things and Mobile computing.
PSO2	To develop the ability to integrate Information technology with business applications and to impart the knowledge on fundamentals of research.

Mapping (POs and PSOs with COs): H - High, M - Medium, L - Low

Nallamuthu Gounder Mahalingam College
Department of Information Technology
Scheme of Examination For 2021 - 2022
Choice Based Credit System & OBES

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	21UTL101 / 21UHN101 / 21UFR101	Tamil Paper - I /	6	-	-	3	50	50	100	3
		Hindi Paper - I /	6	-	-					
		French Paper – I	6	-	-					
II	21UEN101	Communication Skills - I (Level I)	5	-	-	3	50	50	100	3
	21UEN102	Communication Skills -II (Level II)	5	-	-					
III	21UIT101	Core - I : Programming in 'C'	4	-	4	3	50	50	100	4
	21UIT102	Core - II : Computer System Architecture	5	-	-	3	50	50	100	4
	21UIT1A1	Allied - I : Mathematics - I (Statistics)	4	-	5	3	50	50	100	4
	21UIT103	Core Lab - I : Programming in 'C'	-	4	-	3	25	25	50	2
IV	21UHR101	Human Rights	1	-	-	2	-	50	50	2
	21HEC101	Human Excellence - Personal Values & SKY Yoga Practice - I	1	-	-	2	25	25	50	1
V		Extension Activities – Annexure I	-	-	-	-	-	-	-	-
CC	21CFE101	Fluency in English – I	-	-	-	-	-	-	-	-
		Online Course (Optional) (MOOC / NPTEL / SWAYAM)	-	-	-	-	-	-	-	Grade

This Syllabus is passed under BOS April 2021 and approved by CDC

Total: 650

SEMESTER - II										
Part	**Subject Code**	**Title of the Paper**	**Hrs / Week**		**Hrs / Sem.**	**Exam Hrs.**	**Maximum Marks**		**Total Marks**	**Credits**
			L	**P**	**T**		**Internal**	**External**		
I	21UTL202 / 21UHN202 / 21UFR202	Tamil Paper - II /	6	-	-	3	50	50	100	3
		Hindi Paper - II /	6	-	-					
		French Paper – II	6	-	-					
II	21UEN202	Communication Skills - I (Level I)	5	-	-	3	50	50	100	3
	21UEN203	Communication Skills -II (Level II)	5	-	-					
III	21UIT204	Core - III : Object Oriented Programming with Java	4	-	-	3	50	50	100	4
	21UIT205	Core - IV : Data Structures	4	-	-	3	50	50	100	4
	21UIT2A2	Allied - II : Mathematics II (Discrete Mathematics)	4	-	10	3	50	50	100	4
	21UIT206	Core Lab - II : Programming in Java	-	4	-	3	25	25	50	2
IV	21EVS201	Environmental Studies	2	-	-	2	-	50	50	2
	21HEC202	Human Excellence - Family Values & SKY Yoga Practice – II	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	-	-
CC	21CFE202	Fluency in English – II	-	-	-	-	-	-	-	-
	21CMM201	Manaiyiyal Mahathuvam - I	-	-	-	2	-	50	50	Grade #
	21CUB201	Uzhavu Bharatham - I	-	-	-	2	-	50	50	Grade #
		Online Course (Optional) (MOOC NPTEL/ SWAYAM)	-	-	-	-	-	-	-	Grade

This Syllabus is passed under BOS April 2021 and approved by CDC

Total: 650

SEMESTER – III										
Part	**Subject Code**	**Title of the Paper**	**Hrs / Week**		**Hrs / Sem.**	**Exam Hrs.**	**Maximum Marks**		**Total Marks**	**Credits**
			L	**P**	**T**		**Internal**	**External**		
III	21UIT307	Core - V : Operating Systems	5	-	-	3	50	50	100	4
	21UIT308	Core - VI : Relational Database Management System	5	-	-	3	50	50	100	4
	21UIT309	Core - VII : Service Oriented Architecture	5	-	-	3	50	50	100	4
	21UIT3A3	Allied - III : Microprocessor and Assembly Language Programming	5	-	-	3	50	50	100	4
	21UIT310	Core Lab - III : RDBMS	-	4	-	3	50	50	100	2
	21UIT311	Core Lab - IV : Web Designing (HTML, CSS, JavaScript & Angular)	-	4	-	3	50	50	100	2
IV	21UIT3N1 / 21UIT3N2	Non Major Elective - I : Social Networks / Non Major Elective - I : Hardware & Networking	1	-	-	2	-	50	50	2
	21HEC303	Human Excellence - Professional Values & Ethics – III	1	-	-	2	25	25	50	1
CC	21CFE303	Fluency in English – III	-	-	-	-	-	-	-	-
	21CMM302	Manaiyiyal Mahathuvam - II	-	-	-	2	-	50	50	Grade #
	21CUB302	Uzhavu Bharatham - II	-	-	-	2	-	50	50	Grade #

This Syllabus is passed under BOS April 2021 and approved by CDC

Total: 700

SEMESTER – IV										
Part	**Subject Code**	**Title of the Paper**	**Hrs / Week**		**Hrs / Sem.**	**Exam Hrs.**	**Maximum Marks**		**Total Marks**	**Credits**
			L	**P**	**T**		**Internal**	**External**		
III	21UIT412	Core - VIII : Data Communication and Networks	5	-	-	3	50	50	100	4
	21UIT413	Core - IX : Advanced Java	5	-	5	3	50	50	100	4
	21UIT414	Core - X : Visual Programming	4	-	2	3	50	50	100	4
	21UIT4A4	Allied - IV : Software Engineering	5	-	-	3	50	50	100	4
	21UIT415	Core Lab - V : Programming in Advanced Java	-	5	-	3	50	50	100	3
	21UIT416	Core Lab - VI : Visual Programming	-	4	-	3	50	50	100	3
IV	21UIT4N1 /21UIT4N2	Non Major Elective - II : Data Analytics / Non Major Elective - II : Computer Security	1	-	-	2	-	50	50	2
	21HEC404	Human Excellence - Social Values & SKY Yoga Practice – IV	1	-	-	2	25	25	50	1
V		Extension Activities - Annexure I	-	-	-	-	-	-	50	1
CC	21CFE404	Fluency in English – IV	-	-	-	-	-	-	-	-
	21CMM403	Manaiyiyal Mahathuvam - III	-	-	-	2	-	50	50	Grade #
	21CUB403	Uzhavu Bharatham - III	-	-	-	2	-	50	50	Grade #

Total: 750

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**		
III	21UIT517	Core -XI : Information Security	6	-	-	3	50	50	100	4
	21UIT518	Core - XII : Skill Enhanced Course Open Source Methodologies	5	-	5	3	50	50	100	4
	21UIT5E1 / 21UIT5E2 / 21UIT5E3	Core Elective - I : Data Mining and Analytics / Core Elective - I : Artificial Intelligence and Expert Systems / Core Elective - I : E-Commerce	6	-	-	3	50	50	100	4
	21UIT519	Core Lab - VII : Open Source Methodologies	-	5	-	3	50	50	100	3
	21UIT520	Core Lab - VIII : Software Testing Tools	-	4	-	3	25	25	50	3
	21UIT5AL	Advanced Learner Course - I Big Data Analytics (Optional)	SS		-	3	50	50	100	3*
	21UIT5VA	Designing and Animation	30 Hrs.			-	-	50	50	2*
IV	21UIT5S1 / 21UIT5S2	Skill Based Elective - I : Lab. Web Programming (PHP)/ Skill Based Elective - I : Lab. Web Programming (ASP.Net)	-	3	-	2	-	50	50	3
	21HEC505	Human Excellence - National Values & SKY Yoga Practice - V	1	-	-	2	25	25	50	1
CC	21CFE505	Fluency in English – V	-	-	-	-	-	-	-	-
	21CSD501	Soft Skills Development – I	-	-	-	-	-	-	-	Grade
	21GKL501	General Awareness - Self Study	SS		-	2	-	50	50	Grade

Total: 550

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**		
III	21UIT621	Core - XIV : Skill Enhanced Course Python Programming	5	-	-	3	50	50	100	4
	21UIT6E1 / 21UIT6E2 / 21UIT6E3	Core Elective - II : R Programming / Core Elective - II : Internet of Things / Core Elective - II : Block Chain Technology	6	-	-	3	50	50	100	4
	21UIT6E4 / 21UIT6E5 / 21UIT6E6	Core Elective - III: Mobile Computing / Core Elective - III: Computer Graphics / Core Elective - III : Cloud Computing	6	-	-	3	50	50	100	4
	21UIT622	Core Lab - IX : Python Programming	-	5	-	3	50	50	100	3
	21UIT623	Project	-	4	30	-	50	50	100	4
	21UIT6AL	Advanced Learner Course - II R - Programming Lab**.** (Optional)	SS				50	50	100	3*
	21UIT6VA	Basics of Block Chain Technology	30 Hrs.			-	-	50	50	2*
IV	21UIT6S1 / 21UIT6S2	Naan Mudhalvan: Skill Based Elective - II : - Lab. DTP Software(Photoshop)/ DTP Software (CoralDraw)	-	3	-	2	-	50	50	3
	21HEC606	Human Excellence - Global Values & SKY Yoga Practice – VI	1	-	-	2	25	25	50	1
CC	21CFE606	Fluency in English –VI	-	-	-	-	-	-	-	-
	21CSD602	Soft Skills Development – II	-	-	-	-	-	-	-	Grade
								Total:	600	
Total									**3900**	**140+10***

* Extra Credit Courses: **AL** - Advanced Learner Course (Optional) **VA** – Value Added Course. # **CC** - Certificate Courses / Co – Scholastic Courses

Grand Total = 3900; Total Credits = 140 + 10 Extra Credits

This Syllabus is passed under BOS April 2021 and approved by CDC

Question Paper Pattern
(Based on Bloom's Taxonomy)

K1-Remember; **K2**- Understanding; **K3**- Apply; **K4**-Analyze; **K5**- Evaluate

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

(i) Test- I & II, ESE:

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q 1 -10)	A (Q 1 – 5 MCQ) (Q 6–10 Define/Short Answer)	10 x 1 = 10	MCQ Define	70 **(Reduced to 50 for ESE)**
K3 (Q 11-15)	B (Either or pattern)	5 x 4 = 20	Short Answers	
K4 & K5 (Q 16 – 21)	C (Q -16 is Compulsory and Q 17 – 21 answer any 3)	4 x 10 = 40	Descriptive/ Detailed	

2. Theory Examinations: 50 Marks (Part IV)

Knowledge Level	Section	Marks	Description	Total
K1 & K2 (Q 1 -10)	A (Q 1 – 5 MCQ) (Q 6–10 Define / Short Answer)	10 x 1 = 10	MCQ Define	50 **(Reduced to 25 for ESE)**
K3, K4 & K5 (Q 11-18)	B (Answer 5 out of 8)	5 x 8 = 40	Short Answers	

3. Practical Examinations: 100/50 Marks

Knowledge Level	Criterion	External/Internal Marks	Total
K3	Record work & Practical	50/50	100
K4		25/25	50
K5			

***** In Theory ESE, Students will write Examination Maximum Marks as 70 and it will be reduced to 50 for Total Mark calculation.

Components of Continuous Assessment

THEORY

Maximum Marks: 100; CIA Mark: 50

Components		Calculation	CIA Total
Test 1	(70 / 4.67) = 15	15+15+10+05+05	50
Test 2 / Model	(70 / 4.67) = 15		
Assignment / Digital Assignment	10		
Seminar / Socratic Seminar	05		
Group Task : GD, Role Play, APS	05		

Maximum Marks: 50; CIA Mark: 25

Components		Calculation	CIA Total
Test / Model	10	10+5+5+5	25
Assignment / Digital Assignment	5		
Seminar / Socratic Seminar	5		
Group Task : GD, Role Play, APS	5		

PRACTICAL

Maximum Marks: 50; CIA Mark: 25

Components		Calculation	CIA Total
Test / Model	15	15+5+5	25
Observation Note	5		
Record	5		

Maximum Marks: 100; CIA Mark: 50

Components		Calculation	CIA Total
Test / Model	30	30+5+15	50
Observation Note	5		
Record	15		

Maximum Marks: 200; CIA Mark: 100

Components		Calculation	CIA Total
Test / Model	60	60+10+30	100
Observation Note	10		
Record	30		

PROJECT

Maximum Marks: 100; CIA Mark: 50

Components		Calculation	CIA Total
Review I	10	10+10+10+20	50
Review II	10		
Review III	10		
Report Submission	20		

Maximum Marks: 200; CIA Mark: 100

Components		Calculation	CIA Total
Review I	20	20+20+20+40	100
Review II	20		
Review III	20		
Report Submission	40		

Continuous Internal Assessment for Project

For Computer Science Cluster

Maximum Marks: 50 Marks

Criterion	Mode of Evaluation	Marks	Total
I	Synopsis, Company Profile, System Specification, Existing System, Proposed System OR (For Android Developments) Planning Stage	10	50
II	Supporting Diagrams like system flowchart, ER, DFD, Usecase and Table Design OR UI and UX Design Application Architect and Prototyping	10	
III	Coding, Input forms, Output format, Testing OR Development, Testing	20	
IV	Preparation of Report & Submission	10	

External Assessment: 50 Marks

Mode of Evaluation	Marks	Total	Grand Total
Project Report			50
Title Relevance of the Industry/Institute	05	30	
Technology	05		
Design and development Publishing	10		
Testing, Report	10		
Viva Voce			
Project Presentation	10	20	
Q&A Performance	10		

STUDENT SEMINAR EVALUATION RUBRIC

Grading Scale:

A	B	C	D
5	4	2 - 3	0 - 1

CRITERIA	A - Excellent	B - Good	C - Average	D - Inadequate
Organization of presentation	Information presented as interesting story in logical, easy to follow sequence	Information presented in logical sequence; easy to follow	Most of information presented in sequence	Hard to follow; sequence of information jumpy
Knowledge of subject & References	Demonstrated full knowledge; answered all questions with elaboration **&** Material sufficient for clear understanding **AND** exceptionally presented	At ease; answered all questions **but** failed to elaborate **&** Material sufficient for clear understanding **AND** effectively presented	At ease with information; answered most questions **&** Material sufficient for clear understanding **but** not clearly presented	Does not have grasp of information; answered only rudimentary Questions **&** Material not clearly related to topic **OR** background dominated seminar
Presentation Skills using ICT Tools	Uses graphics that explain and reinforce text and presentation	Uses graphics that explain text and presentation	Uses graphics that relate to text and presentation	Uses graphics that rarely support text and presentation
Eye Contact	Refers to slides to make points; engaged with audience	Refers to slides to make points; eye contact majority of time	Refers to slides to make points; occasional eye contact	Reads most slides; no or just occasional eye contact
Elocution – (Ability to speak English language)	Correct, precise pronunciation of all terms Voice is clear and steady; audience can hear well at all times	Incorrectly pronounces few terms Voice is clear with few fluctuations; audience can hear well most of the time	Incorrectly pronounces some terms Voice fluctuates from low to clear; difficult to hear at times	Mumbles and/or Incorrectly pronounces some terms Voice is low; difficult to hear

WRITTEN ASSIGNMENT RUBRIC

Grading Scale:

A	B	C	D	F
09 - 10	07- 08	05 - 06	03 - 04	01 - 02

CRITERION	A - Excellent	B - Good	C - Average	D - Below Average	F - Inadequate
Content & Focus	Hits on almost all content exceptionally clear	Hits on most key points and writing is interesting	Hits in basic content and writing is understandable	Hits on a portion of content and/or digressions and errors	Completely off track or did not submit
Sentence Structure & Style	* Word choice is rich and varies * Writing style is consistently strong * Students own formal language	* Word choice is clear and reasonably precise * Writing language is appropriate to topic * Words convey intended message	* Word choice is basic * Most writing language is appropriate to topic * Informal language	* Word choice is vague * Writing language is not appropriate to topic * Message is unclear	* Not adequate
Sources	Sources are cited and are used critically	Sources are cited and some are used critically	Some sources are missing	Sources are not cited	Sources are not at all cited
Neatness	Typed; Clean; Neatly bound in a report cover; illustrations provided	Legible writing, well-formed characters; Clean and neatly bound in a report cover	Legible writing, some ill-formed letters, print too small or too large; papers stapled together	Illegible writing; loose pages	Same as below standard
Timeliness	Report on time	Report one class period late	Report two class periods late	Report more than one week late	Report move than 10 days late

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT101			**Title**	**Batch:**	2021 - 2024
				Programming in 'C'	**Semester:**	I
Lecture Hrs./Week	4	**Tutorial Hrs./Sem.**	4		**Credits:**	4

Course Objective

To cultivate programming ability on logic development, clear view on control structures, pointers (memory management), file handling, etc.

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 the fundamentals of C programming.	K1
CO2	To understand the concepts of problem-solving techniques.	K2
CO3	To apply concepts and techniques for implementation.	K3
CO4	To analyze the level of logical thinking in program development	K4
CO5	To evaluate the program output.	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	Programming development methodologies - Programming style – **Problem solving techniques:** Algorithm, Flowchart, Pseudo code. Structure of a C program – C character set - Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion. Operators and Expressions.	13
Unit II	**Formatted and Unformatted I/O functions. Decision statements:** If, If...Else, Nested If. Else, Break, Continue, Go to, Switch, Nested switch...case, switch...case and nested ifs statements. **Loop control statements:** For, Nested for, While, Do...while and with while loops.	12 + 1
Unit III	**Arrays**: Initialization, definition, characteristics, One dimensional, predefined stream, two dimensional, three or multi-dimensional arrays – sscanf (), sprintf (). **String**s: Declaration and initialization, displaying, standard functions and applications. **Pointers:** Futures, Declarations, arithmetic operations, pointers and arrays, two dimensional arrays, array of pointers, pointers to pointers, pointers and strings, void pointers.	10+1
Unit IV	**Functions**: Definition, declaration, return statements, types, call by value and reference, returning more multiple values, function as an argument, function with arrays and pointers. **Structure and Union:** Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, structure and functions, typedef, Bit fields, Enumerated data types, Union, union of structures.	11+1
Unit V	**Files:** Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, searching errors in reading or writing files, low level disk I/O, Command line arguments, I/O redirection. **Preprocessor directives:** #define, #include, #ifndef, #error, #line, #pragma, and Predefined macros.	10+1
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- Ashok .N. Kamthane. (2004). *PROGRAMMING AND DATA STRUCTURES*. First Indian Print. Pearson Education: ISBN 81-297-0327-0.

Reference Books

- Balagurusamy. E. (1998). *Programming in ANSI C*. Tata McGraw-Hill.
- Pradip Dey, Manas Ghosh. (2008). *Computer Fundamentals and Programming in c.* Oxford.

Web Reference

- https://www.tutorialspoint.com/cprogramming/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT102			Title	Batch:	2021 - 2024
				Computer System Architecture	Semester:	I
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

To obtain the basic knowledge of computer organization, input, output and memory organization.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember basic building block of digital computer system	K1
CO2	To understand the execution sequence of instruction through the processor	K2
CO3	To apply interfacing of various peripheral devices used with the system	K3
CO4	To analyze functioning of various parts of the computer from hardware point of view	K4
CO5	To judge the pros and cons of various types of memory organizations	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Binary Systems:** Numbers – Conversions – Complements – Codes – Logic. **Canonical & Standard Forms**. **Digital Logic Gates. Simplification of Boolean Functions:** Map method – Two & Three Variable Map – Four Variable Map.	15
Unit II	**Basic Computer Organization and Design:** Instruction Codes - Computer Registers – Computer Instructions – Instruction Cycle – Memory Reference Instructions – Input/Output and Interrupt.	15
Unit III	**Central Processing Unit (CPU):** General Register Organization – Stack Organization - Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control.	14
Unit IV	**Input – Output Organization:** Peripheral Devices- Input – Output Interface – Asynchronous Data Transfer - Direct Memory Access (DMA) - CPU-IOP Communication.	15
Unit V	**Memory Organization:** Memory Hierarchy – Main Memory - Auxiliary Memory - Cache Memory – Associative Memory - Virtual Memory.	16
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

21UIT102

Text Book

- M. Morris Mano (2013). Digital Logic and Computer Design. 16th Impression, Pearson Publication. (Unit I)
- M. Morris Mano. (2008 & 2019), Computer System Architecture, Revised 3rd Edition .PHI (Units II, III, IV, V).

Reference Books

- M. Carter. (2001). Computer Architecture. Schaum's outline series, TMH Pub.
- William Stallings. (2006), Computer System and Architecture, 8th Edition, Pearson Publication.

Web References

- https://www.youtube.com/watch?v=aWp8ILQgudI
- https://www.youtube.com/watch?v=OwC4JN64QYY

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT1A1			**Title:**	**Batch :**	2021 - 2024
				Mathematics – I (Statistics)	**Semester :**	I
Lecture Hrs/Week:	4	**Tutorial Hrs./ Sem.**	5		**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	M	M	M	H	H	M	L	-	-	L	-	-
CO2	M	M	H	H	H	H	-	-	-	L	-	M
CO3	H	-	L	H	H	M	M	-	-	-	-	M
CO4	M	M	M	H	H	L	-	-	-	-	-	H
CO5	L	L	M	H	H	M	-	-	-	-	-	M

Units	Content	Hrs L+T
Unit I	**Measures of central tendency:** Mean: Arithmetic Mean, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation betweenmean, median and mode.	11+1
Unit II	**Dispersion:** Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.	9+1
Unit III	**Correlation:** Karl Pearson`s Coefficient of Correlation – Rank correlation**. Regression:** Regression Equations - Difference betweencorrelation & Regression.	9+1
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.	13+1
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 – x^2 test, Degrees of freedom, Test of goodness of fit, Test of Independence.	13+1
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- Pillai R. S. N. Bagavathi V. (2019). *Statistical Methods***.** 8th Edition, Sultan Chandand Sons& Company Ltd. New Delhi.

Reference Books

- Gupta. S.C. Kapoor. V.K. (Reprint 2014). *Fundamentals of Mathematical Statistics*.11th edition. S. Chand and Sons.

Web References

- https://www.tutorialspoint.com/statistics/index.htm
- https://www.google.com/amp/s/www.edureka.co/blog/statistics-and-probability/amp/

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B. Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT103			**Title**	**Batch:**	2021 - 2024
				Lab. I Programming in 'C'	**Semester:**	I
Practical Hrs./Week:	4	**Tutorial Hrs./Sem.**	-		**Credits**:	2

Course Objective

To understand, learn and apply the various programming concepts of 'C' and improving the programming skills in 'C'**.**

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To apply appropriate mathematical and scientific program logic	K3
CO2	To apply appropriate pointers, structure, and files	K3
CO3	To apply appropriate data structure concepts	K3
CO4	To analyze a problem in different logic	K4
CO5	To verify the solutions of various problems with input and output data	K5
CO6	To create a program using preprocessor directives.	K6

Mapping

PO/PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	L	-	M	M	L	-	L	-	-	-
CO2	H	M	-	-	M	H	L	-	-	M	-	-
CO3	H	M	M	-	H	H	M	-	L	-	-	-
CO4	H	M	H	-	M	M	H	-	M	-	-	-
CO5	H	H	M	L	H	L	H	-	L	-	-	-
CO6	H	M	H	-	M	M	H	-	M	-	-	-

Content	Hrs.
SAMPLE PROGRAM LIST **Test I** 1. Execute a C program to implement basic operators. 2. Execute a C program to implement if, if-else, nested if. 3. Develop a C program to implement switch case. 4. Develop a C program to implement while loop. 5. Create a C program to implement do-while loop. 6. Develop a C program to implement for loop. 7. Create a C program to implement one dimensional array. 8. Execute a C program to implement multi-dimensional array. 9. Create a C program to implement strings. 10. Execute a C program to implement basic pointer operations. **Test II** 11. Develop a C program to implement array of pointers. 12. Create a C program to implement functions using call by value. 13. Execute a C program to implement functions using call by reference. 14. Create a C program to implement structure and array of structure. 15. Develop a C program to implement union. 16. Execute a file to perform read and write operations using file accessing modes. 17. Create a C program to implement preprocessor directives.	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Discussion

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc.- IT			**Programme Title:**	Information Technology	
Course Code:	21UIT204			**Title**	**Batch:**	2021 - 2024
				Object Oriented Programming with Java	**Semester:**	II
Lecture Hrs./Week	4	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

To provide knowledge about basic concepts of OOPs, methods, interfaces, multithreads, packages and applets.

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 the basic concepts of OOPs	K1
CO2	To apprehend a knowledge about how to use java for internet applications	K2
CO3	To implement file, applet, thread concepts for web applications	K3
CO4	To review the usage of packages, exceptions and string concept for developing stand - alone java programs	K4
CO5	To assess the various types of stream classes and file handling	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Fundamentals of Object Oriented Programming**: Introduction – Paradigm - Basics – Benefits – Applications. **Java Evolution**: History – Features – Difference from C/C++ – Web browsers – Hardware and software requirements – Support systems –Environment. **Overview of Java language**. **Constants, Variables and Data types**.	12
Unit II	**Classes, Objects and Methods:** Introduction – Defining – Field, Method Declaration – Creating Objects – Accessing class members – Constructors – Method Overloading - Static Members – Nesting of Methods – Inheritance – Overriding – Final Variables, Methods and Classes. Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility control. **Arrays, Strings and Vectors:** Introduction – One dimensional – Creation – Two-dimensional – Strings - Vectors – Wrapper classes – Enumerated types – Annotations. **Interfaces: Multiple Inheritance.**	13
Unit III	**Packages: Putting classes together**: Introduction – API packages – System packages – Naming Conventions – Creation – Accessing – Using – Adding a Class to a package – Hiding classes – Static import. **Multithreaded Programming** : Introduction – Creation – Extending – Stopping and blocking – Life cycle – Using thread methods – Exceptions – Priorities – Synchronization – Implementing the Runnable interface – Inter-thread communication. **Managing Errors and Exceptions.**	12
Unit IV	**Abstract Windowing Toolkit (AWT) - Applet Programming:** Introduction – Difference between Applet and other Applications - Writing and Building Applet - Life Cycle – Creating Executable applets – Designing a Web page – Applet Tag – Applet to HTML – Running Applets – Passing Parameters – Aligning the display – HTML tags – Numerical Values – User input – Event Handling.	12
Unit V	**Managing Input / Output Files:** Introduction – Streams – Stream Classes – Byte Stream – Character Stream – Using Stream – Useful I/O Classes – File Classes – I/O Exceptions – File Creation – Reading Writing Characters and Bytes – Primitive Data Types – Concatenating and Buffering - Random Access File – Interactive I/O – Other Stream Classes.	11
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

- E. Balagurusamy. (2019). "Programming with JAVA – A Primer", Tata McGraw-HillPublishing Company Limited, 6th Edition. (Unit I, II, III, V)
- Instructional Software Research and Development (ISRD) Group.(2001) "Introduction toObject Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi. (Unit IV – AWT).

Reference Books

- Herbert Schild, (2002). Java Complete Reference, 5th Edition, Tata McGraw Hill Pub
- Y. Daniel Liang (2018) Intro to Java Programming (Comprehensive Version), 10th EditionPearson Publication

Web References

- https://youtu.be/uWYPVz_i7W4
- https://youtu.be/7s3xDfdqfDw

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B. Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT205			Title	Batch:	2021 - 2024
				Data Structures	Semester:	II
Lecture Hrs/Week:	4	Tutorial Hrs./ Sem.	-		Credits:	4

Course Objective

To have adequate knowledge about linear data structures, queues, linked list, trees, searching, sorting and hashing.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect basic concepts of data handle.	K1
CO2	To comprehend data structures like stack, queue, linked list and trees.	K2
CO3	To implement data structure techniques in problem solving	K3
CO4	To analyze space and time complexity of algorithms and to evaluate various data structures.	K4
CO5	To evaluate different algorithm results through the program outputs	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Arrays:** Introduction to Linear and Non-Linear Data Structures - Arrays in C – Single Dimensional Arrays - Array Operations. **Linked List:** Introduction to List and Linked Lists - Dynamic Memory Allocation - Basic Linked List Operations- Doubly Linked List - Circular Linked List - Atomic Node Linked List - Linked List in Arrays - Linked List versus Arrays.	13
Unit II	**Stacks:** Introduction to Stacks - Stack as an Abstract Data Type - Representation of Stacks Through Arrays - Representation of Stacks Through Linked List - Applications of Stacks - Stacks and Recursion.	10
Unit III	**Queues:** Introduction - Queue as anAbstract Data Type - Representation of Queues - Circular Queues - Double Ended Queues - Dequeue - Priority Queues - Application of Queues.	11
Unit IV	**Binary Trees:** Introduction to nonlinear Data Structure - Introduction to Binary Trees - Types of Trees - Definitions - Properties - Representation - Operations – Traversal - Reconstruction - Counting Number - Applications. **Searching**: An Introduction - Binary Search-Indexed Sequential search.	13
Unit V	**Graph:** Traversal – Spanning trees. **Sorting**: Sorting - An Introduction - Efficiency of sorting Algorithms - Bubble sort - Selection sort - Quick sort - Insertion sort - Merge sort - Binary Tree Sort - Radix sort - Shell sort – Heap sort. **Hashing:** An Introduction - Hash functions.	13
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- ISRD group. (2010). Data structure using C. Seventh Reprint. Tata McGraw-Hill.

Reference Books

- Aaron .M. Tanenbaum, Yedidyeh Langsam, Moshe .J. Augenstein. (2007). *Data Structureusing C*. 3rd Edition.PHI Pub.
- Ashok. N. Kamthane. (2004). *Programming And Data Structures*. First Indian Print. PearsonEducation. ISBN 81-297-0327-0.

Web References

- https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- https://www.javatpoint.com/data-structure-tutorial

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT2A2			**Title**	**Batch:**	2021 - 2024
				Mathematics II (Discrete Structures)	**Semester:**	II
Lecture Hrs./Week	4	**Tutorial Hrs./Sem.**	10		**Credits:**	4

Course Objective

On successful completion of this subject the students should know Set theory, Mathematical logic, Relations, Graph theory, Languages and Grammars.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the basic concepts of set theory, mathematical logic, relations and graph theory.	K1
CO2	To infer the basic terminology of discrete mathematics	K2
CO3	To construct discrete notations in the programs	K3
CO4	To analyze discrete concepts through programs	K4
CO5	To determine languages and grammars for programming	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	**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 - min sets - Algebra of sets and Duality – Inclusion and Exclusion principle	10+2
Unit II	**Mathematical Logic**: Introduction - Propositional Logic –Introduction, Proofs –Basic logical operations – Tautologies – Contradiction - Predicate calculus.	10+2
Unit III	**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.	10+2
Unit IV	**Graph Theory**: Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees - Properties of trees – Binary trees – Computer Representation of general trees.	10+2
Unit V	**Number Theory:** Introduction – properties of integer – Greatest Common Divisor – Euclidean algorithm – Least Common Multiple – testing for Prime number. **Language and Grammar:** Introduction –The set theory of strings – Languages – Regular expressions and Regular languages – Grammar – Finite state machine.	10+2
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Assignments

Text Book

- Sharma. J.K. (2005). *Discrete Mathematics*. 2nd Edition. Macmillan India Ltd.

Reference Books

- Kenneth H. Rosen. (2003). *Discrete Mathematics and Its Applications*, 5th Edition,McGraw Hill Pub.
- Dr. Venkataraman. M. K. Dr. Sridharan. N, Chandarasekaran. N. (2000). *DiscreteMathematics*. The National publishing Company Chennai.

Web References

- https://www.youtube.com/watch?v=itrXYg41-V0
- https://www.youtube.com/watch?v=tyDKR4FG3Yw
- https://www.youtube.com/watch?v=HmQR8Xy9DeM
- https://www.youtube.com/watch?v=19SW3P_PRHQ

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT206			Title	Batch:	2021 - 2024
				LAB. II – Programming in Java	Semester:	II
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To apply various concepts of java like inheritance, multithreading, exception handling, AWT, applet, package for improving the programming skills in java.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply basic object oriented programming concepts in java	K3
CO2	To analyze the usage of packages, exceptions in program	K4
CO3	To prove the need of Applets in internet applications development	K5
CO4	To verify the database connectivity using java	K5
CO5	To create forms using AWT components	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST **Test I** 1. Develop a class using constructor. 2. Develop a Program using method overloading. 3. Develop a Program using method overriding. 4. Apply single and multi-dimensional array in assessing students' performance 5. Apply multiple inheritance using interfaces. 6. Develop a Program using packages and sub packages. **Test II** 7. Develop a Program using threads. 8. Test for inter-thread communication in program 9. Test for Exception Handling in program 10. Develop a Program for designing shapes using applets. 11. Develop a Program to handle events. 12. Compose a form using AWT Components. 13. Develop a Program to generate files.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

K.VIJAYAKUMAR, MCA.,M.Phil., K. SRINIVASAN, M.C.A., Dr. R
Head,Dept. of Information Technology, Co-ordinator
NGM College (Autonomous). Curriculum Development Cell (CDC) N

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT307			Title:	Batch:	2021 - 2024
				Operating Systems	Semester:	III
Lecture Hrs/Week:	5	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

On successful completion of this subject the students should know the basic concepts of operating system, memory management, process management, information management, deadlocks, parallel processing, distributed processing and Windows NT, XP, & 7.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect fundamentals of operating system concepts.	K1
CO2	To understand basic principles and advanced concepts of the operating system.	K2
CO3	To apply the different mathematical foundations, algorithmic principles with approaches in computer based systems.	K3
CO4	To analyze the various architectural components involved in OS and its applications.	K4
CO5	To evaluate different operating system configurations	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Operating System-Functions and Structure:** Operating System Definition- Different services of Operating System- Uses of System Calls- Issue of Portability-Operating System Structure- Virtual machine- Booting. **Information Management:** Introduction - The File System- Introduction - Block and Block numbering scheme - Relationship between OS and DMS - File Directory entry - Open/Close Operations. **Device Driver (DD):** The Basics, I/O Procedure, I/O Scheduler.	15
Unit II	**Process Management:** Introduction – States – Transitions – Operations on a Process – Process Scheduling – Multithreading. **Inter Process Communication** -The Producer Consumer Problem. **Solutions to the Producer Consumer problems:** Interrupt Disabling/Enabling - Lock-flag – Primitive for mutual exclusion - Alternating Policy – Semaphores - Classical IPC Problems.	15
Unit III	**Deadlocks:** Introduction - Graphical Representation of Deadlock - Deadlock Prerequisites - Deadlock Strategies. **Memory Management**: Introduction - Single Contiguous Memory Management - Fixed Partition Memory Management - Variable Partitions - Non Contiguous Allocation General Concepts: Paging, Segmentation. **Virtual Memory Management System:** Jargon – Page Replacement Policies.	15
Unit IV	**Parallel Processing:** Introduction - Difference between Distributed and Parallel Processing - Advantages of Parallel Processing - Machine Architectures supporting Parallel Processing - Operating System for Parallel Processing. **Distributed Processing**: Introduction - Distributed Processing - Process Migration – RPC - Distributed Processes - Distributed File Management - Cache Management.	15
Unit V	**Windows NT/2000:** History – Programming: Native NT API – Win32 API – Registry. Structure – Booting – Processes and Threads – Memory Management – NTFS – Security. **Windows XP & 7**: Introduction – Design principles - Architecture.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- Achyut s Godbole. (2005). *Operating Systems*, 2nd Edition, TMH Publications (Units I – IV).

Reference Books

- H. M Deitel. (2003). *Operating Systems*, 2nd Edition, Pearson Education Publication.
- Abraham Silberschatz, Peter B. Galvin, Greg Gagne (2018), *Operating System Concepts*, 10th edition, Abridged Print Companion.

Web References

- https://www.tutorialspoint.com/operating_system/index.htm

(Unit V)

- https://www.os-book.com/OSE1/slide-dir/PDF-dir/ch16.pdf
- http://cc.ee.ntu.edu.tw/~farn/courses/OS/slides/ch22.pdf

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT308			Title	Batch:	2021 - 2024
				Relational Database Management System	Semester:	III
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

To provide better understanding of various concepts of DBMS, Oracle, normalization, data management and retrieval, PL/SQL commands, operations and Security.

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 the basic concepts of database	K1
CO2	To get the idea of a database from SQL statements	K2
CO3	To execute different forms of queries using SQL and PL/SQL statements	K3
CO4	To analyze various data models which describe the structure of database	K4
CO5	To interpret PL/SQL commands in programming	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Database Concepts:** Database – DBMS Vs RDBMS- Normalization -Introduction to Oracle-Software development tools for Oracle- Introduction to SQL. **Interactive SQL Part - I :** Table Fundamentals- Create Table- Viewing -Eliminating Duplicate Rows - Sorting - Creating a Table from a Table - Insert -Delete - Update- Modify- Rename- Truncate- Destroy- Creating Synonyms- Examining Objects.	15
Unit II	**Interactive SQL Part - II:** Data Constraints - Types-Defining Different Constraints - User Constraints- Defining Integrity Constraints - Dropping Integrity Constraints -Default value concepts. **Interactive SQL Part - III:** Computations done on Table Data- Sysdate- Oracle Functions - Date Conversion Functions - Date Functions - Miscellaneous Functions.	15
Unit III	**Interactive SQL Part - IV:** Grouping Data from Tables- Sub queries - Joins - Concatenating Data from table Columns- Union, Intersect and Minus Clause. **SQL Performance Tuning:** Indexes- Multiple Indexes - Using Rowid to delete Duplicate Rows- Using ROWNUM in SQL -Views-Clusters- Cluster Indexes- Sequences- Snapshots.	14
Unit IV	**Security Management using SQL:** Granting and Revoking Permissions - Revoking Privileges Given. **Introduction To PL/SQL:** Advantages of PL/SQL-Generic PL/SQL BLOCK - PL/SQL Execution Environment - PL/SQL - Control Structure. **SQL Transactions:** Oracle Transactions- Processing PL/SQL Block- Cursor- Cursor FOR Loops- Parameterized Cursors- Cursor within Cursor.	16
Unit V	**PL/SQL Security:** Locks- Error handling in Pl/SQL - Oracles Named Exception Handlers. **PL/SQL Database Objects:** Procedures and Functions Reside- advantages - Procedures Vs Functions- Oracle Packages - Database Triggers- Types - Deleting a Trigger- Raise Application Error Procedure.	15
	Total Contact Hrs.	**75**

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

- Ivan Bayross (2017), *SQL, PL/SQL the Programming Language of ORACLE*, 4th Edition BPB Publications.

Reference Books

- Nilesh Shah. (2009), *Database Systems Using Oracle*, 2nd Edition, PHI.
- Arun Majumdar & Pritimoy Bhattacharya. (2001). Database *Management Systems,* TMH.
- Jeffrey A. Hoffer, Joey F. George, Joseph S. Valacich, (2009). *Modern Systems Analysis and Design*. 2nd Edition. 5th Edition. Pearson Education Pub's.
- Gerald V. Post. (2005). *Database Management Systems*, 3rd Edition, TMH.

Web References

- https://intellipaat.com/blog/tutorial/sql-tutorial/rdbms/
- https://www.youtube.com/watch?v=J5wjIf4gdq4
- https://www.youtube.com/watch?v=DEwgEFHHn0M

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT309			Title	Batch:	2021 - 2024
				Service Oriented Architecture	Semester:	III
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

ToUnderstand the various concepts of Client/Server computing and web services, SOAP, UDDI, XML, WSDL etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recall the various client/server concepts, and middleware.	K1
CO2	To Illustrate the basic concepts of C/S and service architectures	K2
CO3	To apply web services in WSDL	K3
CO4	To categorize the various registries, RPC and messages in web services.	K4
CO5	To create new XML documents using SOAP concept.	K6

Mapping

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

Units	Content	Hrs.
Unit I	**Distributed Information Systems**: Design of an Information system – Architecture – communications. **Middleware:** Understanding middleware -RPC and related middleware.	15
Unit II	**Middleware:** TP monitors - Object brokers - Message-oriented middleware. **Web Technologies:** Exchanging Information over the Internet-Web technologies for supporting remote clients-Application servers-Web technologies for application integration.	15
Unit III	**Web Services**: Introduction – **Emergence of web services**: Background-Server-side Architecture progression - Client-side Architecture progression-Service-oriented Architecture and web services. **Web Services Application Scenario**: Background - Web services Hype and the industry -Web services and the industry acceptance.	14
Unit IV	**Extensible Markup Language**: Background – *History – XML* - Validation of XML data - Advanced XML-Document Constraining. **Simple Object Access Protocol:** Background – SOAP - Interaction –Modeling – Encoding - Binding. **Web services Description Language:** Background - WSDL - Web service invocation and WSDL - Web services description details - Service Description through WSDL.	16
Unit V	**Registries: Universal Description, Discovery and Integration-** Background-UDDI – Nomenclature - Core UDDI - Service publication - Discovery. **Remote Procedure Call and Messaging:** Background-Synchronous Web services-Asynchronous web Services-Remote procedure call or messaging- **Case Study**: Industry adoption.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- Gustavo Alonso, Fabio Casati, Harumi kuno, Vijay Machiraju, (2009*), "Web Services Concepts, Architectures and Applications"*, Springer, First Reprint (Units - I & II).
- B V Kumar, S V Subrahmanya, (2009), *"Web Services – An Introduction*", Tata McGraw Hill Pub, Sixth Reprint (Units – III, IV & V).

Reference Book

- Neil Jenkins, et al, (1996), "*Client/Server Unleashed*" Tec Media Publications, First Edition.
- Thomas Erl, (2008), "*Service Oriented Architecture Concepts, Technology and Design*", Pearson Education, Second Impression.
- Thomas Erl, (2016), *"Service Oriented Architecture Analysis and Design for Services and Microservices",* Prentice Hall, Second Edition.

Web References

- https://www.javatpoint.com/service-oriented-architecture
- https://www.w3schools.com/xml/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT3A3			**Title**	**Batch:**	2021 – 2024
				Microprocessor and Assembly Language Programming	**Semester:**	III
Lecture Hrs./Week	5	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

Understand the evolution of microprocessor, Addressing modes, pin diagrams of various processors, Assembly Language Programs, Other Microprocessors, Advanced Microprocessor, Mobile Processors, Interfacing A/D converter and Applications.

Course Outcomes

CO Number	CO Statement	Knowledge Level
CO1	To Recall in mind the various microprocessor and microcontrollers manufacturer name, year, versions, bit-size, etc	K1
CO2	To Understand the basic concepts of 16 bit and 32-bit microprocessors.	K2
CO3	To apply the instructions in the Assembly Language Programs.	K3
CO4	To analyze the various products of processors and controllers.	K4
CO5	To Conclude the various products of processors and controllers.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Introductionto Microprocessors**: Evolution of microprocessors – Single- chip Microcomputer – Embedded Microprocessors – Bit - Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086.	16
Unit II	**8086 Instruction Set** – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions. **Assembly LanguageProgramsfor8086**: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multi byte Addition.	15
Unit III	**Intel 386 and 486 Microprocessors**: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Management Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration - Input devices – Output devices.	15
Unit IV	**Other Microprocessors:** Pentium – Pentium Pro – PentiumII**,** III, IV - Alpha – Cyrix – MIPS – AMD Processors. **Advanced Core Processors:** Dual Core - Core2 Duo - i3 - i5 - i7 – i9 - Quad – Octa - Penta – Comparision. **Mobile Processors:** Introduction – Models – Architecture	15
Unit V	**Interfacing of A/D Converter and Applications**: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities	14
	Total Contact Hrs.	75

Pedagogy

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods

Seminar, Quiz, Assignment, Group task.

Text Book

- Badri Ram, (2007), *Advanced Microprocessors and Interfacing.* Tata McGraw-HillPublishing. Company Limited, Fourteenth reprint.

Reference Books

- A.K. Ray, K.M. Bhurchandi, (2007), *Advanced Microprocessors and Peripherals.* TataMcGraw-Hill Publishing Company Limited, 2nd Edition.p
- Ramesh S. Gaonkar, (1997), *Microprocessor Architecture, Programming, and Applicationswith the 8085.* 3rd Edition. PRI India.

Web References

- https://www.geeksforgeeks.org/introduction-of-microprocessor/
- https://www.slideshare.net/shehrevard/advanced-microprocessor
- https://www.tutorialspoint.com/microprocessor/microprocessor_io_interfacing_overview.ht m#:~:text=The%20interfacing%20process%20includes%20some,the%20signals %20of%20t he%20microprocessor.

(Unit IV)

- https://en.wikipedia.org/wiki/List_of_Intel_Core_i9_microprocessors
- https://images-eu.ssl-images-amazon.com/images/I/C1Ip5bIG39S.pdf
- https://www.intel.com/content/dam/www/public/us/en/documents/datasheets/8th-gen-core-family-datasheet-vol-1.pdf
- https://timestech.in/all-about-mobile-phone-processors

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT310			Title	Batch:	2021 - 2024
				Lab. III - RDBMS	Semester:	III
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To understand, learn and apply the various programming concepts in ORACLE (Basic commands, Trigger, Functions, etc.)

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply appropriate queries in oracle	K3
CO2	To apply various commands in SQL and PL/SQL and tags and concepts in the application.	K3
CO3	To analyze various database applications.	K4
CO4	To verify different forms of queries using SQL and PL/SQL statements	K5
CO5	To create various data models which describe the structure of database	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST **Test I** 1. Experiment with DDL commands. 2. Make use of Constraints 3. Experiment with DML commands. 4. Make use of Arithmetic operations on tables. 5. Determine where clause usage 6. Experiment with Case structures 7. Make use of Built-in functions 8. Determine Group functions usage 9. Make use of Joins and set operations 10. Test for Sub queries usage **Test II** **PL/SQL Block structure**. 1. Test for Control Structures in PL/SQL. 2. Make use of Embedded SQL 3. Test for Cursors usage 4. Make use of Exceptions 5. Experiment with PL/SQL Records and Tables. 6. Make use of Procedures and Functions 7. Experiment with Packages and Triggers. 8. Experiment Java as Front end and connect the oracle tables.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Task. (GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

Dr. R.MANICKA CHEZIAN, M.Sc.,M.S
Controller of Examinations
NGM College (Autonomo
POLLACHI - 642 001.

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT311			Title	Batch:	2021- 2024
				Lab. IV – Web Designing (HTML, CSS, JavaScript & Angular)	Semester:	III
Practical Hrs./Week	4	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To know the Basic and Advanced Tags of HTML, Style sheets, and to know the basics of Angular and JavaScript.

Course Outcomes

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

CO	CO Statement	Knowledge
CO1	To develop webpage using various style sheet formats and HTML tags	K3
CO2	To analyze various style sheet formats for web pages	K4
CO3	To assess the various functions in Angular and JavaScript for creating applications	K5
CO4	To verify the usage of CSS creating applications	K5
CO5	To create applications using Advanced Tags of HTML	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST **Test I** 1. Experiment with Webpage creation using CSS. 2. Apply Ordered List and Un-Ordered List in web pages 3. Apply Table Tags in web pages 4. Experiment with Frame creation. 5. Apply Font Attributes in web pages 6. Apply Style sheets in web pages **JavaScript** 7. Develop a Program to Display Digital clock. 8. Develop a Program to demonstrate onClick and onChange Events. 9. Develop a Program to demonstrate onFocus Event and onSubmit Event. **Test II** 1. Develop a Program to demonstrate onMouserOver and onMouseOut Test for Displaying Date and Time. 2. Develop a Program to demonstrate createElement an createTextNode. 3. Test for Redirection using location object Angular 4. Develop a Program to create a modules & Controllers in a file. 5. Develop a Program to implement the scopes. 6. Develop a Program to apply filters. 7. Develop a Program to create services. 8. Develop a Programs to create simple tables. 9. Develop a Program to perform events. 10. Develop a Program to create a new form. 11. Develop a Program to create a simple application -I.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Task(GD)

WEB REFERENCES

- https://www.w3schools.com/
- https://www.tutorialspoint.com/html/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT3N1			Title	Batch:	2021 - 2024
					Semester:	III
Lecture Hrs./Week	1	Tutorial Hrs./Sem.	-	Skill Based Non-Major- I Social Networks	Credits:	2

Course Objective

To provide the overall view of various concepts of Social Networks such as history, classification of social media, services, pros and cons.

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 basics of Social Networks	K1
CO2	To understand the classification of Social Media	K2
CO3	To deploy various data privacy feature in social media platforms	K3
CO4	To analyze the security aspects in social media.	K4
CO5	To judge the pros and cons of various types of social media platforms	K5

Mapping

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

Units	Content	Hrs.
Unit I	Social Networks: Introduction – Definition - History	3
Unit II	Impact of social media - Privacy and Identity: Data Sh7aring and Safety	3
Unit III	Types of services – Platforms - Building and Strengthening of social media.	4
Unit IV	Spamming in social networks – social aspects- Design Issues	3
Unit V	Growing Constituency through social media – A glance at social media Do's and Don'ts.	2
	Total Contact Hrs.	15

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task. (Roll Play)

Web References

- https://www.usaid.gov/sites/default/files/documents/1866/SMGuide4CSO.pdf
- https://www.symantec.com/content/en/us/.../the_risks_of_social_networking.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT3N2			Title	Batch:	2021 - 2024
				Skill Based Non-Major I - Hardware & Networking	Semester:	III
Lecture Hrs./Week	1	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To make understand various concepts of processors, input / output hardware, communication channels, networks with their types etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the basics of I/O hardware.	K1
CO2	To understand about working of processors.	K2
CO3	To implement a network operating system.	K3
CO4	To analyze different types of networks and topologies.	K4
CO5	To Determine the concepts of Hardware and Networks.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Processors:** Microchips, Miniaturization and Mobility - CPU and Main Memory - Microcomputer System Unit.	2
Unit II	**Input and Output Hardware:** Input Hardware - Keyboard Input- Pointing Devices - Output Hardware - Display Screens.	3
Unit III	**Communication Channels:** Electromagnetic Spectrum -Twisted Pair - Coaxial Cable - Fiber Optic Cable – Microwave and Satellite Systems - Wireless Communications - Next Generation Wireless Communications.	4
Unit IV	**Communication Networks:** Types of Networks - Network Operating System - Host and Node - Servers and Clients – Advantages of Networks.	3
Unit V	**Local Networks:** N/W Types - Types of LAN's – Components – Topology - Impact of LAN.	3
	Total Contact Hrs.	15

Pedagogy

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods

Seminar Quiz, Assignments

Text Book

- Williams, Sawyer and Hutchinson, (2001), *Using Information Technology - A Practical Introduction to Computers & Communications.* 3rd Edition. Tata McGraw Hill.

References

- https://www.usaid.gov/sites/default/files/documents/1866/SMGuide4CSO.pdf
- https://www.symantec.com/content/en/us/.../the_risks_of_social_networking.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Course Objective

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT412			Title	Batch:	2021 - 2024
				Data Communication and Networks	Semester:	IV
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	4

To provide basic concepts of networking like data transmission, topology, OSI model, TCP/IP, transmission media, X.25 protocol, frame relay, ATM and accessing the internet.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recall basics of data communication and networking	K1
CO2	To demonstrate various types of networks and topologies	K2
CO3	To make use of routing algorithms	K3
CO4	To categorize different ways of accessing the internet	K4
CO5	To Compare various types of protocols (X.25, Frame relay, ISDN, ATM)	K4

Mapping

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

Units	Content	Hrs.
Unit I	Introduction to Data Communications and Networking – Information Encoding - Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing.	14
Unit II	**Transmission Errors**: Detection and Correction – **Transmission Media**: Guided Media, Unguided Media. **Network Topologies**: Mesh, Star, Tree, Ring, Bus topology. Switching- Circuit, Message, Packet switching. Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing.	15
Unit III	Network Protocols and OSI Model – TCP/IP - Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN).	15
Unit IV	**X.25 Protocol**: Working principle-Characteristics – Packet format – operations. **Frame Relay:** Need – Working principle – Frame format-congestion & traffic control – FRAD & Features. **Asynchronous Transfer Mode:** Introduction- Packet size- Virtual circuits – Cells- Switching, Layers.	16
Unit V	Internetworking Concepts, Devices, Internet Basics, History and Architecture. **Ways of Accessing the Internet:** Introduction- Dial- up access- Leased lines- DSL- Cable modems.	15
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task. (GD/ Roll Play /APS)

Text Book

- Achyut S.Godbole. (2007). *Data Communications and Networks.* Tata McGraw-Hill Publishing Company Limited, Ninth reprint

Reference Books

- Behrouz A. Forouzan. (2007). *Data Communications and Networking,* 2nd Edition Update. Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint.
- Andrew S. Tanenbaum. (2000). *Computer Networks.* 3rd Edition, Prentice Hall of India.

Web References

- https://www.cisco.com/c/en_in/solutions/small-business/resource-center/networking/networking-basics.html
- https://www.techopedia.com/definition/7776/internet-access

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT413			Title	Batch:	2021 - 2024
				Advanced Java	Semester:	IV
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	5		Credits:	4

Course Objective

On successful completion of this subject the students can understand various concepts of Swings, Beans, JDBC, Servlet, JSP, JSTL, AJAX etc.

Course Outcome

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the knowledge of GUI based applications, Web based applications and Database applications.	K1
CO2	To understand development of the Internet programming through java programming.	K2
CO3	To apply different powerful GUI components from existing applications to create new web pages.	K3
CO4	To analysis different applications for solving the real time problems in Industry.	K4
CO5	To Prove the various concepts using problems.	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	**Swing Basic Concepts:** JFC- The Swing and the AWT - Swing Packages - Structure of A Swing Application – Top - Level Swing Containers - Lightweight Swing Container - JComponent Class - Basic Swing Components - Swing Text Components. **Exploring Swing:** Menu Components -Space Saving Lightweight Containers - Advanced Components – Virtual Desktop Components -Advanced Text Component - New Layout Managers.	14+1
Unit II	**Java Beans**: Definition - Advantages - Application Builder Tools - Using The Bean Development Kit (BDK) - JAR Files - Developing a Simple Bean Using the BDK - Using Bound Properties - Using the Bean info Interface - Constrained Properties - Persistence - Customizers - The Java Bean API - Using Bean Builder.	14+1
Unit III	J**DBC:** Architecture - JDBC-ODBC Relationship – Types of Drivers – Components - Interfaces and classes - Steps for Querying the Database with JDBC - Creating an ODBC Data source - Querying and updating Database Tables - passing parameters to a statement. **Servlets**: Introduction-Architecture - Designing - Servlet generating Plain Text, HTML - Handling GET Request.	14+1
Unit IV	**Cookies**: Overview of cookies – Servlet cookie API – Read, Use, send cookies in a Servlet, Get client's address in a Servlet – Hit counter example.**JSP:** Introduction – Scripting elements - life cycle.	13+1
Unit V	J**STL Tags**: Overview – EL Support – i18n support - Database Support (SQL Tags) – XML support. **AJAX:** Introduction – working concepts - Benefits - Role of Ajax in enhancing the user experience on the web - Rich internet application - What can Ajax do? - Impact of Ajax on user experience - on mobile - Traditional means of web application development - Web application development - Data exchange - Advantages and disadvantages - Web framework XML HTTP request object – Examples (First Program and Login Form).	15+1
	Total Contact Hrs.	75

Pedagogy

Digital Presentation, Chalk and talk, Flipped class.

Assessment Methods

Seminar, Test, Assignment, Group task.

Text Books

- ISRD Group, (2007), *Introduction to Object Oriented Programming through Java*, Tata McGraw-Hill Publishing Company Limited, New Delhi. (Units I, III).
- Herbert Schild**,** (2002), *JavaComplete Reference*, 5th Edition, Tata McGraw Hill Pub (Unit II).
- S. Padma Priya, (2011), *Web Technology*, Scitech Pub (Units IV, V).

Reference Book

- Rashim Mogha, V.V. Preetham,(2010), *Java Web Services Programming*, Willy India Pub.

Web References

- https://www.javatpoint.com/servlet-tutorial\
- https://www.softwaretestinghelp.com/java-components-java-platform-jdk/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT414			**Title**	**Batch:**	2021 - 2024
				Visual Programming	**Semester:**	IV
Lecture Hrs./Week	4	**Tutorial Hrs./Sem.**	2		**Credits:**	4

Course Objective

Tounderstand the various concepts of C#.Net and Visual Basic .Net (Data types, Properties, Components, Inheritance, Polymorphism, Database Connectivity and Web Services).

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recall various statements, data types, properties, components, Indexes, Events and Attributes, etc.	K1
CO2	To Understand the basic structure of VB.Net& C#.Net and features of IDE.	K2
CO3	To make use of the basic concepts of Methods, Arrays, I/O Streams, Database Connectivity and Web Services.	K3
CO4	To analyze the various controls of OOPs, Windows Applications and Web Services.	K4
CO5	To prove the concepts into the Lab. programs.	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	**Visual C#.Net:** Introduction **-** Features – Data types and console I/O. **Methods:** (value, ref, out, params). **Properties, Indexes and Operator Overloading:** Introduction – Properties – Indexes – Operator overloading – Conversion operators**. Inheritance and Polymorphism:** Virtual methods – Abstract Classes and Abstract Methods – Sealed classes.	11
Unit II	**Namespaces and Components** – Namespaces – Components – Components and Namespaces – Access modifiers. **Delegates, Events and Attributes**. **I/O Streams:** Introduction – Streams – Binary Data files – Text files – Data files – File and Directory Operations.	11
Unit III	**Windows applications** - I. **Windows applications-II**. **Database connectivity. Basic Web controls. Validation and list web controls:** Introduction – validation – list. **User and Custom web controls:** Introduction – User controls – controls and custom properties, controls. **Web services**: Introduction – concepts – creation – Creating a web service that use data source.	12+1
Unit IV	**VB.NET**: Essentials – Operators **-** conditionals and loops – Procedures, Scope and Exception handling – Windows Forms **-** Text Boxes, Rich Text Boxes, Labels and Link Labels – Buttons **-** Checkboxes, Radio buttons, Panels and Group boxes.	12
Unit V	List boxes, Checked List Boxes, Combo boxes and Picture boxes – Scroll bars, Splitters, Track Bars, Pickers, Notify Icons, Tool Tips and Timers– Menus, Built-in Dialog boxes and printing– Image lists, Tree and List views, Toolbars, Status and progress Bars and tab. **Database Access with ADO.Net.** **Case Study:** Develop a unique application using this course.	12+1
	Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Books

- Muthu C. (2008). *Visual C#.Net.* First Reprint. Tata Mc-Graw Hill Pub.
- Steven Holzner (2008) Visual Baisc.Net Programming Black Book- -Dream Tech Publication.

Reference Books

- Kogent learning solutions (2011) *ASP.NET 4.0 in Simple Steps*- -Dream Tech Press Publication.
- Padmapriya .S (2011) *Web Technology* - Scitech Publications.

Web References

- https://www.tutorialsteacher.com/csharp/first-csharp-program
- https://www.tutorialspoint.com/vb.net/index.html.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT4A4			**Title**	**Batch:**	2021 - 2024
				Software Engineering	**Semester:**	IV
Lecture Hrs./Week	5	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

Understand the software development life cycle, process models, requirements analysis, design concepts, software quality and testing techniques.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect the various process models, requirements, Designs, Quality, Testing.	K1
CO2	To Understand the software development phases.	K2
CO3	To apply concepts into the testing lab.	K3
CO4	To evaluate the expected result with testing output.	K4
CO5	To justify the concepts of software development and testing phase.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Software and Software Engineering:** The Nature of software-The Unique Nature of WebApps-Software Engineering-The software process-Software Engineering practice-Software Myths. **Process Models:** A Generic process model-Process Assessment and Improvement-Perspective process model-Specialized process models-The Unified process-Personal and team process models-process Technology-Product and Process. **AGILE Development**: Agility – Cost of change - Process - **Extreme programming**: Values – Process – Industry – Debate.	16
Unit II	Requirement analysis-Scenario based modeling-UML Models-Data modeling concepts-Class based modeling. **Requirements Modeling:** Flow (DFD, Activity, ER), Behavior, Patterns - and WebApps.	14
Unit III	**Design concepts:** The design process-Design concepts - Design model. **User Interface Design:** The golden rule-User Interface Analysis and Design-Interface Analysis-Interface Design Steps-WebApp Interface Design-Design evaluation.	15
Unit IV	**Quality Concepts:** Software Quality-Dilemma-Achieving Software Quality. **Software Quality Assurance:** Elements – Tasks, Goals and metrics – Statistical SQA – Software reliability – SQA plan**.**	15
Unit V	**Software Testing strategies:** Strategic Approach to Software Testing-Strategic Issues-Unit Testing-Integration Testing-Validation Testing-System Testing. **Testing conventional Applications:** Software Testing Fundamentals-Internal and External view of Testing-White Box Testing-Basis Path Testing - Control Structure Testing-Black Box Testing. **Case study:** Draft an ER & DFD for a unique problem.	15
	Total Contact Hrs.	75

Pedagogy

Digital Presentation, Chalk and talk, Flipped class

Assessment Methods

Seminar, Quiz, Assignment, Group task.

Text Books

- Roger S. Pressman, (2010), Software *Engineering-A Practitioner's Approach*, 5th Edition, McGraw-Hill International Pub.
- Jeffrey A. Hoffer, Joey F. Georgr, Joseph S. Valacich , (2000), "*Modern Systems Analysis and Design*", 2nd Edition, Pearson Education publications. (Unit II – DFD, ER).

Reference Books

- Richard Fairley, (2010), *Software Engineering Concepts*, 33rd Reprint, Tata McGraw-Hill Publishing Company Limited.
- Pankaj Jalote , (2001), *An Integrated Approach to Software Engineering*, 3rd Edition Narosa Publication.

Web References

- https://www.roberthalf.com.au/blog/employers/6-basic-sdlc-methodologies-which-one-best
- https://www.tutorialspoint.com/software_engineering/software_testing_overview.htm#:~:text=Software%20Testing%20is%20evaluation%20of,comprises%20of%20Validation%20and%20Verification.

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT415			Title	Batch:	2021 - 2024
				Lab. - V. Programming in Advanced Java	Semester:	IV
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	3

Course Objective

Understand the practical experience in various concepts of Swings, Beans, JDBC, Servlet, JSP, JSTL, AJAX, etc...

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply the different components of java programming.	K3
CO2	To analysis the concepts to enhance in the application level.	K4
CO3	To validate the user friendliness and desire performance implied for given input.	K5
CO4	To test the different components of Advanced Java using programs.	K6
CO5	To create connectivity using database.	K6

Mapping

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

Contents	Hrs.
Sample Programs List **Test I** 1. Develop JCheckBox 2. Develop a menu 3. Develop Program for swing 4. Devwlop JTabbedPane 5. Create Function of JTree 6. Create JScrollPane using swing **Test II** 7. Develop a Generic Servlet. 8. Implement JDBC using Servlet. 9. Develope a Javabean to create Juggler Bean. 10. Generate simple property Javabean	75
Total Contact Hrs.	75

Pedagogy

Direct Insteuxtion, Digital Presentation

Assessment Methods

Test, Quiz, Group task (GD/Role play/abs).

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT		**Programme Title:**	Information Technology	
Course Code:	21UIT416		**Title**	**Batch:**	2021 - 2024
			Lab - VI : Visual Programming	**Semester:**	IV
Practical Hrs./Week	4	**Tutorial Hrs./Sem.** -		**Credits:**	3

Course Objective

To understand the practical experience in various concepts of C#.Net and VB.NET (Data types, Statements, Properties, Inheritance, Polymorphism, Multithreading, and Database Connectivity and Web Services).

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To experiment the concepts of web-oriented programs.	K3
CO2	To motivate to create menu-based program for basic manipulation	K4
CO3	To create applications using database connectivity	K6
CO4	To Test the field elements using validator control	K6
CO5	To design the data in grid control	K6

Mapping

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

Content	Hrs.
Sample Program List **TEST I (C#.NET)** 1. Execute Switch Statement Display the employ details. 2. Create method overloading. 3. Create constructor overloading 4. Create student mark list using inheritance **5.** Create User-Defined exception**.** 6. Create an application using button controls (check box, radio). 7. Generate Month calendar. 8. Create applications using controls (trackbar,panel,treeview) 9. Create applications using controls (splitter, menu dialog boxes). 10. Experiment the student details using ADO.Net. **TEST II (VB.NET)** 1. Create string handling function. 2. Create exception handling. 3. Generate program using VB.Net operators. 4. Create window application using text box, Rich text box 5. Create an application using button controls (check, radio, Panel). 6. Create an application using List boxes, Checked List boxes, Combo boxes and picture boxes). 7. Create an application using form controls and perform basic Manipulations. 8. Create a window application with list box, tables and panels. 9. Create application using Scroll bars, Spliters, Track bars, Pickers, Timers). 10. Create application using Image lists, Tree and list views, tool Bars, Status and Progress Bars and tab).	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods:

Test, Assignments, Group task (Group Discussion)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT4N1			Title	Batch:	2021 - 2024
				Non Major Elective - II (Data Analytics)	Semester:	IV
Lecture Hrs./Week	1	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To bestow an understanding of various concepts of data analytics, tools, applications and career opportunities in the field of data analytics.

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 the basic understanding of fundamentals of data analytics	K1
CO2	To understand the types of data analytics	K2
CO3	To apply the tools in various domain	K3
CO4	To identify career opportunities	K4
CO5	To interpret technical skill of data scientist	K5

Mapping

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

Units	Content	Hrs.
Unit I	Data analytics: Introduction – Importance - Types of analytics	3
Unit II	Common Terminologies - Tools and basic prerequisites	3
Unit III	Advanced Tools - Workflow	3
Unit IV	Applications: Industries – Business Functions	3
Unit V	Career in analytics: Data scientist - Life of a data scientist - become a data scientist - Technical skills - Career path in analytics.	3
	Total Contact Hrs.	15

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Seminar, Quiz, Assignments

Web References

- https://data36.com/data-analytics-basics-intro/
- https://blog.k2datascience.com/the-basics-of-data-analytics-77e5cc7ea741
- https://www.jigsawacademy.com/em/Beginners_Guide_to_Analytics.pdf

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. IT			Programme Title:	Information Technology	
Course Code:	21UIT4N2			Title	Batch:	2021 - 2024
				Non Major Elective - II : Computer Security	Semester:	IV
Lecture Hrs./Week	1	Tutorial Hrs./Sem.	-		Credits:	2

Course Objective

To understanding of various concepts of data security, cryptography, substitution techniques, encryption, decryption etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To find the basic fundamentals of data security	K1
CO2	To illustrate the concepts of ciphers and cryptography methods	K2
CO3	To organize the idea of encryption and decryption methods	K3
CO4	To discover basic issues in data security	K4
CO5	To compare substitution and Transposition techniques	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction-The need for security- Security Approaches: Trusted system.	3
Unit II	Security models-Security management practices- Principles of security.	3
Unit III	Cryptography: Concepts and Techniques - Introduction-Plain text and Cipher text	3
Unit IV	Substitution Techniques: Caesar Cipher-Mono Alphabetic Cipher-Homophonic substitution cipher-Polygram substitution cipher	3
Unit V	Transposition Techniques: Rail Fence-Simple Columnar. Encryption and Decryption	3
	Total Contact Hrs.	15

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- Atul Kahate. (2009). *Cryptography and Network Security*, 2nd Edition.

Reference Books

- William Stallings. (2006). *Cryptography and Network Security Principles and Practices*. 4th Edition. PHI Education Asia.
- Behrouz A. Forouzan. (2007). *CRYPTOGRAPY and NETWORK SECURITY*. Tata McGraw Hill Pub.

Web References

- www.tutorialspoint.com
- https://vivadifferences.com/difference-between-substitution-cipher-technique-and-transposition-cipher-technique/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT517			Title	Batch:	2021 - 2024
				Information Security	Semester:	V
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

To endow with better knowledge on various concepts of Security, Symmetric and Asymmetric algorithms, Digital certificates, E-mail, WWW, 2G, 3G etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To Recollect basic concepts of network security	K1
CO2	To Understand basic knowledge of cryptography	K2
CO3	To Apply diverse security mechanisms	K3
CO4	To Evaluate various security algorithms	K4
CO5	To Interpret different types of protocols	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Security:** Introduction – Need – Approaches – Principles – **Types of attacks*. **Cryptography:** Introduction – Plain text and Cipher text – Substitution & Transposition techniques – Encryption and Decryption – Symmetric and Asymmetric key Cryptography – Steganography – Key range and Key size - Possible types of attacks.	18
Unit II	**Symmetric Key Algorithms**: Introduction - **Algorithm Types and modes* – Overview – DES– IDEA– RC4 & 5 – Blowfish – AES.	19
Unit III	**Asymmetric Key Algorithms**: Introduction – History – Overview - RSA algorithm – **Symmetric and asymmetric cryptography*. **Digital Signatures**: Introduction – Message Digests - MD5 – Secure Hash Algorithm. Knapsack algorithm – Other algorithms.	18
Unit IV	**Digital Certificates:** Introduction – Concepts – **Certification Authority* – Technical details – Creation – Cross certification – Revocations. **Private key management - PKIX model** – **PKCS**.	18
Unit V	**Internet Security Protocols:** Introduction – Concepts. **Secure Socket Layer** (SSL): **Transport Layer Security** (TLS) – **Secure Hyper Text Transfer Protocol** (SHTTP) – **Time Stamping Protocol** (TSP). **Secure Electronic Transaction (SET):** Introduction – Participants – Process – Internals. SSL Versus SET – 3-D secure Protocol. **Electronic Money:** Introduction – Security mechanisms – Types. **Email security**: Introduction – Privacy Enhanced Mail – Pretty Good Privacy. WAP Security - Security in GSM – Security in 3G.	17
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

- ATUL KAHATE. (2013). *CRYPTOGRAPHY and NETWORK SECURITY*. 3rd Edition, McGraw Hill Education Pvt Ltd.

Reference Books

- William Stallings. (2006). *Cryptography and Network Security Principles and Practices*. 4th Edition. PHI Education Asia.
- Behrouz A. Forouzan. (2007). *CRYPTOGRAPY and NETWORK SECURITY*. Tata McGraw Hill Pub.

Web References

- https://www.youtube.com/watch?v=edQIJvaUhHg
- https://www.youtube.com/watch?v=9OjK9NNlXYY
- https://www.youtube.com/watch?v=NK5Z6Oj0YkM

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc.- IT			Programme Title:	Information Technology	
Course Code:	21UIT518			Title	Batch:	2021 - 2024
				Skill Enhanced Course: Open Source Methodologies	Semester:	V
Lecture Hrs./Week	5	Tutorial Hrs./Sem.	5		Credits:	4

Course Objective

On successful completion of this subject the students should have the knowledge about Unix & Linux Operating System concepts, normal & administrative commands and Android application development.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the various Unix commands for directory, editor, shell programming. Android layers, components, and user interfaces.	K1
CO2	To get the idea of the Unix, Linux, and Android program commands.	K2
CO3	To execute the programs by using the various Unix, Linux commands.	K3
CO4	To review by using the commands and operations get proper output.	K4
CO5	To Assess the commands of Unix and Linux.	K5

Mapping

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

Units	Content	Hrs. L+T
Unit I	**Getting Started:** Introduction – UNIX, Linux and GNU – Programming Linux-Getting help. **The VIM Editor:** History – Creating and editing a file – features. Command Mode: moving the cursor – Deleting and changing text. Input Mode - Searching and substituting – *Miscellaneous commands* – yank, put and delete commands – Reading and writing files – Setting parameters – Advanced editing techniques – Units of measure.	15+1
Unit II	**Shell Programming:** Usage – Philosophy – Definition – Pipes and redirection – As a programming language – Syntax – Graphical (Dialog Utility).	14+1
Unit III	**Working with Files:** Linux file structure – System calls and device drivers – Low level file access – *Standard I/O file library – File and directory maintenance – Scanning directories. **Linux Environment.**	14+1
Unit IV	**Android:** Introduction – Features – AOS versions – Google play - Packages – ASDK – OOP – Test driving Tip calculator App in AVD – Build Apps – Development resources.	13+1
Unit V	**Welcome App:** Introduction – Overview – Creation – Android studio Window – Building App's GUI with layout editor – Run Welcome App – Making your App accessible – Internationalizing App.	14+1
	Total Contact Hrs.	75

Pedagogy

Digital Presentation, Chalk and talk, Flipped Class

Assessment Methods

Test, Seminar, Aasignment, Group task(GD/ Role play/abs).

Text Books

- Neil Matthew and Richard Stones, (2006), *Beginning LINUX Programming*, 3rd Edition, WileyDream Tech Publications (Units I – III).
- .Paul and Harvey Deitel, (2018), *Android 6 for Programmers*, 3rd Edition, Pearson Education Pubications. (Units IV & V),

Reference Books

- Sumithaba Das,(2006), *Unix Concepts and Applications*, Version 4.
- Mark G. Sobell, (2004), *A Practical Guide to Red Hat Linux 8*, Pearson Education, Edition.
- Jang, (2003), *Mastering Red Hat Linux Fedora Core 5*, Wiley Pub.

Web References

- https://maker.pro/linux/tutorial/basic-linux-commands-for-beginners
- https://www.tutorialspoint.com/android/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT5E1			Title	Batch:	2021 - 2024
				Major Elective-I Data Mining and Analytics	Semester:	V
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

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

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 the various basic concepts of data mining	K1
CO2	To understand different types of data mining to be applied in various domain areas	K2
CO3	To execute data mining algorithms for finding hidden interesting patterns in data	K3
CO4	To evaluate various data mining algorithms to solve real world problems	K5
CO5	To judge the pros and cons in handling big data.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Data mining and the data warehouse**: Introduction - Data mining -Kinds of data-functionalities- classification-Task primitives-Integration with database or warehouse-Major issues. **Mining frequent patterns, association and correlations**: Basic concepts. **Efficient and scalable frequent itemset mining methods:** Apriori Algorithm-Generating association rules.	20
Unit II	**Classification and prediction:** Definition – Issues - classification by Decision tree Induction – Bayesian classification-rule based classification - classification by back propagation - support vector machine.	18
Unit III	**Cluster analysis:** Definition - types of data in cluster analysis - categorization of major clustering methods - partitioning methods - hierarchical methods	17
Unit IV	Spatial data mining - multimedia data mining - text mining - mining the www - data mining Applications.	18
Unit V	**Big data Analytics** : Introduction - Drivers for big data-Applications-Architecture-Advanced Analytics platform-Implementation	17
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

Text Books

- Jiawei Han and Micheline Kamber (2005) Data Mining concepts and techniques, Elsevier publication (Units – I, II, III & IV).

- Dr. Aravind Sathi (2012) Big Data Analytics:Disruptive Technologies for Changing the Game,

  1st Edition, MC Press publication (Unit – V).

Reference Books

- Vikram Pudi, P.Radha Krishna (2009),*Data Mining***,** Oxford University Press, 1st Edition.

- Anand Rajaraman and Jeffry David Ullman (2012), "Mining of Massive Datasets", Cambridge University Press.

Web References

- https://youtu.be/m5c27rQtD2E
- https://youtu.be/6FWIez4lP68

Course Designed by Name and Signature	Verified by HOD Name and Signature	Checked by CDC	Approved by COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT5E2			Title	Batch:	2021 - 2024
				Major Elective – I	Semester:	V
Lecture Hrs./Week:	6	Tutorial Hrs./Sem.:	-	Artificial Intelligence & Expert Systems	Credits:	4

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	To Understand the nature of AI problems and task domains of AI	K1
CO2	To Apply the appropriate search procedures to solve the problems by using best algorithms.	K3
CO3	To Analyze and select the suitable knowledge representation method.	K4
CO4	To Manipulate the acquired knowledge and infer new knowledge.	K4
CO5	To Demonstrate the development of AI systems by encoding the knowledge	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Introduction**: AI Problems – AI techniques – Criteria for success. Problems, Problem Spaces, Search: State space search – Production Systems – Problem Characteristics – Issues in design of Search.	18
Unit II	**Heuristic Search techniques:** Generate and Test – Hill Climbing – Best-Fist, Problem Reduction, Constraint Satisfaction, Means-end analysis.	18
Unit III	**Knowledge representation issues:** Representations and mappings – Approaches to Knowledge representations – Issues in Knowledge representations – Frame Problem.	18
Unit IV	**Predicate Logic:** Representing simple facts in logic – Representing Instance and Isa relationships – Computable functions and predicates – Resolution – Natural deduction.	18
Unit V	**Representing knowledge using rules:** Procedural Vs Declarative knowledge – Logic programming – Forward Vs Backward reasoning – Matching – Control knowledge Brief explanation of Expert Systems-Definition- Characteristics-architecture- Knowledge Engineering- Expert System Life Cycle-Knowledge Acquisition Strategies- Expert System Tools	18
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

❖ Elaine Rich, Kevin Knight, (2009), *Artificial Intelligence*, 3rd edition, Tata McGraw Hill Publications.

Reference Books

❖ Stuart Russell, Peter Norvig, (2009), *Artificial Intelligence: A Modern Approach*, 3rd Edition, Pearson New International Edition.

❖ Er. Rajiv Chopra, (2005), *Artificial Intelligence: A Practical Approach*, 1st Edition, S. Chand Publications.

Web References

❖ https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_expert_systems.htm

❖ https://www.geektonight.com/artificial-intelligence-pdf

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

K.VIJAYAKUMAR, MCA.,M.Phil., Head, Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT5E3			Title	Batch:	2021 - 2024
				Major Elective - I: E-Commerce	Semester:	V
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	--		Credits:	4

Course Objective

To learn E-Business revenue models, E-marketing, E-security, CRM, online payment systems and sales.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember basic concepts of e-commerce	K1
CO2	To understand the role of E-marketing, E-security, E-payment systems in current scenario	K2
CO3	To apply mobile payments.	K3
CO4	To analyze various portalsassociated with e-commerce	K4
CO5	To justify legal and ethical issues in digital economy and phishing	K5

Mapping

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

Units	Content	Hrs.
Unit I	**e-Commerce:** Introduction- Early Business information interchange efforts – Emergence of the internet – Milestones – **Advantages* – *Disadvantages* – Online extension of BAM model – Transition to e-commerce in India – E-transition challenges for Indian corporates. **Business Models**: Introduction – E-Business models based on the relationship of transaction parties and transaction types.	18
Unit II	**E-Marketing:** Traditional Marketing – Identifying web presence goals – Online marketing – E-Advertising – Internet marketing trends – Target Markets – Marketing strategies.	18
Unit III	**E-Security:** Information system security – **Security on the internet*. **E-Payment Systems:** Internet Banking – Digital payment requirements – Digital token based e-payment systems – Classification of new payment systems – Electronic cash – Risk and e-Payment system – Online financial services in India – Online stock trading.	18
Unit IV	**E-customer Relationship Management:** CRM – Typical Business Touch Points. **E-supply Chain Management:** CISCO – supply chain. **Information Systems for Mobile Commerce:** Introduction – Mobile payments – Mobile Commerce in India.	18
Unit V	**Portals for E-Business: ***Portals* – Requirements of intelligent websites – portals for mass collaborations – portals for Enterprise Resource Planning – ERP – Intranet Portals – HRM – Various HRIS modules. **Legal and Ethical Issues:** Ethical issues in Digital economy – cyber stalking – Phishing – Application fraud – Skimming – Copyright – Internet Gambling – Threats to children – Special Nature of Computer Ethics.	18
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

- P. T. Joseph S. J., (2017), *E - Commerce: An Indian Perspective,* 5th Edition, PHI.

Reference Books

- Henry Chan, Raymond Lee, Tharam Dillon, Elizabeth Chang, (2011), *E-commerce Fundamentals and Applications*, 1st Edition, Wiley India Pvt Ltd.
- Gary P Schneider, (2012), *E-Commerce Strategy, Technology And Implementation*,9th Edition, Engage Learning Pub.

Web References

- https://www.slideshare.net/sajidkhetani/digital-payments-india-perspective
- https://www.sampletemplates.com/marketing-templates/digital-marketing-presentation.html

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT519			Title	Batch:	2021 - 2024
				Lab. - VII Open Source Methodologies	Semester:	V
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	3

Course Objective

To obtain the practical knowledge about Unix & Linux Operating System commands, Administrative, Normal Commands and Basic Android Applications.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply the concepts of GNOME, shell and SDK.	K3
CO2	To analyze the various commands.	K4
CO3	To verify the results for the different input data.	K5
CO4	To create applications in Linux.	K6
CO5	To create various simple Android applications.	K6

Mapping

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

Content	Hrs.
Sample Program List ***Test I*** **U**sing GNOME, perform the following 1. Develop the Change of the Desktop Background and mouse pointer theme. 2. Develop the Change the Root Password. 3. Create the Add/Remove software. 4. Create List and view all the files using Icon. 5. Create an Archive file and Extract all Individual files from it. 6. Develop and Perform character Mapping. Using Shell perform the following 1. Execute the File manipulation commands 2. Execute the Directory manipulation commands 3. Execute the Utility commands 4. Execute the Pipes & Filter commands ***Test II*** **U**sing Android SDK perform the following 1. Develop the phone dialer with the given number filled in. 2. Develop a Google search using Intent. 3. Create a Sending a text message and showing a picture (using extra attributes). 4. Develop the Music player and play a song stored in SD card. 5. Create a simple Android Application.	75
Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Task.(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT520			Title	Batch:	2021 - 2024
				Lab - VIII : Software Testing Tools	Semester:	V
Practical Hrs./Week	4	Tutorial Hrs./Sem.	--		Credits:	3

Course Objective

To gain the knowledge to apply the various programming concepts of Software testing like integration, unit, functional, non-functional testing and about product metrics.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To make use of properties for checking the values	K3
CO2	To justify the expected result with the obtained result.	K5
CO3	To create GUI based database applications to test	K6
CO4	To develop test cases for the testing programs	K6
CO5	To test wesites using selenium controls	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST **Test I** **Using Winrunner** 1. Create a payroll system and test using the tool. 2. Create a ration shop management system and test using the tool. 3. Create airline reservation system and test using the tool. 4. Create Library management system and test using the tool. 5. Create Banking system and test using the tool. **Test II** **Using Selenium** 1. Write a simple test program that will launch Firefox browser and open "WWW.google.com". 2. Write a simple test program that will launch google chrome browser and open "WWW.ngmc.org " and then search Department of Information Technology . 3. Write a simple test program that will launch Firefox browser and open "WWW.gmail.com". 4. Write a simple test program that will launch Google chrome browser and open "WWW.amazon.com".and then search mobile accessories list. 5. Write a simple test program that will launch Firefox browser and open "WWW.yahoo.com"and then search yahoo mail.	60
Total Contact Hrs.	60

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Discussion

Web references

- https://www.educba.com/winrunner/
- https://www.slideshare.net/mansirajpara/win-runner-testing-tool

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT5AL			**Title**	**Batch:**	2021 - 2024
				Big Data Analytics (Self-Study)	**Semester:**	V
Lecture Hrs./Week	SS	**Tutorial Hrs./Sem.**	-		**Credits:**	3*

Course Objective

To cultivate knowledge about Big data Analytics and Technologies and to transform the business using Analytics.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the fundamentals of Big Data.	K1
CO2	To understand the concepts of Hadoop	K2
CO3	To apply different types of Analytics	K3
CO4	To evaluate the results and transform the business	K4
CO5	To determine business through big data	K5

Mapping

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

Units	Content
Unit I	**Types Of Digital Data**: classification of digital data. **Introduction to Big Data**: Characteristics– Evolution – Definition – Challenges – Big Data Definition – Other Characteristics – Need of Big Data – Traditional Business Intelligence Versus Big Data – Data Warehouse Environment – Hadoop Environment – Big Data Today – Changing Realms Of Big Data. **Big Data Analytics**: Big Data Analytics – Classification Of Analytics – Greatest Challenges – Top Challenges – Importance – Kind Of Technologies to Meet The Challenges – Data Science – Data Scientist – Terminologies used in Big Data – BASE – Analytics Tools
Unit II	**The Big Data Technology Landscape**: NoSQL – Hadoop. **Introduction to Hadoop**: Introduction – Need- RDBMS Versus Hadoop – Distributed Computing Challenges – History – Overview – Use case – Distributors – HDFS – Processing Data with Hadoop – Managing Resources And Applications With Hadoop YARN – Interacting With Hadoop Ecosystem- **Few Interesting Differences.**
Unit III	**Apply Analytics :** Evolution of analytics-Text analytics-Speech analytics-Video/image analytics-Behavior analytics-Combined analytics-Transparency-Prediction vs. privacy
Unit IV	**Report Results :** Data visualization-New data visualization-Displaying behavior & emotions-Displaying connections-How to improve data visualization-Info graphics - Beware the self-service business intelligence tools-The ingredients of successful data visualization and info graphics - Management dashboards
Unit V	**Transform Business :** Better understand and target customers- Improve and optimize business processes- Improve people's health and well-being- Improve business security and reduce fraud- Drive business and people performance- Improve cities and other infrastructure- New business opportunities- Smart will transform employment

Assessment Methods:

Test, Quiz, Assignments

Text Books

- Seema Acharya, Subashini Chellapan, (2019) "Big Data and Analytics" , 2nd Edition, Wiley Publications (Unit – I, II)
- Bernard Marr, (2015) " Big data : using smart big data, analytics and metrics to make better decisions and improve performance", Wiley Publications (Unit – III, IV,V)

Reference Book

- M. Vijayalakshmi Radha Shankarmani (2016) "Big Data Analytics",Kindle Edition,Wiley Publications

Web References

- https://www.simplilearn.com/what-is-big-data-analytics-article
- https://searchbusinessanalytics.techtarget.com/definition/big-data-analytics
- https://www.youtube.com/watch?v=bY6ZzQmtOzk
- https://www.bmc.com/blogs/hadoop-introduction/
- https://www.bmc.com/blogs/hadoop-architecture/

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT5VA			**Title**	**Batch:**	2021 - 2024
				Designing and Animation	**Semester:**	V
Practical Hrs./Week	2	**Tutorial Hrs./Sem.**	--		**Credits:**	2*

Course Objective

To know various animation techniques like as game creation, flying of butterfly, moving solar system etc.,

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To apply the ability to write script in flash to create 2Danimations	K3
CO2	To motivate to create animated banners	K4
CO3	To create own 2D animation film	K5
CO4	To develop digital multimedia content	K6
CO5	To design animated pictures	K6

Mapping

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

Units	Content	Hrs.
Unit I	❖ Develop a flash program to animate the Butterfly ❖ Develop a flash program to animate the Solar system ❖ Develop a flash program to animate the flag hoisting ❖ Develop a flash program to animate any game play ❖ Develop a flash program to animate traffic control	10
Unit II	❖ Create fish aquarium ❖ Create walking with naturals ❖ Create animation using any vehicle ❖ Create a raining program effect using flash ❖ Develop animate musical instrument play	10
Unit III	❖ Create the flight land and takeoff animation ❖ Create any animate cartoon character ❖ Develop animation for reading a book (flip) ❖ Create animation for the wall clock/ digital clock ❖ Create banner using 2D animation	10
	Total Contact Hrs.	30

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT5S1			Title	Batch:	2021 - 2024
				Skill Based Elective - I : Lab. Web Programming (PHP)	Semester:	V
Practical Hrs./Week	3	Tutorial Hrs./Sem.	--		Credits:	3

Course Objective

To known the various programming concepts of database, string functions, date & time functions, content navigation and creating web page.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To motivate the students to create dynamic website	K4
CO2	To test the various tags in the application.	K5
CO3	To create files in the websiteusing database.	K6
CO4	To construct and upload a file to the server and create directory	K6
CO5	To choose and add the products that are selected from a web page	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST 1. Execute a PHP Program to print an array. 2. Execute a PHP Program to sort elements in an array in ascending and descending order. 3. Develop a PHP program to split a string as array elements based on delimiter. 4. Execute a PHP Program to combine the array elements into a string with given delimiter. 5. Develop a PHP Program to Program to create a Simple Calculator. 6. Develop a PHP Programs to create simple Login and Logout using sessions. 7. Develop a PHP Program to upload a file to the Server. 8. Create a PHP Program to create a New Database. 9. Create a PHP Program to connect to the server and selecting database. 10. Create a PHP Program to insert records to the table in Database. 11. Create a PHP Program to fetch records from the table in Database. 12. Create a PHP Program to Store an image in Database. 13. Create a PHP Program to Read image from Database. 14. Create a PHP Program to create a simple Registration form. 15.'Create a PHP program for Contact form.	45
Total Contact Hrs.	45

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT5S2			**Title**	**Batch:**	2021 - 2024
				Skill Based Elective - I : Lab. Web Programming (ASP.Net)	**Semester:**	V
Practical Hrs./Week	3	**Tutorial Hrs./Sem.**	--		**Credits:**	3

Course Objective

To know the various scripting concepts and tags in ASP.net Programming and creating web page.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To make use of the different controls in asp.net.	K3
CO2	To analyze various applications in the web.	K4
CO3	To create websites withdatabase.	K6
CO4	To Test the field elements using validator control	K6
CO5	To design the data in grid control	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST **Test - 1** 1. Execute a simple program using web controls. 2. To work with states of ASP.Net pages and Ad rotator control. 3. To work with calendar control, tree view control & validation control. 4. Develop Interactiont with a user in a form with radiobuttons 5. Execute Return session id number for auser 6. Execute Get a session'stimeout **Test - 2** 7. Execute query textbox and display records in by using database. 8. To make use of database for inserting and deleting records using database. 9. To execute data grid and its control template. 10. Develop Interaction with a user in a form that uses the "post"method. 11. Create a simple application usingdatabase.	45
Total Contact Hrs.	45

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Discussion

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: V.Prabavathi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K.Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA., M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT621			**Title**	**Batch:**	2021 - 2024
				Skill Enhanced Course: Python Programming	**Semester:**	VI
Lecture Hrs./Week	5	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

To understand various concepts of Python and expertise in Python programming knowledge

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect basic programming concepts	K1
CO2	To understand and familiar with the basic coding in python	K2
CO3	To apply python terminologies for developing applications in small scale	K3
CO4	To figure out advanced concepts in python for developing web based	K4
CO5	To assess the data analysis tools usage in python.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Python Basics – I**: Introduction – Basic Concepts. **Python Basics – II**: Introduction – Data types – Mutable Vs Immutable-Input to python-Modular Programming and python Modules.	15
Unit II	**Operators in python- Functions:** Introduction-Need-Basics-Defining functions- Passing Variables- Function Arguments-Additional note on Modules-Special functions.	13
Unit III	**Flow control** – **Strings:** Creation, Initialization and Accessing elements- Traversing – String Operations-Difference between function, method and Attributes – **Lists:** Introduction-Basic concepts-Creating, Traversing and slicing Lists- List Functions and Methods- Nested list and using them as matrix.	12
Unit IV	**Dictionaries:** Introduction- Basics- Concepts-Functions and Methods-Dictionary Methods-View Objects. **Tuples:** Introduction-Basic concepts-Additional topics- **Regular Expression**: Basic concepts- Special characters, Groups of characters and Anchors-Understanding Re Module- Match object-Important Methods.	17
Unit V	**File Operations:** Introduction – Basics –Reading and Writing- **Advanced concepts. Pandas: Open Source Data Analysis and Manipulation Tool:** Introduction- Basics- Using Pandas for files.	18
	Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments

Text Book

- Anurag Gupta, G. P. Biswas, (2020), Python Programming – Problem Solving, Packages And Libraries, Mc Graw Hill Publications.

Reference Books

- Sheetal Taneja and Naveen Kumar, (2018) "Python programming A Modular Approach with Database, Mobile, and Web Applications" Pearson India Education Services**.**
- Chris Meyers Allen Downey, Jeffrey Elkner. (2015). Learning with Python DreamTech Press, Kindle Edition.

Web References

- https://www.youtube.com/watch?v=ApMSoHn1cM4
- https://www.youtube.com/watch?v=eaXiOpnRYDE

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT6E1			Title	Batch:	2021 - 2024
				Major Elective – II	Semester:	VI
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-	R Programming	Credits:	4

Course Objective

To provide understanding of various concepts of R Programming like functions, variables, data types and standardizing etc.

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 a broad understanding of techniques of R Programming	K1
CO2	To understand the structural design of R Programming	K2
CO3	To apply R Programs in real time	K3
CO4	To analyze the issues associated with R Programming	K4
CO5	To Determine the various concepts of R Programming	K5

Mapping

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

Units	Content	Hrs.
Unit I	Introduction: Goals – Installing - Choosing an IDE: Emacs/ESS – Eclipse/Architect – Rstudio – Revolution-R – Live-R – Others. A Scientific Calculator: Goals – Operations and Vectors – Assigning Variables – Special Numbers – Logical vectors. Inspecting variables and your workspace: Classes – types and Numbers – other classes – Checking and Changing – Examining – workspace. Vectors, Matrices and Arrays.	18
Unit II	Lists and Data formats: Lists – Creation – Atomic and Recursive – Dimension and arithmetic – Indexing – Conversion – Combination – Data frames – Creation – indexing – Manipulation. Environments and functions: Environments – Functions – Creation – passing functions to and from other functions – variable scope. Strings and factors.	19
Unit III	Flow control and Loops: Flow control – Loops. Advanced Looping: Replication – Looping over lists – arrays – Multiple input apply – Split-apply-combine – the plyr package. Packages: Loading Packages – Installing – Maintaining.	17
Unit IV	Dates and Times: Date and time classes – Conversion to and from Classes- Time zones – Arithmetic and Dates and Times – Lubridate**. The Data Analysis workflow:** Getting data: Built in Datasets – Reading Text Files – Binary Files – Web data – Accessing Databases.	17
Unit V	Cleaning and Transforming: Cleaning Strings – Manipulating Data Frames – Sorting – Functional Programming. Exploring and Visualizing: Statistics Summary – Three Plotting Systems – Scatter Plots – Line Plots – Histograms – Box Plots – Bar charts – Other packages and Systems.	19
	Total Contact Hrs.	90

Pedagogy

Seminar, Digital Presentation, Chalk and talk.

Assessment Methods

Test, Quiz, Assignment, Group task.

Text Book

- Richard Cotton,(2019) *A step by step Function Guide to Data Analysis – Learing R*. Shroff Publishers & Distributors Pvt. Ltd. ISBN: 978-93-5110-286-1

Reference Books

- Nina Zumel, (2014) *Practical Data Science with R***,** Dreamtech Press Publisher, ISBN: 9789351194378.
- Hadley Wickham, (2019) *Advanced R*, Second Edition, CRC Publisher, ISBN: 978-0815384571, 2019

Web References

- https://maker.pro/linux/tutorial/basic-linux-commands-for-beginners
- https://www.tutorialspoint.com/android/index.htm

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT6E2			Title	Batch:	2021 - 2024
				Major Elective II: Internet of Things (IoT)	Semester:	VI
Lecture Hrs./Week	6	Tutorial Hrs./Sem.	-		Credits:	4

Course Objective

Understand about the definition and usage of Internet of things and the key components of IoT system.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember the various concepts of IoT.	K1
CO2	To Understand the basic concepts of M2M and sensors	K2
CO3	To apply the concepts into the embedded devices	K3
CO4	To analyze the various privacy issues.	K4
CO5	To evaluate software design for IoT applications	K5

Mapping

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

Units	Content	Hrs.
Unit I	**IoT:** Overview – Introduction – Conceptual Framework – Architectural View – Technology Behind – Sources – M2M Communication – Examples.	16
Unit II	**Design Principles for Connected Devices:** Introduction – IoT/M2M Systems Layers and Design Standardization – Communication Technologies – Data Enrichment, Consolidation and Device Management at Gateway – Designing and Affordability.	16
Unit III	**Data Acquiring, Organizing, Processing and Analytics:** Introduction – Data Acquiring and Storage – Organizing the data – Transactions, Business Processes, Integration and Enterprise Systems – Analytics – Knowledge Acquiring, Managing and Storing Processes.	18
Unit IV	**Sensors, Participatory Sensing, RFIDs, and Wireless Sensor Networks:** Introduction – Sensor Technology – Participatory Sensing, Industrial and Automotive IoT – Actuator – Sensor Data Communication Protocols – RF Identification Technology – Wireless Sensor Network Technology.	20
Unit V	**Prototyping and Designing the Software for IoT Applications:** Introduction – Prototyping Embedded Device Software – Devices, Gateways, Internet and Web/Cloud Services Software Development – Prototyping Online Component APIs and Web APIs. **IoT Privacy, Security and Vulnerabilities Solutions:** Introduction – Vulnerabilities, Security Requirements and Threat Analysis – IoT Security Tomography and Layered Attacker Model – Security Models, Profiles and Protocols.	20
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods:

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

- Raj Kamal, (2019), *Internet of Things Architecture and Design Principle*‖, 4th Reprint, McGraw Hill Education.

Reference Books

- Vijay Madisetti and Arshdeep Bahga, (2014), *Internet of Things (A Hands-on-Approach),* 1st Edition, VPT
- Margolis, Michael (2011) Arduino Cookbook: Receipestobegin, *Expand and Enhance Your Projects*. O'Reilly Media Inc.
- Monk, Simon. Raspberry Pi (2016) *Cookbook: Software and hardware problems and Solutions.* O'Reilly Media Inc.

Web References

- https://onlinecourses.swayam2.ac.in/aic20_sp06/preview
- https://onlinecourses.swayam2.ac.in/arp19_ap79/preview

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT6E3			Title	Batch:	2021 - 2024
				Major Elective - II Block Chain Technology	Semester:	VI
Lecture Hrs/Week:	6	Tutorial Hrs./ Sem.	-		Credits:	4

Course Objective

To understand the fundamentals of block chain and cryptocurrency, influence and role of block chain in various fields.

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 the fundamentals of blockchain technology and crypto currency	K1
CO2	To understand the mining mechanism in blockchain.	K2
CO3	To apply and identify security measures, and various types of services that allow people to trade and transact with bitcoin.	K3
CO4	To analyze security, privacy, and efficiency of a given Blockchain system.	K4
CO5	To explain the Blockchain technology in various fields.	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Introduction to Blockchain**: The big picture of the industry – size, growth, structure, players. Bitcoin versus Cryptocurrencies versus Blockchain - Distributed Ledger Technology (DLT). Strategic analysis of the space – Blockchain platforms, regulators, application providers. The major application: currency, identity, chain of custody.	18
Unit II	**Network and Security:** Advantage over conventional distributed database, Blockchain Network, Mining Mechanism, Distributed Consensus, Blockchain 1.0, 2.0 and 3.0 – transition, advancements and features. Privacy, Security issues in Blockchain.	19
Unit III	**Cryptocurrency:** Cryptocurrency - History, Distributed Ledger, Bitcoin protocols -Symmetric-key cryptography - Public-key cryptography - Digital Signatures - High and Low trust societies - Types of Trust model: Peer-to-Peer, Leviathan, and Intermediary. Application of Cryptography to Blockchain.	18
Unit IV	**Cryptocurrency Regulation:** Cryptocurrency Regulation - Stakeholders, Roots of Bit coin, Legal views - exchange of cryptocurrency - Black Market - Global Economy. Crypto-economics – assets, supply and demand, inflation and deflation – Regulation.	18
Unit V	**Challenges in Block Chain:** Opportunities and challenges in Block Chain – Application of block chain: Industry 4.0 – machine to machine communication – Data management in industry 4.0 – future prospects. Block chain in Health 4.0 - Blockchain properties - Healthcare Costs - Healthcare Quality - Healthcare Value - Challenges for using blockchain for healthcare data.	16
	Total Contact Hrs.	90

Pedagogy

Digital Presentation, Chalk and talk, Flipped class.

Assessment Methods

Seminar, Assignment, Group task.

Text Books

- Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, (2016), "*Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction*", Princeton University Press.
- Antonopoulos, "*Mastering Bitcoin: Unlocking Digital Cryptocurrencies*" (2014), 1st Edition, O'Reilly Media.

Reference Books

- Satoshi Nakamoto, "*Bitcoin: A Peer-to-Peer Electronic Cash System*" (2008), SSRN electronic Journal.
- Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh, (2020), "*Blockchain Technology for Industry 4.0*", Springer.

Web References

- https://www.slideshare.net/Mithileysh/blockchain-technology-181440314
- https://www.slideshare.net/asrithak/blockchain-technology-ppt

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title :	Information Technology	
Course Code:	21UIT6E4			Title:	Batch :	2021 - 2024
				Major Elective – III	Semester :	VI
Lecture Hrs./Week:	6	Tutorial Hrs./Sem.	-	Mobile Computing	Credits :	4

Course Objective

Understand the various concepts and techniques of WAP, GSM, CDMA, 2G, 3G, 4G etc...

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 the various networks, standards, communication medium, Spread spectrum techniques.	K1
CO2	To Understand the basic concepts of wireless networks.	K2
CO3	To deploy the mobile applications to the devices.	K3
CO4	To analyze the various wireless networks technologies.	K4
CO5	To evaluate the importance of mobile communications.	K5

Mapping

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

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	17
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.	17
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 – WiFi vs. 3G. **4G & 5G:** Introduction - Architecture.	20
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD/ Roll Play /APS)

Text Book

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

Reference Books

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

Web References

- https://www.tutorialspoint.com/mobile_computing/index.htm
- https://www.javatpoint.com/mobile-computing

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Bachelor of Information Technology	
Course Code:	21UIT6E5			**Title**	**Batch:**	2021 - 2024
				Major Elective - III Computer Graphics	**Semester:**	VI
Lecture Hrs./Week	6	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

To offer programming ability on graphics, clear view on graphics functions, output devices, 3D and 2D transformations etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To remember basic graphics systems	K1
CO2	To understand various graphical algorithms	K2
CO3	To implement two, three dimensional and clipping algorithms	K3
CO4	To sort of visible surface detection methods	K4
CO5	To influence color models in graphics programming	K5

Mapping

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

Units	Content	Hrs.
Unit I	**Overview of Graphics Systems:** Video Display Devices, Refresh Cathode ray tubes, Raster Scan displays, Random Scan Displays, Color CRT monitors, Direct view storage tubes, Flat panel Displays, 3-Dimentional viewing devices, Stereoscopic and Virtual Reality systems, Raster Scan Systems, Random Scan Systems -,Input Devices, Graphics software.	18
Unit II	**Output Primitives:** Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes– Character Attributes.	18
Unit III	**2D Geometric Transformations:** Basic Transformations – Matrix Representations – Composite Transformations– Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - 2D Viewing Functions – Clipping Operations – Point, Line: Cohen-Sutherland Line Clipping, Liang- Barsky Line Clipping, Polygon, Curve, Text and Exterior clippings.	18
Unit IV	**3D Concepts**: 3D Display Methods – 3D Graphics Packages. **3D Object Representations**: Polygon Surfaces – Curved lines and Surfaces – Blobby Objects. **3D Geometric Modeling and Transformations**: Translation – Rotation – Scaling – Other Transformations.	16
Unit V	**Visible-Surface Detection Methods:** Classification of Visible-Surface algorithms – Depth-Buffer Method – Scan- Line Method – Depth-Sorting Method – BSP-Tree Method – Area-Subdivision Method – Octree Methods – Ray-casting Methods – Curved surfaces – Wire frame Methods – Visibility-Detection functions. **Illumination Models:** Standard Primaries and the Chromaticity Diagram – Intuitive color Concepts – RGB Color Model – YIQ Color Model – CMY Color Model – HLS Color Model- Color selection ad Applications.	20
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(GD)

Text Book

- Donald Hearn, Pauline Baker, Warren Carithers (2016). COMPUTER GRAPHICS. 4th Edition. Pearson Education, Indian reprint.

Reference Books

- William M. Newman & Robert F. Sproull. (2007). *PRINCIPLES OF INTERACTIVE COMPUTER GRAPHICS.* TMH.
- Malay K. Pakhira (2008), *COMPUTER GRAPHICS, MULTIMEDIA AND ANIMATION*, New Delhi, Prentice Hall of India Pvt. Ltd.

Web References

- https://www.tutorialspoint.com/computer_graphics/2d_transformation.htm
- https://www.javatpoint.com/computer-graphics-3d-transformations
- https://www.youtube.com/watch?v=TYqzwU8pW7s

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT6E6			**Title**	**Batch:**	2021 - 2024
				Major Elective – III Cloud Computing	**Semester:**	VI
Lecture Hrs./Week	6	**Tutorial Hrs./Sem.**	-		**Credits:**	4

Course Objective

To understand various concepts of cloud computing and learn types of cloud services, usage of cloud etc.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To recollect cloud networking concepts	K1
CO2	To understand and familiar with the basic concepts of cloud computing and python	K2
CO3	To apply the terminologies in designing cloud based applications	K3
CO4	To figure out security issues in cloud computing	K4
CO5	To judge the pros and cons of various types of cloud providers	K5

Mapping

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

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.	17
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.	17
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.	19
Unit V	**Python Basics:** Introduction – Installation – Data types and Data structures –Control flow – Functions – Modules – Packages – File handling – Date/Time – Operations – Classes. **Python for Cloud:** Amazon web services – Google Platform – Windows Azure – MapReduce – Packages – Web Application Framework – Designing a RESTful Web API.	19
	Total Contact Hrs.	90

Pedagogy

Direct Instruction, Digital Presentation, Flipped Class

Assessment Methods

Test, Seminar, Quiz, Assignments, Group Task.(Roll Play)

Text Book

- Arshdeep Bahga, Vijay Madisetti. (2016). Cloud Computing – A Hands-on Approach. Universities Press Pvt. Ltd.

Reference Books

- Anthony T.Velte, Toby J.Velte, Robert Elsenpeter. (2013). Cloud Computing - A Practical Approach. Mc Graw Hill Publications. Fourteenth reprint.
- Michael Miller. (2009). Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing.

Web References

- https://www.youtube.com/watch?v=RziNWUlBPPM
- https://www.youtube.com/watch?v=rjY59WLMK2o

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT622			Title	Batch:	2021 - 2024
				Lab. IX – Python Programming	Semester:	VI
Practical Hrs./Week	5	Tutorial Hrs./Sem.	-		Credits:	3

Course Objective

To apply various concepts like string handling, mathematical functions, control structure and files in Python language.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy the list and tuple using control structures	K3
CO2	To examine need of files and its related functions	K4
CO3	To choose various packages suitable for the application	K5
CO4	To verify the usage of various in built functions and packages	K5
CO5	To create an application using python as a developing tool	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST 1. Develop a program to read a number n and print an inverted star pattern of the desired size. 2. Develop a program to search the number of times a particular number occurs in a list. 3. Develop a program to read a list of words and return the length of the longest one 4. Develop a program to take a string and replace every blank space with a hyphen 5, Develop a program to check if a given key exists in a dictionary or not 6. Create a program to check common letters in the two input strings 7. Apply recursion to reverse a string 8. Develop a program to read the contents of a file. 9. Assess the area of a rectangle using classes. 10. Test for reading a string from the user and appends it into a file.	75
Total Contact Hrs.	75

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments, Group Task(GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT623			Title	Batch:	2021 - 2024
				Project	Semester:	VI
Practical Hrs./Week:	4	Tutorial Hrs./Sem.	30		Credits:	4

Course Objective

To learn depth knowledge about tools used in software application development, web designing & web technologies and understand the usage of front end and back end tools.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To create database, tables, coding	K6
CO2	To apply the coding into System side	K3
CO3	To apply various tools in real time Applications/Software	K3
CO4	To analyze the system requirements of the Application /Software	K4
CO5	To verify the developed Application with the customer requirements	K5
CO6	Evaluate the Applications/Softwares through the stake holder	K6

Mapping

PO/PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	H	M	H	H	H	M	H	M	H	M	M	M
CO2	H	M	H	H	H	M	H	M	M	H	M	M
CO3	H	H	M	M	H	M	H	M	M	H	M	M
CO4	H	H	H	H	H	H	H	H	H	H	H	M
CO5	H	H	H	M	H	M	H	H	H	H	H	H
CO6	H	H	H	H	H	H	H	M	H	H	H	H

INFORMATION TECHNOLOGY 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

Modules of the Project

Input Design Format

Output Design

Table Design

Supporting Diagrams (ER/DFD/Use Case)

4 Implementation and Testing

Coding Methods

Testing Approach

Implementation and Maintenance

5 Project Evaluation

Project Outcome

Limitation of the Project

Further Scope of the Project

6 Conclusion

7 Appendix

Source Code

Screenshots and Reports

8 References

Size of the Project

Content	Hrs. P+T
Using only the following Elective Tools **Front end, Multimedia & Web based tools:** 1. Java & Advanced Java 2. Angular & Javascript 3. PHP 4. Python 5. C#.NET & VB.NET 6. HTML 5.0 7. Flash 8. R - Programming **Back end tools:** 1. MySQL 2. Oracle 8i & above 3. MS Access 2007 4. SQL Server 2000 and Above **Note:** Project Internship (upto System Study) going to fourth semester Vacation and submit their report on fifth semester	30+30
Total Contact Hrs.	60

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

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Assignments, Reviews, Group Task (GD/APS)

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

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			**Programme Title:**	Information Technology	
Course Code:	21UIT6AL			**Title**	**Batch:**	2021 - 2024
				R Programming Lab.	**Semester:**	VI
Practical Hrs./Week	Self-Study	**Tutorial Hrs./Sem.**	-		**Credits:**	3*

Course Objective

To apply various concepts of R language.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy programs using control structures	K3
CO2	To analyze the vector, files and data frame usage in program generation	K4
CO3	To select appropriate tools for data analysis in R	K5
CO4	To verify the usage of data frame usage in program generation	K5
CO5	To create applications using R in built packages and functions	K6

Mapping

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

Content

SAMPLE PROGRAM LIST

1. Develop a Program to print the numbers from 1 to 30 and print "Fizz" for multiples of 3, print "Buzz" for multiples of 5, and print "FizzBuzz" for multiples of both.
2. Develop a Program to get all prime numbers up to a given number
3. Develop a Program to find the maximum and the minimum value of a given vector
4. Develop a Program to read the .csv file and display the content
5. Develop a Program to create a simple bar plot of five subjects marks.
6. Develop a Program to create a Dataframes which contain details of 5 employees and display the details.
7. Develop a Program to list containing a vector, a matrix and a list and give names to the elements in the list
8. Develop a Program to create a matrix taking a given vector of numbers as input. Display the matrix
9. Develop a Program to get the unique elements of a given string and unique numbers of vector.
10. Develop a Program to add new row(s) to an existing data frame
11. Develop a Program to replace NA values with 3 in a given data frame
12. Develop a Program to extract specific column from a data frame using column name

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments ,Group Task (GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: C.R. Durga devi Signature:	Name: K.Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name:Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil., Head,Dept. of Information Technology, NGM College (Autonomous), POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. IT			Programme Title:	Information Technology	
Course Code:	21UIT6VA			Title	Batch:	2021-2024
					Semester:	VI
Lecture Hrs./Week	-	Tutorial Hrs./Sem.	-	Basics of Block Chain Technology	Credits:	2*

Course Objective

On successful completion of this subject the students can understand various concepts of Block chain, Crypto currency, Digital Signature, Bitcoins etc.

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 the fundamentals of block chain technology and crypto currency.	K1
CO2	To understand the mining mechanism in block chain.	K2
CO3	To apply and identify security measures, and various types of services that allow people to trade and transact with bitcoin.	K3
CO4	To analyze security, privacy, and efficiency of a given Blockchain system.	K4
CO5	To Assess the concepts of Blockchain, Cryptocurrency, Bitcoin and Digital Signature.	K5

Mapping

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

Units	Content	Hrs.
Unit I	Block Chain – Introduction – Problems with centralized System – Overview – Fundamentals. Bitcoin- Introduction – Transaction life cycle - Block chain2.0 – Smart Contracts. Block in Block chain Architecture - Distributed Consensus - Economics behind Block Chain Consensus.	10
Unit II	The Chain and the Longest chain – Cryptocurrency to Block chain 2.0 – Permissioned model of Block chain. Cryptographic hash function – Properties – Hash pointer and Merkle tree.	8
Unit III	Digital Signature - Public Key Cryptography - A basic cryptocurrency - Creation of coins - Payments and double spending - FORTH – the precursor for Bitcoin scripting - Bitcoin Scripts - Bitcoin P2P Network - Transaction in Bitcoin Network - Block Mining - Block propagation and block relay - Why Consensus - Distributed consensus in open environments - Consensus in a Bitcoin network.	12
	Total Contact Hrs.	30

Pedagogy

Digital Presentation, Chalk and talk, Flipped class.

Assessment Methods

Seminar, Quiz, Assignments.

Text Books

- Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder, (2016), "*Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction*", Princeton University Press.
- Antonopoulos, (2014), "*Mastering Bitcoin: Unlocking Digital Crypto currencies*", O'Reilly Media Inc.

Reference Books

- Satoshi Nakamoto, "*Bitcoin: A Peer-to-Peer Electronic Cash System*".
- Rodrigo da Rosa Righi, Antonio Marcos Alberti, Madhusudan Singh, (2020), "*Blockchain Technology for Industry 4.0*", Springer.

Web References

- https://www.slideshare.net/Mithileysh/blockchain-technology-181440314
- https://www.slideshare.net/asrithak/blockchain-technology-ppt

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: R. Sekar Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head, Dept. of Information Technology
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT6S1			Title	Batch:	2021 - 2024
				Skill Based Elective II - Lab. DTP software (Photoshop)	Semester:	VI
Practical Hrs./Week	3	Tutorial Hrs./Sem.	-		Credits:	3

Course Objective

To learn, apply and create various editing techniques of Photoshop.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy basic tools for designing photos.	K3
CO2	To examine various editing tools.	K4
CO3	To choose manipulation of text with photos.	K5
CO4	To verify filters and layers	K5
CO5	To create pdf document	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST 1. Perform Scanning and simple image editing. 2. Apply Color change, image extraction and merging of images. 3. Create Smoothening of sharp edges. 4. Draw and Paint with Colors. 5. Placing a Photo inside Text. 6. Remove red eyes from a photo. 7. Apply Filters and layers. 8. Create a PDF-document from MS-Office-programs.	45
Total Contact Hrs.	45

Pedagogy

Direct Instruction, Digital Presentation

Assessment Methods

Test, Assignments ,Group Task (GD)

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K.VIJAYAKUMAR, MCA.,M.Phil.,
Head,Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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

Programme Code:	B.Sc. - IT			Programme Title:	Information Technology	
Course Code:	21UIT6S2			Title	Batch:	2021 - 2024
				Skill Based Elective II. - Lab. DTP Software (CorelDraw)	Semester:	VI
Practical Hrs./Week	3	Tutorial Hrs./Sem.	-		Credits:	3

Course Objective

To learn, apply and create various designing concepts of CorelDraw.

Course Outcomes

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

CO Number	CO Statement	Knowledge Level
CO1	To deploy basic geometric shapes	K3
CO2	To examine various line tools.	K4
CO3	To choose manipulation of images	K5
CO4	To verify filters options	K5
CO5	To create layers	K6

Mapping

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

Content	Hrs.
SAMPLE PROGRAM LIST 1. Draw the Basic geometric shapes using tools. 2. Draw different type of lines using line tools. 3. Create an image and manipulate it. 4. Perform Image extraction and merging of images 5. Animate text using Text tool. 6. Create a table then insert Data and highlight it. 7. Create image and insert Text on image. 8. Draw sunflower and apply editing tools. 9. Perform image Filter operations. 10. Creating layer and modify layer properties.	30
Total Contact Hrs.	30

Web References

- https://www.tutorialspoint.com/listtutorial/Corel-Draw-Tutorial---New-Product-Flyer/4249
- https://www.youtube.com/watch?v=TpbFHCEvnpY
- https://www.youtube.com/watch?v=w9c8OuJOADo
- https://www.youtube.com/watch?v=TKDuNJxaeRE

Course Designed by	Verified by HOD	Checked by	Approved by
Name and Signature	Name and Signature	CDC	COE
Name: B. Kalaiselvi Signature:	Name: K. Vijayakumar Signature:	Name: Mr. K. Srinivasan Signature:	Name: Dr. R. Manickachezian Signature:

K. VIJAYAKUMAR, MCA., M.Phil.,
Head, Dept. of Information Technology,
NGM College (Autonomous),
POLLACHI - 642 001.

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

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