

BACHELOR OF COMPUTER APPLICATIONS

Syllabus

AFFILIATED COLLEGES

Program Code: 22J

2020 – 2021 onwards



BHARATHIAR UNIVERSITY

(A State University, Accredited with “A” Grade by NAAC,
Ranked 13th among Indian Universities by MHRD-NIRF,
World Ranking : Times - 801-1000, Shanghai - 901-1000, URAP - 982)
Coimbatore - 641 046, Tamil Nadu, India

Program Educational Objectives (PEOs)	
The BCA program describe accomplishments that graduates are expected to attain within five to seven years after graduation	
PEO 1	To impart advance knowledge about various sub-domains related to the field of computer applications
PEO 2	To provide the strong character to uphold the spiritual and cultural values of our country to make students acceptable to both industries and higher education.
PEO 3	Graduates will be capable of attaining higher position in their professional carrier, capable to do quality research by strengthening their mathematical, scientific and basic engineering fundamentals.
PEO 4	Graduate will be capable of adopting the changing technologies, tools, and industrial environment.
PEO 5	Graduates will promote collaborative learning and spirit of team work through multidisciplinary projects and diverse professional activities.



Program Specific Outcomes (PSOs)	
After the successful completion of BCA program, the students are expected to	
PSO 1	Develop proficiency in problem solving and logical thinking skill.
PSO 2	To impart the knowledge of programming languages, web designing, networking and Software development cycle.
PSO 3	Enrich the communicative ability to present orally throughout all the stages of Software development process
PSO 4	Learn latest development and technologies in IT and Communications system.
PSO 5	Implementation of professional engineering solutions for the betterment of society keeping the environmental context in mind, be aware of professional ethics and be able to communicate effectively.



Program Outcomes (POs)	
On successful completion of the BCA program	
PO1	Disciplinary knowledge: Capable to apply the knowledge of mathematics, algorithmic principles and computing fundamentals in the modeling and design of computer based systems of varying complexity.
PO2	Scientific reasoning/ Problem analysis: Ability to critically analyze, categorizes, formulate and solve the problems that emerges in the field of computer science.
PO3	Problem solving: Able to provide software solutions for complex scientific and business related problems or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal and environmental considerations.
PO4	Environment and sustainability: Understand the impact of software solutions in environmental and societal context and strive for sustainable development.
PO5	Modern tool usage: Use contemporary techniques, skills and tools necessary for integrated solutions.
PO6	Ethics: Function effectively with social, cultural and ethical responsibility as an individual or as a team member with positive attitude.
PO7	Cooperation / Team Work: Function effectively as member or leader on multidisciplinary teams to accomplish a common objective.
PO8	Communication Skills: An ability to communicate effectively with diverse types of audience and also able to prepare and present technical documents to different groups.
PO9	Self-directed and Life-long Learning: Graduates will recognize the need for self-motivation to engage in lifelong learning to be in par with changing technology.
PO10	Enhance the research culture and uphold the scientific integrity and objectivity

BHARATHIAR UNIVERSITY: : COIMBATORE 641 046

B.C.A Curriculum

(For the students admitted during the academic year 2020 – 21 onwards)

Course Code	Title of the Course	Credits	Hours		Maximum Marks		
			Theory	Practical	CIA	ESE	Total
FIRST SEMESTER							
	Language – I	4	6		25	75	100
	English – I	4	6		25	75	100
	Core 1: Computing Fundamentals and C Programming	4	4		25	75	100
	Core 2: Digital Fundamentals and Computer Architecture	4	4		25	75	100
	Core Lab 1: Programming Lab – C	4		3	40	60	100
	Allied 1: Mathematical Structures for Computer Science	4	5		25	75	100
	Environmental Studies #	2	2		-	50	50
Total		26	27	3	165	485	650
SECOND SEMESTER							
	Language – II	4	6		25	75	100
	English – II	4	6		25	75	100
	Core 3: C++ Programming	4	5		25	75	100
	Core Lab 2: Programming Lab – C++	4		4	40	60	100
	Core Lab 3: Internet Basics	2		2	20	30	50
	Allied 2: Discrete Mathematics	4	5		25	75	100
	Value Education – Human Rights #	2	2		-	50	50
Total		24	24	6	160	440	600
THIRD SEMESTER							
	Core 4: Data Structures	4	6		25	75	100
	Core 5: Java Programming	4	6		25	75	100
	Core Lab 4: Programming Lab – Java	4		5	25	75	100
	Allied 3: Computer Based Optimization Techniques	4	6		25	75	100
	Skill based Subject 1 : Web Programming	3	5		20	55	75
	Tamil @/ Advanced Tamil (OR) Non-major elective-1 (Yoga for Human Excellence)# / Women’s Rights#	2	2		-	50	50
Total		21	25	5	120	405	525

FOURTH SEMESTER							
	Core 6: System Software and Operating System	4	6		25	75	100
	Core 7: Linux and Shell Programming	4	6		25	75	100
	Core Lab 5: Linux and Shell Programming Lab	4		6	40	60	100
	Allied 4: Business Accounting	4	6		25	75	100
	Skill based subject 2 (lab) : Web Programming - Lab	3	4		30	45	75
	Tamil @/ Advanced Tamil (OR) Non-major elective-II (General Awareness) #	2	2		-	50	50
	Total	21	24	6	145	380	525
FIFTH SEMESTER							
	Core 8: RDBMS & Oracle	4	6		25	75	100
	Core 9: Visual Basic	4	6		25	75	100
	Core Lab 6: Programming Lab – VB & Oracle	4		6	40	60	100
	Elective-I Introduction to Compiler Design / PHP & Scripting Language / PYTHON Programming	4	6		25	75	100
	Skill based Subject 3: CASE Tools Concepts and Applications	3	6		20	55	75
	Total	19	24	6	135	340	475
SIXTH SEMESTER							
	Core 10: Graphics & Multimedia	4	5		25	75	100
	Core 11: Project Work Lab %%	8	5		-	200	200
	Core Lab 7: Programming Lab – Graphics & Multimedia	4		6	40	60	100
	Elective-II : Computer Networks / Dot Net programming / Distributed Computing	4	5		25	75	100
	Elective-III : Internet of Things (IoT) / Web Services / Software Testing	4	5		25	75	100
	Skill based Subject 4 (lab) : CASE Tools Lab	3		4	30	45	75
	Extension Activities	2			50	-	50
	Total	29	20	10	195	530	725
	Grand Total	140	144	36	920	2580	3500
ONLINE COURSES							



First Semester

Course code	11T	TITLE OF THE COURSE	L	T	P	C
Core/Elective/Supportive		PART - I TAMIL – PAPER -1	3			3
Pre-requisite			Syllabus Version		2020-21	
Course Objectives:						
The main objectives of this course are to:						
ஆளுமை மேம்பாடு மற்றும் மொழித்திறனை வளர்த்தல் தன்னம்பிக்கையைத் தாண்டதல்						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	புதுக்கவிதையின் மூலம் வாழ்வியல் விழுமியங்களை உணர்ந்து கொள்ளுதல்.					K1, K2
2	சிறந்த மற்றும் வாழும் கவிஞர்களை அறிந்து கொள்ளுதல்.					K2, K3
3	சிறந்த படைப்பாளர்களின் சிறுகதையில் வெளிப்படும் சமூகச்சிந்தனைகளை அறிந்து விழிப்புணர்வைப் பெறுதல்					K3
4	தற்கால இலக்கியங்களான புதுக்கவிதை> சிறுகதை தோன்றி வளர்ந்த பின்புலத்தையறிதல். மொழியைப் பிழையின்றி பேச எழுத கற்கத்தேவையான தமிழ் இலக்கணத்தின் இன்றியமையாமையை உணர்தல்					K1, K3
5	நடைமுறை வாழ்வியலுக்குத் தேவைப்படும், ஆங்கிலக் கடிதத்தை தமிழாக்கம் செய்தலுக்கான பயிற்சி அடைதல்.					K2, K3
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1	செய்யுள்				20 -- hours	
1.	பாரதியார்	:	எங்கள் தாய்			
2.	பாரதிதாசன்	:	தமிழின் இனிமை			
3.	கண்ணதாசன்	:	ஒரு கந்தல் துணியின் கதை			
4.	சிற்பி பாலசுப்பிரமணியம்	:	ஓடு.ஓடு.சங்கிலி			
5.	தமிழ்ஒளி	:	வருங்கால மனிதன் வருக!			
6.	வைரமுத்து	:	இது வித்தியமான தாலாட்டு			
Unit:2	செய்யுள்				20 -- hours	
1.	பச்சியப்பன்	:	காலம் பிரசவித்த மற்றொரு காலம்			
2.	பழநி பாரதி	:	காடு			
3.	தேவயாணி	:	இயற்கைக்குத் திரும்புவோம்			
4..	செல்வகுமாரி	:	இலக்கியத்தில் பெண்கள்			

5. அறிவுமதி	: ஹைக்கூக் கவிதைகள்
6. நாட்டுப்புறப்பாடல்கள்	: தாலாட்டு, தொழிற் பாடல்கள்
Unit:3	சிறுகதை
	20-- hours
தேர்ந்தெடுக்கப்பட்ட சிறுகதைகள்- நியூ செஞ்சுரி புக் ஹவுஸ் வெளியீடு, சென்னை. அலைபேசி எண்.9047571857	
Unit:4	இலக்கிய வரலாறு
	10 - hours
1. புதுக்கவிதையின் தோற்றமும் வளர்ச்சியும் 2. ஹைக்கூக் கவிதைகள் 3. பாரதி, பாரதிதாசன் இலக்கியப் பணி 4. சிறுகதையின் தோற்றமும் வளர்ச்சியும்	
Unit:5	இலக்கணம்
	20 -- hours
1. வல்லினம் மிகுமிடம் 2. வல்லினம் மிகாவிடம் 3. தொடரில் வழுவச் சொற்களை நீக்கி எழுதுதல் 4. ஒருமை பன்மை மயக்கம் நீக்கி எழுதுதல் 5. மொழிபெயர்ப்புப் பகுதி - ஆங்கிலத்திலிருந்து தமிழில் மொழிபெயர்த்தல் பொதுப்பகுதி , அலுவலகப்பகுதி	
Course Designed By: முனைவர் ஆர்.நிர்மலா தேவி	

French 2020-21 onwards - Affiliated Colleges - Annexure No. 11A
SCAA DATED: 23.09.2020

First Semester – Paper I

Course: French 1

Course Code:

Credits: 4

Hours: 90

Course Objectives:

To understand, speak, read and write simple, standard speech which is very slow and is carefully articulated and can recognize familiar words and very basic phrases concerning themselves, their family and immediate concrete surroundings when people speak slowly and clearly

Course Outcomes:

S.No	Course Outcome	Blooms Level
CO1	Comprehend basic vocabulary	K1
CO2	Understand basic syntax and grammar patterns	K2
CO3	Converse slowly in known situations	K3
CO4	Translate small basic sentences	K4

Syllabus:

Part 1 - French 1	
Unit No.	Topics
1	Etape 0
	Etape 1 (Lecons 1 - 3)
2	Etape 2 (Lecons 1 - 3)
3	Etape 3 - Leçons 1 - 2
4	Etape 3 – Leçon 3
	Etape 4 – Leçon 1
5	Etape 4 – Leçons 2 - 3
Etapes 0 to 4, Pages 11 to 62 Page 5 of 17	

French 2020-21 onwards - Affiliated Colleges - Annexure No. 11A
SCAA DATED: 23.09.2020

Text Book Prescribed: Adomania 1 – Methode de francais

Authors: Céline Himber, Corina Brillant, Sophie Erlich

Publisher: HACHETTE FLE

Available at: GOYAL Publishers and Distributors Pvt Ltd, New Delhi (9810322459)

Reference: Latitudes 1

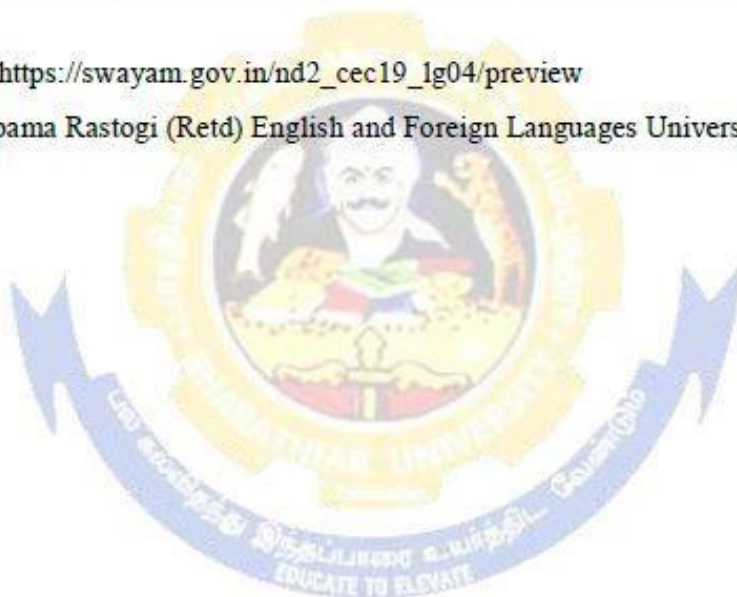
Author: Yves Loiseau, Régine Merieux

Publisher: French and European Publications Inc

Available at: GOYAL publishers and distributors Pvt Ltd, New Delhi (9810322459)

SWAYAM : https://swayam.gov.in/nd2_cec19_1g04/preview

by Prof. Nirupama Rastogi (Retd) English and Foreign Languages University, Hyderabad



Course code	HD1	HINDI PAPER -I	L	T	P	C
Part-I		PART I	3	-	-	3
Pre-requisite			Syllabus Version			2020-21

COURSE OBJECTIVE:

- Improves grammatical knowledge
- Will continue to read and learn about articles and think about them
- It is possible to read and understand short stories and understand the thoughts and life of the people of this state
- Translation knowledge and the ability to read and analyze a message are also available

	PART I HINDI PAPER I	
Unit No.		HOURS
I	PROSE : NUTHAN GADYA SANGRAH Lesson 1 – Bharathiya Sanskurthi - Dr.Rajendra Prasad Lesson 3 – Razia - Ramaviksha Benipuri Lesson 4 – Makreal - Yespal Lesson 5 – Bahtha Pani Nirmala - 'AGEYA' Lesson 6 – Rashtrapitha Mahathma Gandhi - Mukthibodh Lesson 9 – Ninda Ras - Harishankar Parsayi.	18
II	NON DETAILED TEXT SHORT STORIES: KAHANI KUNJ 1. Pareksha – Premchand 2. Mamtha - Jayashankar Prasad 3. Apna paraya - Jaynendrakumar 4. Admi ka bachcha - Yespal 5. Bolaram ka jeev - Harishankar Parsayi 6. Vapasi - Mannu Bhandari	18
III	GRAMMAR : SHABDHA VICHAR ONLY (NOUN, PRONOUN, ADJECTIVE, VERB, TENSE, CASE ENDINGS) Theoretical & Applied.	14
IV	TRANSLATION : English – Hindi only. ANUVADH ABHYAS – III (1-15 lessons only)	12
V	COMPREHENSION: 1 Passage from ANUVADH ABHYAS–III (16-30)	10
	TOTAL	72

Teaching methods:

Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Book:

Nuthan gadya sangrah, 2009, editor : Jayaprakash, publisher : Sumitra prakashan sumitras, 16/4, hastings road, Allahabad – 211001.

Kahani kunj, 2011, Editor :V.P. Amithab.Publisher : Govind Prakashan Sadhar Bagaar, Mathura, Uttar Pradesh,–281 001

Reference Books:

NAVEEN HINDI Vyakaran, 2002, Dakshin Bharat Hindi Prachar Sabha, Chennai – 600 017

Web Link ●

<https://hi.wikipedia.org/wiki/>
<https://en.wikipedia.org/wiki/Premchand>
<http://hindigrammar.in/>

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	M	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	M	S	M	L	L	L	L

COURSE PREPARED by	Dr.R.RAMESH KUMAR rameshjee67@gmail.com
-------------------------------	--

BHARATHIAR UNIVERSITY : COIMBATORE – 641 046
Part I – Malayalam Language
For Under-graduate Degree Programme
(For the students admitted during 2020-2021 onwards)

Programme Educational Objectives (PEO)
Undergraduate Programme of Part I Malayalam will be

PROGRAMME OUTCOME (PEO) :

- **PO1:** Basic knowledge of Malayalam language will be improved.
- **PO2:** Knowledge of glossaries will increase.
- **PO3:** Malayalam language expression will rise.
- **PO4:** Learners will enrich their Malayalam Literature
- **PO5:** The desire to read literature, such as the essay on a poem, develops.
- **PO6:** Knowledge such as reading, understanding and critique of literature will improve
- **PO7:** The knowledge of expressing one's opinion in Malayalam will improve.
- **PO8:** Communication knowledge will increase.
- **PO9:** Develop a skill in translation.
- **PO10:** They will learn more about our Indian Culture and the values of Human being.

PROGRAM SPECIFIC OUTCOME (PSO):

PSO1: Develop an interest in the appreciation of literature.

PSO2: Discuss and respond to content of a reading passage.

PSO3: Learning the literacy knowledge of Malayalam specially reading and writing .

PSO4: Learning the literary knowledge specially reading and understanding of Malayalam short Stories

PSO5: Learning the history of Malayalam literature.

PSO6: The ability to translate from Malayalam to English and from English to Malayalam will be improved.

PSO7: Develop a skill in handling literature

Course code	MAL1	PART I MALAYALAM PAPER I	L	T	P	C
			3	-	-	3
Pre-requisite			Syllabus Version			2020-21

COURSE OBJECTIVE:

- Improves grammatical knowledge
- Will continue to read and learn about articles and think about them
- It is possible to read and understand short stories and understand the thoughts and life of the people of this state
- Translation knowledge and the ability to read and analyze a message are also available
- Translation knowledge and the ability to read and analyze a message are also

S.No	COURSE OUTCOME	
CO1	Understand the text styles and grammatical elements	K1
CO2	Discuss the content of a reading passage	K1
CO3	Develop an interest in the appreciation of short stories	K2
CO4	Comprehend the grammatical structures and sentence making	K3
CO5	Understand the language and developing English to Malayalam translation skill	K4

	PART I MALAYALAM PAPER I	
Unit No.		HOURS
I	Novel - PathummayudeAadu - Vaikam Muhammed Basheerr	18
II	Novel- - PathummayudeAadu - Vaikam Muhammed Basheerr	18
III	Short Story - EntePriyappetaKadhakal – Akbar Kakkattil)	14
IV	Short Story - EntePriyappetaKadhakal – Akbar Kakkattil)	12
V	Composition & Translation(English to Malayalam)	10
	TOTAL	72

Teaching methods:

Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Books:

1. Novel- PathummayudeAadu - Vaikam Muhammed Basheer
(D.C.Books, Kottayam, Kerala)
2. Short Story - EntePriyappetaKadhakal – Akbar Kakkattil
(D.C. Books, Kottayam, Kerala)
3. Expansion of ideas, General Eassay and Translation. (A simplepassage)

Reference Books:

- 1.Malayala Novel SahithyaCharitram-K.M.Tharakan (N.B.S.Kottayam)
- 2.Chelukatha Innale Innu-M.Achuyuthan (D.C Books, Kottayam)
- 3.Sahithya CharitramPrasthanangalilude- Dr.K.M George,
(D.C.Books Kottayam)
4. MalayalaSahithyavimarsam-Sukumar Azheekode (D.C.books)

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	M	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	M	S	M	L	L	L	L

COURSE PREPARED	Dr.Sujathabai (gopikailas@gmail.com) Dr.Pavithra (pavithramasngc@gmail.com) Ms.N.Rajani(rajanidevan1974@gmail.com)
----------------------------	---

Part II English 2020-21 onwards - Affiliated Colleges - Annexure No.6(b)
SCAA DATED: 23.09.2020

Course code	12E]	PART II – ENGLISH-I	L	T	P	C
PART II ENGLISH		COMMUNICATIVE ENGLISH	4	-	-	4
Pre-requisite		Basic knowledge of English language	Syllabus Version		2020-2021	
Course Objectives:						
The main objective of this course is to:						
1. Enable the students to communicate effectively and appropriate in day-today conversations.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	To understand basic language skills through listening and reading					K1
2	To understand basic English grammar and use effectively					K2, K3
3	To enhance word power to speak and write effectively					K3
4	To improve flawless writing and speaking in day to day situations					K4
5	To communicate effectively					K5
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1		-			20hours	
1. Listening and Speaking - Introducing self and others -Listening for specific information Pronunciation (without phonetic symbols) -Essentials of pronunciation - American and British pronunciation						
2. Reading and Writing -Reading short articles – newspaper reports / fact based articles i. Skimming and scanning ii. Diction and tone - iii. Identifying topic sentences Reading aloud: Reading an article/report - Journal (Diary) Writing						
3. Study Skills - 1						
a. Using dictionaries, encyclopaedias, thesaurus						
4. Grammar in Context: Naming and Describing • Nouns & Pronouns •Adjectives						

Part II English 2020-21 onwards - Affiliated Colleges - Annexure No.6(b)
SCAA DATED: 23.09.2020

Unit:2	-	20hours
1. LISTENING AND SPEAKING – a. Listening with a Purpose -b. Effective Listening c. Tonal Variation d. Listening for Information e. Asking for Information f. Giving Information and Writing 1. a. Strategies of Reading: Skimming and Scanning b. Types of Reading: Extensive and Intensive Reading c. Reading a prose passage d. Reading a poem e. Reading a short story 2.Paragraphs: Structure and Types a. What is a Paragraph? b. Paragraph structure c. Topic Sentence d. Unity e. Coherence f. Connections between Ideas: Using Transitional words and expressions g. Types of Paragraphs 3. Study Skills II: Using the Internet as a Resource a. Online search b. Know the keyword of India c. Refine your search d. Guidelines for using the Resources e. e-learning resources of Government f. Terms to know 4. Grammar in Context Involving Action-I a. Verbs b. Concord		
Unit:3	-	15hours
1. Listening and Speaking -Giving and following instructions -Asking for and giving directions -Continuing discussions with connecting ideas 2. Reading and writing -Reading feature articles (from newspapers and magazines) -Reading to identify point of view and perspective (opinion pieces, editorials etc.) -Descriptive writing – writing a short descriptive essay of two to three paragraphs. 3. Grammar in Context:-Involving Action :Verbals - Gerund, Participle, Infinitive • Modals		
Unit:4	-	16 hours
1. Listening and Speaking- a. Giving and responding to opinions 2. Reading and writing a. Note taking b. Narrative writing – writing narrative essays of two to three paragraphs 3. Grammar in Context: Tense • Present • Past • Future		
Unit:5	-	18 hours
1. Listening and Speaking a. Participating in a Group Discussion 2. Reading and writing - Reading diagrammatic information - interpretations maps, graphs and pie charts - Writing short essays using the language of comparison and contrast 3. Grammar in Context: Voice (showing the relationship between Tense and Voice)		

Part II English 2020-21 onwards - Affiliated Colleges - Annexure No.6(b)
SCAA DATED: 23.09.2020

Unit:6	Contemporary Issues	2 hours
	Total Lecture hours	75hours
Text Book(s)		
COMMUNICATIVE ENGLISH –TANSCHÉ		
Reference Books		
1		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://onlinecourses.nptel.ac.in/noc20_hs14/preview	
Course Designed By:		

Course code		Computing Fundamentals and C Programming	L	T	P	C
Core/Elective/Supportive		Core Paper: 1	4	0	0	4
Pre-requisite		Students should have basic Computer Knowledge	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To impart knowledge about Computer fundamentals						
2. To understand the concepts and techniques in C Programming						
3. To equip and indulge themselves in problem solving using C						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Learn about the Computer fundamentals and the Problem solving					K2
2	Understand the basic concepts of C programming					K2
3	Describe the reason why different decision making and loop constructs are available for iteration in C					K3
4	Demonstrate the concept of User defined functions , Recursions , Scope and Lifetime of Variables, Structures and Unions					K4
5	Develop C programs using pointers Arrays and file management					K3
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1		Fundamentals of Computers & Problem Solving in C	12 hours			
Fundamentals of Computers : Introduction – History of Computers-Generations of Computers-Classification of Computers-Basic Anatomy of a Computer System-Input Devices-Processor-Output Devices-Memory Management – Types of Software- Overview of Operating System-Programming Languages-Translator Programs-Problem Solving Techniques - Overview of C.						
Unit:2		Overview of C	15 hours			
Overview of C - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output.						
Unit:3		Decision Making , Looping and Arrays	15 hours			
Decision Making and Branching: Introduction – if, if...else, nesting of if ...else statements- else if ladder – The switch statement, The ?: Operator – The goto Statement. Decision Making and Looping: Introduction- The while statement- the do statement – the for statement-jumps in loops. Arrays – Character Arrays and Strings						
Unit:4		User-Defined Functions, Structures and Unions	15 hours			
User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of						

Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables- Multi file Programs. Structures and Unions		
Unit:5	Pointers & File Management	15 hours
Pointers: Introduction-Understanding pointers -Accessing the address of a variable Declaration and Initialization of pointer Variable – Accessing a variable through its pointer Chain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function Arguments Functions returning pointers – Pointers to Functions – Pointers and Structures. File Management in C.		
Unit:6	Contemporary Issues	3 hours
Problem Solving through C Programming - Edureka		
	Total Lecture hours	75 hours
Text Book(s)		
1	E Balagurusamy: Computing Fundamentals & C Programming – Tata McGraw-Hill, Second Reprint 2008	
Reference Books		
1	Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson, 2002.	
2	Henry Mullish & Hubert L.Cooper: The Sprit of C, Jaico, 1996.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	Introduction to Programming in C – NPTEL	
2	Problem solving through Programming in C – SWAYAM	
3	C for Everyone : Programming Fundamentals – Coursera	
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	S	L
CO2	S	M	S	M	M	L	S	L	S	L
CO3	S	S	S	M	M	M	S	M	S	M
CO4	S	S	S	M	S	M	S	M	S	M
CO5	S	S	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Digital Fundamentals and Computer Architecture	L	T	P	C
Core/Elective/Supportive		Core Paper : 2	4	0	-	4
Pre-requisite	Students should have basic computer knowledge		Syllabus Version	2020-21 Onwards		
Course Objectives:						

On successful completion of this subject the students should have Knowledge on		
<ol style="list-style-type: none"> 1. To familiarize with different number systems and digital arithmetic & logic circuits 2. To understand the concepts of Combinational Logic and Sequential Circuits 3. To impart the knowledge of buses, I/O devices, flip flops, Memory and bus structure. 4. To understand the concepts of memory hierarchy and memory organization 5. To understand the various types of microprocessor architecture 		
Expected Course Outcomes:		
On the successful completion of the course, student will be able to:		
1	Learn the basic structure of number system methods like binary, octal and hexadecimal and understand the arithmetic and logical operations are performed by computers.	K3
2	Define the functions to simplify the Boolean equations using logic gates.	K1
3	Understand various data transfer techniques in digital computer and control unit operations.	K2
4	Compare the functions of the memory organization	K4
5	Analyze architectures and computational designs concepts related to architecture organization and addressing modes	K4
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create		
Unit:1	Number System and Arithmetic circuits	12 hours
Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: The Basic Gates – NOR, NAND, XOR Gates.		
Unit:2	Combinational Logic and Sequential Circuits	14 hours
Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form Construction and properties – Implementations – Don't care combinations - Product of sum, Sum of products, Simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – Shift Registers-Counters.		
Unit:3	Input – Output Organization and Data Transfer	12 hours
Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy- Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.		
Unit:4	Memory Organization	10 hours
Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory, Page Table, Page Replacement.		
Unit:5	Case Studies	6 hours
CASE STUDY: Pin out diagram, Architecture, Organization and addressing modes of 80286-80386-80486-Introduction to microcontrollers.		
Unit:6	Contemporary Issues	2 hours

Expert lectures, online seminars – webinars		
	Total Lecture hours	56 hours
Text Book(s)		
1	Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.	
2	Computer System Architecture -M. Morris Mano , PHI.	
3	Microprocessors and its Applications-Ramesh S. Goankar	
Reference Books		
1	Digital Electronics Circuits and Systems, V.K. Puri, TMH.	
2	Computer Architecture, M. Carter, Schaum's outline series, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://nptel.ac.in/courses/106/103/106103068/	
2	http://www.nptelvideos.in/2012/12/digital-computer-organization.html	
3	http://brittunculi.com/foca/materials/FOCA-Chapters-01-07-review-handout.pdf	
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	M	M	L
CO2	S	M	S	M	M	S	M	M	M	L
CO3	S	S	S	M	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	S	S
CO5	S	S	S	S	S	S	S	M	S	S

*S-Strong; M-Medium; L-Low

Course code		Programming Lab – C	L	T	P	C
Core/Elective/Supportive		Core Lab: 1	0	0	3	4
Pre-requisite		Students should have basic knowledge in C programming and algorithms	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To practice the Basic concepts, Branching and Looping Statements and Strings in C programming						
2. To implement and gain knowledge in Arrays, functions, Structures, Pointers and File handling						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Remember and Understand the logic for a given problem and to generate Prime numbers & Fibonacci Series (Program-1,2,3)					K1, K2
2	Apply the concepts to print the Magic square, Sorting the data , Strings, Recursive functions and Pointers (Program-4,5,6,8,10)					K2, K3
3	Remember the logic used in counting the vowels in a sentence (Program-7)					K1
4	Apply and Analyze the concepts of Structures and File management (Program-9,11,12)					K3&K4
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Programs			36 hours			
1. Write a C program to find the sum, average, standard deviation for a given set of numbers.						
2. Write a C program to generate n prime numbers.						
3. Write a C program to generate Fibonacci series.						
4. Write a C program to print magic square of order n where $n > 3$ and n is odd.						
5. Write a C program to sort the given set of numbers in ascending order.						
6. Write a C program to check whether the given string is a palindrome or not using pointers.						
7. Write a C program to count the number of Vowels in the given sentence.						
8. Write a C program to find the factorial of a given number using recursive function.						
9. Write a C program to print the students Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.						
10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.						
11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file						
12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total i) no of chars ii) no. of words and iii) no. of lines.						
			Total Lecture hours		36 hours	
Text Book(s)						
1	E Balagurusamy: Computing Fundamentals & C Programming – Tata McGraw-Hill, Second Reprint 2008					
Reference Books						

1	Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson, 2002.
2	Henry Mullish & Hubert L.Cooper: The Sprit of C, Jaico, 1996.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	Introduction to Programming in C – NPTEL
2	Problem solving through Programming in C – SWAYAM
3	C for Everyone : Programming Fundamentals – Course
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	L	M	S	S	S	L
CO3	S	S	S	M	L	M	S	S	S	M
CO3	S	S	S	L	L	M	S	S	S	L
CO4	S	S	S	M	L	M	S	S	S	M

*S-Strong; M-Medium; L-Low

ALLIED SUBJECT-I:

MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE

Subject Description: This subject deals with mathematical concepts like Matrices, Numerical analysis and Statistical methods for computer science and applications.

Goal: To learn about the mathematical structures for computer based applications

Objective: On successful completion of this subject the students should have

- Understood the concepts of mathematics
- Learnt applications of statistical and numerical methods for Computer Science.

UNIT I: Matrices – Introduction – Determination – Inverse of a matrix – Rank of a Matrix – Eigen value Problems

UNIT II: System of Simultaneous Linear algebraic Equation – Gauss elimination, Gauss Jordon, Gauss Seidal methods.

UNIT III: Numerical Differentiations – Newton's forward Difference - Backward Difference – Starling formula Numerical Integration – Trapezoidal Rule & Simpson's rule.

UNIT IV: Measures of central tendency – Mean Median and Mode – Relationship among mean media and mode. Measures of dispersion – Range, quartile deviation and Standard deviation.

UNIT V: Regression and Correlation – Types of relationship – Linear regression – Correlation – Coefficient of correlation – Regression equation of variables.

TEXT BOOKS:

1. Engineering Mathematics, Volume II, Dr M.K. Venkataraman, National Publishing Company, Chennai. (Unit I)
2. Numerical Methods in Science & Engineering, M.K. Venkataraman, National Publishing Company, Chennai, Revised Edition -2005 (Unit II & III)
3. Business Statistics, S.P. Gupta & M.P. Gupta, Sultan Chand and Sons (Unit IV & V)

REFERENCE BOOKS:

1. Numerical Methods, E. Balagurusamy, Tata McGraw Hill.
2. Fundamental of Mathematical Statistics, S. C. Gupta, V. K. Kapoor, Sultan Chand & Sons

**CORE MODULE SYLLABUS FOR ENVIRONMENTAL STUDIES
FOR UNDER GRADUATE COURSES OF ALL BRANCHES OF HIGHER EDUCATION**

SYLLABUS

Unit 1 : Multidisciplinary nature of environmental studies, Definition, scope and importance (2 lectures) Need for public awareness.

Unit 2 : Natural Resources : Renewable and non-renewable resources : natural resources and associated problems.

Forest resources : Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.

Water resources : Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.

Mineral resources : Use and exploitation, environmental effects of extracting and using mineral resources, case studies.

Food resources : World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.

Energy resources : Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.

Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

Role of an individual in conservation of natural resources.

Equitable use of resources for sustainable lifestyles.

Unit 3 : Ecosystems : • Concept of an ecosystem. Structure and function of an ecosystem. • Producers, consumers and decomposers. • Energy flow in the ecosystem. • Ecological succession. • Food chains, food webs and ecological pyramids. • Introduction, types, characteristic features,

structure and function of the following ecosystem :- a. Forest ecosystem b. Grassland ecosystem c. Desert ecosystem d. Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit 4 : Biodiversity and its conservation : • Introduction – Definition :

genetic, species and ecosystem diversity. • Biogeographical classification of India • Value of biodiversity : consumptive use, productive use, social, ethical, aesthetic and option values. • Biodiversity at global, National and local levels.

India as a mega-diversity nation. • Hot-spots of biodiversity. • Threats to biodiversity : habitat loss, poaching of wildlife, man-wildlife conflicts. • Endangered and endemic species of India Conservation of biodiversity : In-situ and Ex-situ conservation of biodiversity.

Unit 5 : Environmental Pollution : Definition - • Cause, effects and control measures of :- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards

Solid waste Management : Causes, effects and control measures of urban and industrial wastes. • Role of an individual in prevention of pollution. • Pollution case studies. • Disaster management : floods, earthquake, cyclone and landslides.

Unit 6 : Social Issues and the Environment : • From Unsustainable to Sustainable development . • Urban problems related to energy • Water conservation, rain water harvesting, watershed management • Resettlement and rehabilitation of people; its problems and concerns. Case Studies : • Environmental ethics : Issues and possible solutions. • Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies. • Wasteland reclamation. • Consumerism and waste products.

Environment Protection Act. • Air (Prevention and Control of Pollution) Act.

Water (Prevention and control of Pollution) Act • Wildlife Protection Act

Forest Conservation Act • Issues involved in enforcement of environmental legislation. • Public awareness.

Unit 7 : Human Population and the Environment • Population growth, variation among nations. • Population explosion – Family Welfare Programme. • Environment and human health. • Human Rights. • Value Education. • HIV/AIDS. • Women and Child Welfare. • Role of Information Technology in Environment and human health. • Case Studies.

Unit 8 : Field work • Visit to a local area to document environmental assets river/ forest/grassland/hill/mountain • Visit to a local polluted site- Urban/Rural/Industrial/Agricultural • Study of common plants, insects, birds.

Study of simple ecosystems-pond, river, hill slopes, etc. (Field work Equal to 5 lecture hours)



Second Semester

Course code	21T	TITLE OF THE COURSE	L	T	P	C
Core/Elective/Supportive		PART - I TAMIL – PAPER - II	3	-	-	3
Pre-requisite			Syllabus Version		2020 - 21	
Course Objectives:						
The main objectives of this course are to:						
மாணுட விழுமியங்களைப் போற்றி ஆன்மிகச் சிந்தனையை வளர்த்தல்						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	அற இலக்கியங்கள் வழி ஒழுக்கங்களைக் கற்றுத் தருதல்					K1,K2
2	பக்தியிலக்கியங்கள் வழி பக்திநெறிகளை உணர்த்துதல்.					K2
3	தமிழில் உரைநடை இலக்கியப் படைப்பாளர்களின் சிந்தனைகளை எடுத்துரைத்தல்.					K3
4	பிழையின்றி எழுத இலக்கணங்களைக் கற்றுத் தருதல்					K1,K3
5	தமிழ் இலக்கிய வரலாற்றில் அற இலக்கியம் மற்றும் உரைநடையின் தமிழ்ப்பணியை அறிதல்					K2,K3
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1	செய்யுள்					20 -- hours
1. திருக்குறள் – 1. இனியவை கூறல் 2. உழவு 3. குறிப்பறிதல் (காமத்துப்பால்) 2. நாலடியார் – சுற்றந்தழால் 3. நான்மணிக்கடிகை - 10 பாடல்கள் (11, 13, 29, 48, 66, 83, 85, 94, 100, 105)						
Unit:2	செய்யுள்					20 -- hours
1. தமிழ் விடு தூது : முதல் 25 கண்ணிகள் 2. நாச்சியார் திருமொழி : வாரணமாயிரம் எனத் தொடங்கும் 11 பாடல்கள் 3. மாணிக்கவாசகர் : திருவம்மாளை 4. சித்தர் பாடல்கள் 5. காளமேகப்பூலவர் பாடல்கள்						
Unit:3	உரைநடை					20 -- hours
1. கலைகள் : உ.வே. சாமிநாத ஐயர் 2. தமிழர் பண்பாடு : டாக்டர் சோ.நா.கந்தசாமி						

3. இணையத்தமிழ் வளர்ச்சி : முனைவர் ப.அர.தக்கீரன்		
4. திருக்குறள் நெறியில் அறிவாண்மை : திருப்பெருத்திரு சாந்தலிங்க இராமசாமி அடிகளார்		
5. கொங்கு நாட்டார் தமிழ்ப்பணி: காப்பியப் புலவர்கள் : முனைவர் இரா.கா. மாணிக்கம்.		
Unit:4	இலக்கணம்	15 -- hours
1. வினா விடை வகைகள் (அறு வகை வினா, எண் வகை விடை)		
2. ஆகுபெயர் விளக்கம் • பயன்பாடு வகைகள் 10		
Unit:5	இலக்கிய வரலாறு	15 -- hours
1. பதினெண் கீழ்க்கணக்கு நூல்கள்		
2. உரைநடையின் தோற்றமும் வளர்ச்சியும்		
பயிற்சிக்குரியன: விண்ணப்பங்கள் • மடல்கள் எழுதச் செய்தல்		
Course Designed By: முனைவர் ஆர்.நிர்மலா தேவி		

French 2020-21 onwards - Affiliated Colleges - Annexure No. 11A
SCAA DATED: 23.09.2020

Second Semester – Paper 2

Course: French 2

Course Code:

Credits: 4

Hours: 90

Course Objectives:

To understand and use familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type

Course Outcomes:

S.No	Course Outcome	Blooms Level
CO1	Comprehend day to day conversations	K1
CO2	Understand basic culture and literature of France	K2
CO3	Converse confidently in known situations	K3
CO4	Translate small paragraphs of known context	K4

Syllabus:

Part 1 - French 2	
Unit No.	Topics
1	Etape 5 (Lecons 1 - 3)
2	Etape 6 (Lecons 1 - 3)
3	Etape 7 - Leçons 1 - 2
4	Etape 7 – Leçon 3
	Etape 8 – Leçon 1
5	Etape 8 – Leçons 2 - 3
Etapas 5 to 8, Pages 63 -114	

French 2020-21 onwards - Affiliated Colleges - Annexure No. 11A
SCAA DATED: 23.09.2020

Text Book Prescribed: Adomania 1 – Methode de francais

Authors: Céline Himber, Corina Brilliant, Sophie Erlich

Publisher: HACHETTE FLE

Available at: GOYAL Publishers and Distributors Pvt Ltd, New Delhi (9810322459)

Reference: Latitudes 1

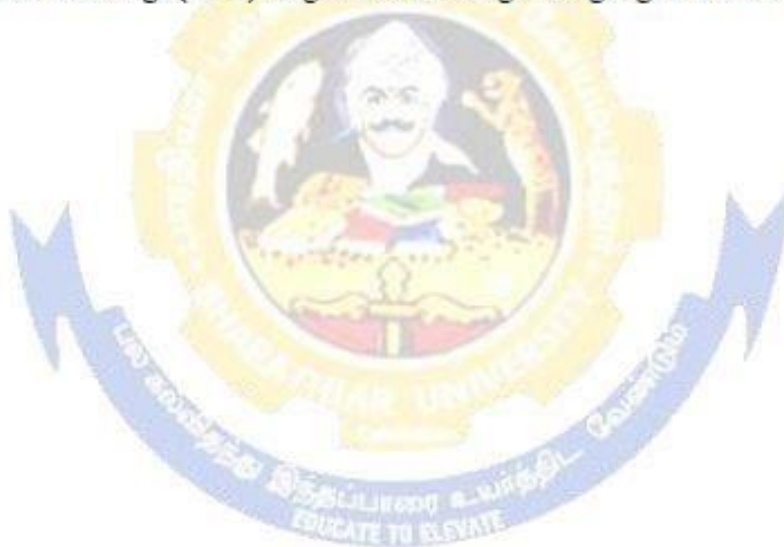
Author: Yves Loiseau, Régine Merieux

Publisher: French and European Publications Inc

Available at: GOYAL publishers and distributors Pvt Ltd, New Delhi (9810322459)

SWAYAM : https://swayam.gov.in/nd2_cec19_1g04/preview

by Prof. Nirupama Rastogi (Retd) English and Foreign Languages University, Hyderabad



Course code	HD2	HINDI PAPER -II	L	T	P	C
Part I		PART I	3	-	-	3
Pre-requisite			Syllabus Version		2020-21	

• **COURSE OBJECTIVE:**

- A basic understanding of contemporary poetry can be gained and the nature of modern poetry can be realized.
- Realizing the nature of drama and its nature and improving the knowledge of reading and understanding the nature of contemporary plays.
- Understands the benefits of correspondence and can enhance the correspondence you need.
- Translation is especially useful for translating from Hindi to English

	PART I - HINDI II	
Unit No.		Hours
I	MODERN POETRY : PANCHVATI by MYTHLI SHARAN GUPT	18
II	ONE ACT PLAY: EKANI KI PIYUSH 1. Owrangieb ki aakirirath– Ramkumar varma 2. Ek din - Lakshminarayan Misra 3. Vapasi - Vishnuprabhakar 4. Badsurath rajkumari - Krishnachandra 5. Aakket - Harijeeth	18
III	LETTER WRITING (Leave Letter, Job Application, Ordering Books, Letter to Publisher, Personal Letter)	10
IV	CONVERSATION: (Doctor & Patient, Teacher & Student, Storekeeper & Buyer, Two Friends, Booking Clerk & Passenger at Railway Station, Auto rickshaw driver and Passenger)Ref : Bolchal Ki Hindi Aur Sanchar by Dr. Madhu Dhavan Vani Prakashan, New Delhi.	12
V	TRANSLATION: HINDI-ENGLISH ONLY Lessons – 1-15 only ANUVADH ABYAS-III	14
	TOTAL	72

Teaching methods:

Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Book:

Panchvati, Mythili sharan Gupt, 2015, Rajkamal Prakashan, 1B Nethaji Subash Marg, New Delhi.

Ekaniki piyush, Srimathi Usha mehra, 1999, Hindu sahithya Bhandar, 55 choupattyan rode, Lacknow 226003

Reference Books:

Bolchal Ki Hindi Aur Sanchar, 2015, Dr. Madhu Dhavan Vani Prakashan, New Delhi.

Web Link

<https://hi.wikipedia.org/wiki/>
<https://en.wikipedia.org/wiki/Premchand>
<http://hindigrammar.in/>

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	S	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	S	L	S	S	S	S	S

**COURSE
PREPARED by**

Dr.R.RAMESH KUMAR
rameshjee67@gmail.com

SECOND SEMESTER – MALAYALAM - PAPER II

Course code	MAL2	PART I MALAYALAM PAPER II	L	T	P	C
			3	-	-	3
Pre-requisite			Syllabus Version			2020-21

COURSE OBJECTIVE:

- A basic understanding of contemporary poetry can be gained and the nature of modern poetry can be realized.
- Realizing the nature of drama and its nature and improving the knowledge of reading and understanding the nature of contemporary plays.
- Understands the benefits of correspondence and can enhance the correspondence you need.
- Translation is especially useful for translating from English to Malayalam

S.No	COURSE OUTCOME	
CO1	Get a basic understanding of Memories	K1
CO2	It will create basic knowledge about Environmental Psychology.	K1
CO3	It will create awareness about our environment.	K2
CO4	Knowledge is gain about our country, culture etc	K3
CO5	It will be an eye opener to the students towards our Mother Earth.	K4

	PART I – MALAYALAM II	
Unit No.		Hours
I	Novel -Enmakaje	18
II	Novel - Enmakaje	18
III	Memories – NeermaathalamPootthakaalam	10
IV	Memories – NeermaathalamPootthakaalam	12
V	Translation(English to Malayalam)	14

	TOTAL	72
--	-------	----

Teaching methods:

Lecturing, Assignment, Group Discussion, Quiz, Group Activity. PowerPoint Projection through LCD

Text Books:

Emakaje – AmbikasuthanMangad – DC Books Kottayam,Kerala

NeermaathalamPoothakaalam - Madhavikutty -DC Books Kottayam, Kerala

Reference Books:

- 1.Athmakathasahithyam Malayalathil-Dr.Vijayalam Jayakumar (N.B.S.Kottayam)
2. Malayala Novel SahithyaCharitram-K.M.Tharakan (N.B.S.Kottayam)
3. SahithyaCharitramPrasthanangalilude- Dr.K.M George,
(D.C.Books Kottayam)
4. MalayalaSahithyavimarsam-Sukumar Azheekode (D.C.books)

Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	S	S	S	S	S	S
CO3	M	S	S	M	S	S	S	S	M	S
CO3	S	M	M	M	M	S	S	M	S	M
CO4	L	S	L	S	L	S	L	M	M	M
CO5	S	S	M	S	L	S	S	S	S	S

COURSE PREPARED	Dr.Sujathabai (gopikailas@gmail.com) Dr.Pavithra (pavithramasngc@gmail.com) Ms.N.Rajani (rajanidevan1974@gmail.com)
----------------------------	--

Part II English 2020-21 onwards - Affiliated Colleges - Annexure No.6(b)
SCAA DATED: 23.09.2020

Course code	22E	PART II – ENGLISH-II	L	T	P	C
Part II English II		COMMUNICATIVE ENGLISH	4	-	-	4
Pre-requisite		BASIC INTELLIGENCE ON WRITING	Syllabus Version		2020-2021	
Course Objectives:						
The main objective of this course is to:						
1. To train the students to develop the communication skills and inculcate language skills.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand basic grammar and enrich word power and language skill					K1, K2
2	Enhance the writing skill of the students to write flawlessly					K3
3	Write paragraphs, emails, letters, opinion pieces and dramatic scripts					K4
4	Enhance understanding various formal and informal, written and oral communications and respond to them					K5
5	Generate the own writing.					K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 – Create						
Unit:1						
					18hours	
1. Listening and Speaking a. Listening and responding to complaints (formal situation) b. Listening to problems and offering solutions (informal) 2. Reading and writing a. Reading aloud (brief motivational anecdotes) b. Writing a paragraph on a proverbial expression/motivational idea. 3. Word Power/Vocabulary a. Synonyms & Antonyms 4. Grammar in Context a. Adverbs b. Prepositions						
Unit:2						
					20hours	
1. Listening and Speaking a. Listening to famous speeches and poems b. Making short speeches- Formal: welcome speech and vote of thanks. Informal occasions- Farewell party, graduation speech 2. Reading and Writing a. Writing opinion pieces (could be on travel, food, film / book reviews or on any contemporary topic) b. Reading poetry b.i. Reading aloud: (Intonation and Voice Modulation) b.ii. Identifying and using figures of speech - simile, metaphor, personification etc. 3. Word Power a. Idioms & Phrases						

Part II English 2020-21 onwards - Affiliated Colleges - Annexure No.6(b)
SCAA DATED: 23.09.2020

4. Grammar in Context		
a. Conjunctions and Interjections		
Unit:3		18hours
1. Listening and Speaking		
a. Listening to Ted talks b. Making short presentations – Formal presentation with PPT, analytical presentation of graphs and reports of multiple kinds c. Interactions during and after the presentations		
2. Reading and writing		
a. Writing emails of complaint b. Reading aloud famous speeches		
3. Word Power		
a. One Word Substitution		
4. Grammar in Context		
a. Sentence Patterns		
Unit:4		16hours
1. Listening and Speaking		
a. Participating in a meeting: face to face and online b. Listening with courtesy and adding ideas and giving opinions during the meeting and making concluding remarks.		
2. Reading and Writing		
a. Reading visual texts – advertisements b. Preparing first drafts of short assignments		
3. Word Power		
a. Denotation and Connotation		
4. Grammar in Context:		
a. Sentence Types		
Unit:5		18 hours
1. Listening and Speaking		
a. Informal interview for feature writing b. Listening and responding to questions at a formal interview		
2. Reading and Writing		
a. Writing letters of application b. Readers' Theatre (Script Reading) c. Dramatizing everyday situations/social issues through skits. (writing scripts and performing)		
3. Word Power		
a. Collocation		
4. Grammar in Context		
a. Working with Clauses		
	Total Lecture hours	90hours
Text Book(s)		
1	COMMUNICATIVE ENGLISH –TANSCHÉ	
Reference Books		

Course code		C++ PROGRAMMING	L	T	P	C
Core/Elective/Supportive		Core: 3	5	0	0	4
Pre-requisite	Before starting this course one should have a basic understanding of computer programs and computer programming language. If you know the concepts of C programming it will be much easier to understand this course		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. Impart knowledge of object oriented programming concepts and implement them in C++						
2. Enable to differentiate procedure oriented and object-oriented concepts.						
3. Equip with the knowledge of concept of Inheritance so that learner understands the need of inheritance.						
4. Explain the importance of data hiding in object oriented programming						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Define the different programming paradigm such as procedure oriented and object oriented programming methodology and conceptualize elements of OO methodology					K1
2	Illustrate and model real world objects and map it into programming objects for a legacy system.					K2
3	Identify the concepts of inheritance and its types and develop applications using overloading features.					K3
4	Discover the usage of pointers with classes					K4
5	Explain the usage of Files, templates and understand the importance of exception Handling					K5
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1						
INTRODUCTION TO C++			10 hours			
Key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures: - Decision Making and Statements: If.. Else, jump, goto, break, continue, Switch case statements - Loops in C++: for, while, do - functions in C++ - inline functions – Function Overloading..						
Unit:2						
CLASSES AND OBJECTS			10 hours			
Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.						
Unit:3						
OPERATOR OVERLOADING			12 hours			
Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path						

inheritance – Virtual base Classes – Abstract Classes.		
Unit:4	POINTERS	13 hours
Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding, Polymorphism and Virtual Functions.		
Unit:5	FILES	13 hours
File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .		
Unit:6	Contemporary Issues	2 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	60 hours
Text Book(s)		
1	Ashok N Kamthane, Object-Oriented Programming with Ansi And Turbo C++, Pearson Education, 2003.	
Reference Books		
1	E. Balagurusamy, Object-Oriented Programming with C++, TMH, 1998.	
2	Maria Litvin & Gray Litvin, C++ for you, Vikas publication, 2002.	
3	John R Hubbard, Programming with C, 2nd Edition, TMH publication, 2002.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://www.spoken-tutorial.org	
2	https://www.tutorialspoint.com/cplusplus/index.htm	
3	https://www.w3schools.com/cpp/	
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	M	M	M	L
CO2	S	S	S	S	S	S	S	M	M	M
CO3	S	S	S	S	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	M	S
CO5	S	S	S	S	S	S	S	M	M	S

*S-Strong; M-Medium; L-Low

Course code		PROGRAMMING LAB - C++	L	T	P	C
Core/Elective/Supportive		Core Lab : 2	0	0	4	4
Pre-requisite	Basic understanding of computer programs and computer programming language like C.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. Impart knowledge of object oriented programming concepts and implement them in C++						
2. Enable to differentiate procedure oriented and object-oriented concepts.						
3. Equip with the knowledge of concept of Inheritance so that learner understands the need of inheritance.						
4. Explain the importance of data hiding in object oriented programming						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Define the different programming paradigm such as procedure oriented and object oriented programming methodology and conceptualize elements of OO methodology					K1
2	Illustrate and model real world objects and map it into programming objects for a legacy system.					K2
3	Identify the concepts of inheritance and its types and develop applications using overloading features.					K3
4	Discover the usage of pointers with classes					K4
5	Explain the usage of Files, templates and understand the importance of exception Handling					K5
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Programs			36 hours			
1. Write a C++ Program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions..						
2. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD (), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.						
3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.						
4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT						
5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the operators ++ and == to concatenate two Strings and to compare two strings respectively.						
6. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them.						

Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.	
7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.	
8. Write a C++ Program to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.	
9. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.	
10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers	
11. Write a C++ Program to create a File and to display the contents of that file with line numbers.	
12. Write a C++ Program to merge two files into a single file.	
Text Book(s)	
1	Ashok N Kamthane, Object-Oriented Programming with Ansi And Turbo C++, Pearson Education, 2003.
Reference Books	
1	E. Balagurusamy, Object-Oriented Programming with C++, TMH, 1998.
2	Maria Litvin & Gray Litvin, C++ for you, Vikas publication, 2002.
3	John R Hubbard, Programming with C, 2nd Edition, TMH publication, 2002.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	
2	
3	
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	M	M	M	L
CO2	S	S	S	S	S	S	S	M	M	M
CO3	S	S	S	S	S	S	S	M	M	M
CO4	S	S	S	S	S	S	S	M	M	S
CO5	S	S	S	S	S	S	S	M	M	S

Course code		Internet Basics	L	T	P	C
Core/Elective/Supportive		Core Lab : 3	0	0	2	2
Pre-requisite		Knowledge of WINDOWS Operating Systems	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. Introduce the fundamentals of Internet and the Web functions.						
2. Impart knowledge and essential skills necessary to use the internet and its various components.						
3. Find, evaluate, and use online information resources.						
4. Use Google Apps for education effectively.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the fundamentals of Internet and the Web concepts					K2
2	Explain the usage of internet concepts and analyze its components.					K2
3	Identify and apply the online information resources					K3
4	Inspect and utilize the appropriate Google Apps for education effectively					K3, K4
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Programs			36 hours			
1. Create an email account in Gmail. Using the account created compose a mail to invite other college students for your college fest, enclose the invitation as attachment and send the mail to at least 50 recipients. Use CC and BCC options accordingly.						
2. Open your inbox in the Gmail account created, check the mail received from your peer from other college inviting you for his college fest, and download the invitation. Reply to the mail with a thank you note for the invite and forward the mail to other friends.						
3. Assume that you are studying in final year of your graduation and are eagerly looking for a job. Visit any job portal and upload your resume.						
4. Create a meeting using Google calendar and share meeting id to the attendees. Transfer the ownership to the Manager once the meeting id is generated.						
5. Create a label and upload bulk contacts using import option in Google Contacts.						
6. Create your own Google classroom and invite all your friends through email id. Post study material in Google classroom using Google drive. Create a separate folder for every subject and upload all unit wise E-Content Materials.						
7. Create and share a folder in Google Drive using 'share a link' option and set the permission to access that folder by your friends only.						
8. Create one page story in your mother tongue by using voice recognition facility of Google docs.						
9. Create a registration form for your Department Seminar or Conference using Google Forms.						
10. Create a question paper with multiple choice types of questions for a subject of your choice, using Google Forms.						
11. Create a Google form with minimum 25 questions to conduct a quiz and generate a certificate after submission.						

12. Create a meet using Google Calendar and record the meet using Google Meet.	
13. Create a Google slides for a topic and share the same with your friends.	
14. Create template for a seminar certificate using Google Slides.	
15. Create a sheet to illustrate simple mathematical calculations using Google Sheets.	
16. Create student's internal mark statement and share the Google sheets via link.	
17. Create different types of charts for a range in CIA mark statement using Google Sheets.	
18. Create a mark statement in Google Sheets and download it as PDF, .xls and .csv files.	
Text Book(s)	
1	Ian Lamont, Google Drive & Docs in 30 Minutes, 2 nd Edition.
2	
Reference Books	
1	Sherry Kinkoph Gunter, My Google Apps, 2014.
2	
3	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	https://www.youtube.com/watch?v=NzPNk44tdlQ
2	https://www.youtube.com/watch?v=PKuBtQuFa-8
4	https://www.youtube.com/watch?v=hGER1hP58ZE
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	S	S	S	M	M	S	L
CO2	S	M	S	S	S	S	S	S	S	M
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

ALLIED -II: DISCRETE MATHEMATICS

Subject Description: This subject deals with discrete structures like set theory, mathematical logic, relations, languages, graphs and trees.

Goal: To learn about the discrete structures for computer based applications.

Objective: On successful completion of this subject the students should have: -
Understanding the concepts of discrete mathematics - Learning applications of discrete structures in Computer Science.

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-minsets- Algebra of sets and Duality-Inclusion and Exclusion principle

UNIT II: Mathematical logic – Introduction- propositional calculus –Basic logical operations- Tautologies-Contradiction-Argument-Method of proof- Predicate calculus.

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.

UNIT IV: Languages – Operations on languages – Regular Expressions and regular languages – Grammar – Types of grammars – Finite state machine – Finite – State automata

UNIT V: Graph Theory – Basic terminology – paths, cycle & Connectivity – Sub graphs – Types of graphs – Representation of graphs in computer memory - Trees – Properties of trees-Binary trees – traversing Binary trees – Computer Representation of general trees.

TEXT BOOKS:

1. Discrete Mathematics, J.K. Sharma, 2nd edition, 2005, Macmillan India Ltd. (UNIT I TO V)

REFERENCE BOOKS:

1. Discrete Mathematics Structures with Applications to Computer Science, J. P. Tremblay, R Manohar, McGraw Hill International Edition
2. Discrete Mathematics, M. K. Venkataraman, N.Sridharan, N.Chandarasekaran, National Publishing Company, Chennai

BHARATHIAR UNIVERSITY : COIMBATORE 641 046.

Value Education – Human Rights

(2 hours per week)

(FOR THE UNDER GRADUATE STUDENTS OF AFFILIATED COLLEGES

WITH EFFECT FROM 2008-2009)

UNIT – I: Concept of Human Values, Value Education Towards Personal Development

Aim of education and value education; Evolution of value oriented education; Concept of Human values; types of values; Components of value education.

Personal Development :

Self analysis and introspection; sensitization towards gender equality, physically challenged, intellectually challenged. Respect to - age, experience, maturity, family members, neighbours, co-workers.

Character Formation Towards Positive Personality:

Truthfulness, Constructivity, Sacrifice, Sincerity, Self Control, Altruism, Tolerance, Scientific Vision.

UNIT – II : Value Education Towards National and Global Development

National and International Values:

Constitutional or national values - Democracy, socialism, secularism, equality, justice, liberty, freedom and fraternity.

Social Values - Pity and probity, self control, universal brotherhood.

Professional Values - Knowledge thirst, sincerity in profession, regularity, punctuality and faith.

Religious Values - Tolerance, wisdom, character.

Aesthetic values - Love and appreciation of literature and fine arts and respect for the same.

National Integration and international understanding.

UNIT – III : Impact of Global Development on Ethics and Values

Conflict of cross-cultural influences, mass media, cross-border education, materialistic values, professional challenges and compromise.

Modern Challenges of Adolescent Emotions and behavior; Sex and spirituality; Comparison and competition; positive and negative thoughts.

Adolescent Emotions, arrogance, anger, sexual instability, selfishness, defiance.

UNIT - IV : Therapeutic Measures

Control of the mind through

- a. Simplified physical exercise
- b. Meditation – Objectives, types, effect on body, mind and soul
- c. Yoga – Objectives, Types, Asanas
- d. Activities:
 - (i) Moralisation of Desires
 - (ii) Neutralisation of Anger
 - (iii) Eradication of Worries
 - (iv) Benefits of Blessings

UNIT; V : Human Rights

1. Concept of Human Rights – Indian and International Perspectives
 - a. Evolution of Human Rights
 - b. Definitions under Indian and International documents
2. Broad classification of Human Rights and Relevant Constitutional Provisions.
 - a. Right to Life, Liberty and Dignity
 - b. Right to Equality
 - c. Right against Exploitation
 - d. Cultural and Educational Rights
 - e. Economic Rights
 - f. Political Rights
 - g. Social Rights
3. Human Rights of Women and Children
 - a. Social Practice and Constitutional Safeguards
 - (i) Female Foeticide and Infanticide
 - (ii) Physical assault and harassment
 - (iii) Domestic violence
 - (iv) Conditions of Working Women
4. Institutions for Implementation
 - a. Human Rights Commission
 - b. Judiciary
5. Violations and Redressal
 - a. Violation by State
 - b. Violation by Individuals
 - c. Nuclear Weapons and terrorism
 - d. Safeguards.



Third Semester

Course code		Data Structures	L	T	P	C
Core/Elective/Supportive		Core: 4	6	0	0	4
Pre-requisite	Basic understanding of Data storage, retrieval and algorithms.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To introduce the fundamental concept of data structures						
2. To emphasize the importance of data structures in developing and implementing efficient algorithms.						
3. Understand the need for Data Structures when building application						
4. Ability to calculate and measure efficiency of code						
5. Improve programming logic skills.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of data structures and algorithms					K1-K2
2	Construct and analyze of stack and queue operations with illustrations					K2-K4
3	Enhance the knowledge of Linked List and dynamic storage management.					K2-K3
4	Demonstrate the concept of trees and its applications					K2-K3
5	Design and implement various sorting and searching algorithms for applications and understand the concept of file organizations					K1-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1	INTRODUCTION				15 hours	
Introduction of Algorithms, Analysing Algorithms. Arrays: Sparse Matrices – Representation of Arrays. Stacks and Queues. Fundamentals – Evaluation of Expression Infix to Postfix Conversion – Multiple Stacks and Queues						
Unit:2	LINKED LIST				12 hours	
Linked List: Singly Linked List – Linked Stacks and Queues – Polynomial Addition- More on Linked Lists – Sparse Matrices – Doubly Linked List and Dynamic – Storage Management – Garbage Collection and Compaction.						
Unit:3	TREES				15 hours	
Basic Terminology – Binary Trees – Binary Tree Representations – Binary Trees-Traversal-More On Binary Trees – Threaded Binary Trees – Binary Tree. Representation of Trees – Counting Binary Trees. Graphs: Terminology and Representations-Traversals, Connected Components and Spanning Trees, Shortest Paths and Transitive Closure						
Unit:4	EXTERNAL SORTING				15 hours	
Storage Devices –Sorting with Disks: K-Way Merging – Sorting with Tapes Symbol Tables: Static Tree Tables – Dynamic Tree Tables – Hash Tables: Hashing Functions – Overflow Handling.						

Unit:5	INTERNAL SORTING	15 hours
Insertion Sort – Quick Sort – 2 Way Merge Sort – Heap Sort – Shell Sort – Sorting on Several Keys. Files: Files, Queries and Sequential organizations – Index Techniques –File Organizations.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Ellis Horowitz, Sartaj Shani, Data Structures, Galgotia Publication.	
2	Ellis Horowitz, Sartaj Shani, Sanguthevar Rajasekaran, Computer Algorithms, Galgotia Publication.	
3	S.Lovelyn Rose, R.Venkatesan, Data Structures, Wiley India Private Limited,2015, 1 st Edition	
Reference Books		
1	Jean-Paul,Tremblay & Paul G.Sorenson , An Introduction to Data structures with Applications Tata McGraw Hill Company 2008, 2ndEdition.	
2	Samanta.D , Classic Data Structure Prentice Hall of India Pvt Ltd 2007, 9 th Edition	
3	Seymour Lipschutz, Data Structures McGraw Hill Publications, 2014, 1 st Edition	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	M	M
CO2	S	S	S	M	M	M	M	M	M	M
CO3	S	S	S	M	S	M	M	M	S	S
CO4	S	S	S	M	S	S	S	S	M	M
CO5	S	S	S	M	M	S	S	M	M	S

*S-Strong; M-Medium; L-Low

Course code		Java Programming	L	T	P	C
Core/Elective/Supportive		Core: 5	6	0	0	4
Pre-requisite	Students Should have the basic understanding of oops concept.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To expose the students with the introduction to OOPs and advantages of object oriented programming.						
2. The concepts of OOPs make it easy to represent real world entities.						
3. The course introduces the concepts of converting the real time problems into objects and methods and their interaction with one another to attain a solution.						
4. Simultaneously it provides the syntax of programming language Java for solving the real world problems.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	The competence and the development of small to medium sized application programs that demonstrate professionally acceptable coding					K1-K2
2	Demonstrate the concept of object oriented programming through Java					K2-K4
3	Apply the concept of Inheritance, Modularity, Concurrency, Exceptions handling and data persistence to develop java program					K3
4	Develop java programs for applets and graphics programming					K3
5	Understand the fundamental concepts of AWT controls, layouts and events					K1-K2
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
FUNDAMENTALS OF OBJECT-ORIENTED PROGRAMMING						
15 hours						
Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming –Application of Object-Oriented Programming. Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.						
Unit:2						
BRANCHING AND LOOPING						
12 hours						
Constants, Variables, Data Types – Operators and Expressions – Decision Making and Branching: if, if...else, nested if, switch, ? : Operator – Decision Making and Looping: while, do, for – Jumps in Loops – Labeled Loops – Classes, Objects and Methods.						
Unit:3						
ARRAYS AND INTERFACES						
15 hours						
Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.						
Unit:4						
ERROR HANDLING						
15 hours						
Managing Errors and Exceptions – Applet Programming – Graphics Programming.						

Unit:5	MANAGING INPUT / OUTPUT FILES IN JAVA	15 hours
Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Programming with Java – A Primer – E. Balagurusamy, 5 th Edition, TMH.	
2	Herbert Schildt , Java: The Complete Reference, McGraw Hill Education, Oracle Press 10 th Edition, 2018	
3	Programming with Java – A Primer – E. Balagurusamy, 3 rd Edition, TMH.	
Reference Books		
1	The Complete Reference Java 2 – Patrick Naughton & Hebert Schildt, 3 rd Edition, TMH	
2	Programming with Java – John R. Hubbard, 2 nd Edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	www.spoken-tutorial.org	
2	www.nptel.ac.in	
3	https://www.w3schools.in/java-tutorial/	
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	L	S	M	M	M
CO2	S	S	S	M	S	L	S	M	M	M
CO3	S	S	S	M	S	M	S	S	M	M
CO4	S	S	S	M	S	M	M	S	M	M
CO5	S	S	S	M	S	M	S	S	M	M

*S-Strong; M-Medium; L-Low

Course code		Programming Lab – JAVA	L	T	P	C
Core/Elective/Supportive		Core Lab: 4	0	0	5	4
Pre-requisite		Students should know about the OOPs concept and basic knowledge in java theory.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
3. The main objective of JAVA Programming Lab is to provide the students a strong foundation on programming concepts and its applications through hands-on training.						
4. To practice the Basic concepts, Branching and Looping Statements and Strings in C programming						
5. To implement and gain knowledge in Arrays, functions, Structures, Pointers and File handling						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of Java Programming with emphasis on ethics and principles of professional coding					K1, K2
2	Demonstrate the creation of objects, classes and methods and the concepts of constructor, methods overloading, Arrays, branching and looping					K2
3	Create data files and Design a page using AWT controls and Mouse Events in Java programming Implement the concepts of code reusability and debugging.					K2, K3
4	Develop applications using Strings, Interfaces and Packages and applets					K3
5	Construct Java programs using Multithreaded Programming and Exception Handling					K3
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Programs			36 hours			
1. Write a Java Applications to extract a portion of a character string and print the extracted string.						
2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.						
3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.						
4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.						
5. Write a Java Program to draw several shapes in the created windows.						
6. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called my details. When the button is clicked its corresponding values are to be appeared in the text fields.						
7. Write a Java Program to demonstrate the Multiple Selection List-box.						
8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple line for address						
9. Write a Java Program to create Menu Bars and pull down menus.						
10. Write a Java Program to create frames which respond to the mouse clicks. For each events with mouse such as mouse up, mouse down, etc., the corresponding message to be						

displayed.		
11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.		
12. Write a Java Program which open an existing file and append text to that file.		
	Total Lecture hours	36 hours
Text Book(s)		
1	Programming with Java – A Primer – E. Balagurusamy, 5 th Edition, TMH.	
2	Herbert Schildt , Java: The Complete Reference, McGraw Hill Education, Oracle Press 10 th Edition, 2018	
3	Programming with Java – A Primer – E. Balagurusamy, 3 rd Edition, TMH.	
Reference Books		
1	The Complete Reference Java 2 – Patrick Naughton & Hebert Schildt, 3 rd Edition, TMH	
2	Programming with Java – John R. Hubbard, 2 nd Edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://www.w3resource.com/java-exercises/	
2	https://www.udemy.com/introduction-to-java-programming/	
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	S	S	M	M	L
CO2	S	S	S	L	S	M	S	M	M	L
CO3	S	S	S	M	S	M	S	M	M	L
CO4	S	S	S	M	S	M	S	S	M	S
CO5	S	S	S	M	S	S	S	S	M	S

*S-Strong; M-Medium; L-Low

Allied-:3:COMPUTER BASED OPTIMIZATION TECHNIQUES

Subject Description: This subject deals various optimization techniques for linear programming, Transportation, Assignment Problems, Game theory, PERT and CPM.

Goal: To learn about the managerial concepts like decision making, optimization, etc.

Objective: On successful completion of this subject the students should have:

- Understanding various mathematical applications in industries.
- Decision making for real time environment.

UNIT I: Linear Programming - Mathematical Model assumption of linear Programming – Graphical method - Principles of Simplex method, Big-M Method, Duality, Dual simplex method.

UNIT II: Transportation and Assignment problem - Integer Programming Branch and Round Techniques - Assignment and Traveling Salesman Problem.

UNIT III: Game Theory - Concept of Pure and Mixed Strategies – Solving 2 x 2 matrix with and without saddle point - $n \times 2$ - $2 \times m$ games. Replacement models - Elementary replacement models - present value - rate of return - depreciation - Individual replacement – Group replacement.

UNIT IV: (*Derivations not included*) Queuing Theory - definition of waiting line model - Queue discipline - traffic intensity - poisson arrival – Birth death process - Problem from

single server: finite and infinite population model – Problems from multi server: finite and infinite population model.

UNIT V: PERT & CPM - Network representation - backward pass - Forward pass - computation - Pert Network - Probability factor – updating and Crashing.

TEXT BOOK:

1. Operations Research, Manmohan, P.K. Gupta, Kanthiswarup, S. Chand & Sons - 1997.

REFERENCE BOOKS:

1. Operations Research, Hamdy A Taha, Pearson Education, 7th edition, 2002
2. Problems in Operations Research, P.K. Gupta, D.S. Hira, S. Chand Publishers.

Course code		Web Programming	L	T	P	C
Core/Elective/Supportive		Skill based Subject – 1	5	0	0	3
Pre-requisite	Students should have basic knowledge on internet and world wide web.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To enhance the knowledge of students in web programming 2. To learn about the scripting languages HTML and its elements 3. To understand concept of DHTML to integrate dynamic web pages 4. To understand XML, CSS and XSL for formatting the web pages						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of Internet, WWW, browsers and Email and protocols.					K1
2	Understand and apply the HTML, HTML elements and formatting styles					K1-K3
3	Knowledge on creating tables, forms and DHTML					K3
4	Understand the structure of XML document, DTD and Schema					K1-K3
5	Knowledge on working with SML, Style sheets and XSL					K1-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
Introduction to Internet			15 hours			
Introduction to Internet – World Wide Web – Browsers: Introduction – Popular Web Browsers – know your browsers – Electronic Mail : Introduction – E-mail networks and servers – E-mail protocols – Structure of an E-mail.						
Unit:2						
HTML			12 hours			
HTML : Introduction – Getting started – Creating and saving an HTML document – Document Layout of HTML Page – HTML elements – Some other formatting Styles – Hypertext Links.						
Unit:3						
HTML & DHTML			15 hours			
HTML (contd) : URLs – Images – HTML tables – Forms – Special Characters – Metatages. Interactivity Tools and Multimedia : Introduction – DHTML – Scripting Languages – Java – ASP.						
Unit:4						
XML basics and DTD			15 hours			
XML :XML basics – Introduction – need for XML – Advantages – Working with an XML Document – Structure of an XML Document – DTD- XML Schema.						
Unit:5						
XML Schema and XSL			15 hours			
XML (contd) : Working with XML Schema – Declaring Attributes – XML namespaces – Reusing Schema Components – Grouping elements and attributes. XML Style sheets : Introduction – CSS – eXtensible Style Sheet language – Formatting Data based on controls – Displaying data in a Tabular Format.						

Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Internet and Web Design, ITL Education, Macmillan India Ltd.	
2	HTML and XML an Introduction, NIIT, Prentice Hall of India Pvt. Ltd	
3		
Reference Books		
1	World Wide Web Design with HTML, C. Xavier, 2007, TMH.	
2		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	S	L
CO2	L	M	S	M	M	L	S	L	S	L
CO3	S	S	L	M	M	M	S	M	S	M
CO4	S	M	S	M	S	M	S	M	S	M
CO5	M	S	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low

BHARATHIAR UNIVERSITY : COIMBATORE
SYLLABUS FOR
“Women’s Rights
FOR PART – IV IN THIRD SEMESTER OF UNDERGRADUATE CANDIDATES
WITH EFFECT FROM 2008-09
IN CBCS PATTERN

UNIT I

Laws, Legal Systems and Change

Definition - Constitutional law, CEDAW and International Human Rights – Laws and Norms – Laws and Social Context – Constitutional and Legal Framework.

UNIT II

Politics of land and gender in India

Introduction – Faces of Poverty – Land as Productive Resources – Locating Identities – Women’s Claims to Land – Right to Property - Case Studies.

UNIT III

Women’s Rights: Access to Justice

Introduction – Criminal Law – Crime Against Women – Domestic Violence – Dowry Related Harassment and Dowry Deaths – Molestation – Sexual Abuse and Rape – Loopholes in Practice – Law Enforcement Agency.

UNIT IV

Women’s Rights

Violence Against Women – Domestic Violence - The Protection of Women from Domestic Violence Act, 2005 - The Marriage Validation Act, 1982 - The Hindu Widow Re-marriage Act, 1856 - The Dowry Prohibition Act, 1961

UNIT V

Special Women Welfare Laws

Sexual Harassment at Work Places – Rape and Indecent Representation – The Indecent Representation (Prohibition) Act, 1986 - Immoral Trafficking – The Immoral Traffic (Prevention) Act, 1956 - Acts Enacted for Women Development and Empowerment - Role of Rape Crisis Centers.

References

1. Nitya Rao “Good Women do not Inherit Land” Social Science Press and Orient Blackswan 2008
2. International Solidarity Network “Knowing Our Rights” An imprint of Kali for Women 2006
3. P.D.Kaushik “Women Rights” Bookwell Publication 2007
4. Aruna Goal “Violence Protective Measures for Women Development and Empowerment” Deep and Deep Publications Pvt 2004
5. Monica Chawla “Gender Justice” Deep and Deep Publications Pvt Ltd.2006
6. Preeti Mishra “Domestic Violence Against Women” Deep and Deep Publications Pvt 2007
7. ClairM.Renzetti, Jeffrey L.Edleson, Raquel Kennedy Bergen, Source Book on “Violence Against Women” Sage Publications 2001

CONSTITUTION OF INDIA

UNIT I

Making of Constitution-Constituent Assembly-Dr.Rajendra Prasath-Dr.B.R.Ambedkar -Salient features-Fundamental Rights.

UNIT II

Union Executive-President of India-Vice-President-Prime Minister-Cabinet -Functions

UNIT III

Union Legislature-Rajya Sabha-Lok Sabha-Functions and Powers

UNIT IV

Union Judiciary-Supreme Court-Functions –Rule of law

UNIT V

State-Executive-Legislature-Judiciary

Books for Reference:

Agharwal.R.C.-National Movement and Constitutional Development- New Delhi, 1977
Chapra B.R., Constitution of India, New Delhi, 1970
Rao B.V., Modern Indian Constitution, Hyderabad, 1975.
Nani Palkhivala- Constitution of India, New Delhi, 1970
Krishna lyer, V.R., Law and Justice, New Delhi, 2009

BHARATHIAR UNIVERSITY : COIMBATORE
SYLLABUS FOR
"YOGA FOR HUMAN EXCELLENCE"
FOR PART – IV IN THIRD SEMESTER OF UNDERGRADUATE CANDIDATES
WITH EFFECT FROM 2008-09
IN CBCS PATTERN

Unit I - Yoga and Physical Health

- 1.1 Physical Structure – Three bodies – Five limitations
- 1.2 Simplified Physical Exercises – Hand Exercises -Leg Exercises – Breathing Exercises – Eye Exercises – Kapalapathi
- 1.3 Maharasanas 1-2 – Massages – Acu-puncture – Relaxation
- 1.4 Yogasanas – ~~Tadasana~~ ^{Padmasana} – Padmasana – Vajrasanas – Chakrasanas (Side) – Viruchasanas – Yoga muthra – Patchimothasanas – Ustrasanas – Vakkarasanas – Salabasanas

Unit II - Art of Nurturing the life force and Mind

- 2.1 Maintaining the youthfulness – Postponing the ageing process
- 2.2 Sex and Spirituality - Significance of sexual vital fluid – Married life – Chastity
- 2.3 Ten stages of Mind
- 2.4 Mental frequency – Methods for concentration

Unit III - Sublimation

- 3.1 Purpose and Philosophy of life
- 3.2 Introspection – Analysis of Thought
- 3.3 Moralization of Desires
- 3.4 Neutralization of Anger

Unit IV – Human Resources Development

- 4.1 Eradication of worries
- 4.2 Benefits of Blessings
- 4.3. Greatness of Friendship
- 4.4 Individual Peace and World Peace

Unit V – Law of Nature

- 5.1 Unified force – Cause and Effect system
- 5.2 Purity of Thought and Deed and Genetic Centre
- 5.3 Love and Compassion
- 5.4 Cultural Education – Five fold Culture

பாரதியார் பல்கலைக்கழகம் : கோயமுத்தூர்

பகுதி - IV : சிறப்புத் தமிழ் தாள் - 1

முன்றாம் பருவம்

இளங்கலை 2010-11 கல்வி ஆண்டு முதல் சேர்வோர்க்குரியது
(12-ம் வகுப்பு வரை தமிழ் யொழிப்பாடம் பயின்றவர்களுக்கு)

கூறு - 1 : பாரதியார் கவிதைகள்

கண்ணன் என் சேவகன்

பாரதிதாசன் - அழகின் சிரிப்பு (முழுவுதும்)

யீரா (கவிஞர்) - குக்கூ (புதுக்கவிதை)

கூறு - 2 : யொழித் திறன்

பிழைநீக்கி எழுதுதல் -

றன ர வேறுபாடு அறிதல்

ளன, ழன, லன வேறுபாடு அறிதல்

ன, ண, ந வேறுபாடு அறிதல்

குறில் நெயில் வேறுபாடு அறிதல்

கூறு - 3 : கடிதங்கள் எழுதுதல் -

பாராட்டுக் கடிதம், நன்றிக்கடிதம்

அழைப்புக்கடிதம், அலுவலக விண்ணப்பம்.

கூறு - 4 : சொற்களைத் தந்து தொடர்களை அமைக்கும் பயிற்சி அளித்தல்

வல்லினம் மிகும் திடங்கள்.

கூறு - 5 : பாடந்தழுவிய வரலாறு.

2010-2011 கல்வியாண்டு முதல் பயில்பவர்களுக்கு பின்வரும் வினாத்தாள்
அமைப்பு பின்பற்றப்பட வேண்டும்.

Maximum 50 Marks – wherever applicable			
Section A	Multiple choice questions with four options	10*1=10	10 questions – 2 each from every unit
Section B	Short answer questions of either / or type (like 1.a (or) b)	5*3=15	5 questions – 1 each from every unit
Section C	Essay-type questions of either / or type (like 1.a (or) b)	5*5=25	5 questions – 1 each from every unit
NOTE: In Section “C” one of the questions shall be application oriented or a problem or a case study.			



Fourth Semester

Course code		System Software and Operating Systems	L	T	P	C
Core/Elective/Supportive		Core : 6	6	0	0	4
Pre-requisite	Students Should have the basic knowledge in computer.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To understand the processing of programs on a computer system to design and implementation of language processor.						
2. To enhance the ability of program generation through expansion and gain knowledge about Code optimization using software tools.						
3. Students will gain knowledge of basic operating system concepts.						
4. To have an in-depth understanding of process concepts, deadlock and memory management.						
5. To provide an exposure to scheduling algorithms, devices and information management.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Know the program generation and program execution activities in detail					K1
2	Understand the concepts of Macro Expansions and Gain the knowledge of Editing processes					K2-K3
3	Remember the basic concepts of operating system					K1
4	Understand the concepts like interrupts, deadlock , memory management and file management					K2
5	Analyze the need for scheduling algorithms and implement different algorithms used for representation, scheduling, and allocation in DOS and UNIX operating system.					K1-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
INTRODUCTION TO SYSTEM SOFTWARE			12 hours			
Introduction–System Software and machine architecture. Loader and Linkers: Basic Loader Functions – Machine dependent loader features –Machine independent loader features – Loader design options						
Unit:2						
MACHINE AND COMPILER			15 hours			
Machine dependent compiler features – Intermediate form of the program – Machine dependent code optimization – Machine independent compiler features – Compiler design options – Division into passes – Interpreters – p-code compilers – Compiler-compilers.						
Unit:3						
OPERATING SYSTEM			15 hours			
What is an Operating System? – Process Concepts: Definition of Process – Process States – Process States Transition – Interrupt Processing – Interrupt Classes – Storage Management: Real Storage: Real Storage Management Strategies – Contiguous versus Non-contiguous storage allocation – Single User Contiguous Storage allocation- Fixed partition multiprogramming – Variable partition multiprogramming.						
Unit:4						
VIRTUAL STORAGE			15 hours			

Virtual Storage: Virtual Storage Management Strategies – Page Replacement Strategies – Working Sets – Demand Paging – Page Size. Processor Management: Job and Processor Scheduling: Preemptive Vs Non-preemptive scheduling – Priorities – Deadline scheduling.		
Unit:5	DEVICE AND INFORMATION MANAGEMENT	15 hours
Device and Information Management Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek Optimization – File and Database Systems: File System – Functions – Organization – Allocating and freeing space – File descriptor – Access control matrix.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Leland L.Beck, System Software: An Introduction to Systems Programming, Pearson, Third Edition.	
2	H.M. Deitel, Operating Systems, 2 nd Edition, Perason, 2003.	
Reference Books		
1	Achy8ut S. Godbole, Operating Systems, TMH, 2002.	
2	John J. Donovan, Systems Programming, TMH, 1991.	
3	D.M. Dhamdhere, Systems Programming and Operating Systems, 2 nd Revised Edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	M	M	M	L
CO2	S	S	S	S	S	M	M	M	S	L
CO3	S	M	M	M	S	M	S	S	S	L
CO4	S	S	S	M	S	S	S	M	M	M
CO5	S	S	S	M	S	S	S	M	M	M

*S-Strong; M-Medium; L-Low

Course code		Linux and Shell Programming	L	T	P	C
Core/Elective/Supportive	Core : 7		6	0	0	4
Pre-requisite	Before starting the course students should have the basic knowledge about operating system and C programming.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. Linux is a multi-user and multi-tasking operating system and after learning the concepts of an operating system						
2. Student will be able to write simple shell programming using Linux utilities, pipes and filters.						
3. The file system, process management and memory management are discussed.						
4. Various commands used by Linux shell is also discussed which makes the users to interact with each other.						
5. Bourne shell programming is dealt in depth which can be used to develop applications.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Describe the architecture and features of Linux Operating System and distinguish it from other Operating System.					K1
2	Develop Linux utilities to perform File processing, Directory handling, User Management and display system configuration					K2-K3
3	Develop shell scripts using pipes, redirection, filters and Pipes					K2
4	Apply and change the ownership and file permissions using advance Unix commands.					K3
5	Build Regular expression to perform pattern matching using utilities and implement shell scripts for real time applications.					K3-K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
INTRODUCTION			12 hours			
Introduction to LINUX Operating System: Introduction – The LINUX Operating System.						
Unit:2						
MANAGING FILES AND DIRECTORIES			15 hours			
Managing Files and Directories: Introduction – Directory Commands in LINUX – File Commands in LINUX.						
Unit:3						
VI EDITOR			15 hours			
Creating files using the vi editor: Text editors – The vi editor. Managing Documents: Locating files in LINUX – Standard files – Redirection – Filters – Pipes.						
Unit:4						
SECURING FILES			15 hours			
Securing files in LINUX: File access permissions – viewing File access permissions – Changing File access permissions. Automating Tasks using Shell Scripts: Introduction – Variables- Local and Global Shell variables – Command Substitution.						

Unit:5	CONDITIONAL EXECUTION IN SHELL SCRIPTS	15 hours
Using Conditional Execution in Shell Scripts: Conditional Execution – The case...esac Construct. Managing repetitive tasks using Shell Scripts: Using Iteration in Shell Scripts – The while construct – until construct – for construct – break and continue commands – Simple Programs using Shell Scripts.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Operating System LINUX, NIIT, PHI, 2006, Eastern Economy Edition.	
2	N.B. Venkateswarlu , Introduction to Linux: Installation and Programming, BS Publications, 2008, 1 st Edition	
Reference Books		
1	Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	http://spoken-tutorial.org/	
2	https://www.tutorialspoint.com/linux/index.htm	
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	M	M	M	L
CO2	S	S	S	M	S	M	M	M	M	L
CO3	S	S	S	M	S	M	S	S	S	M
CO4	S	S	S	M	S	M	S	S	S	M
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Course code		Programming Lab – LINUX and SHELL PROGRAMMING	L	T	P	C
Core/Elective/Supportive		Core Lab: 5	0	0	6	4
Pre-requisite		Students should have the prior basic knowledge in operating system.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. Describe the architecture and features of Linux Operating System 2. To create programs in the Linux environment using Linux utilities and commands. 3. Student is given an introduction of Linux shell commands and they will be able to write own shell scripts. 4. Shell programming is dealt in depth which can be used to develop applications.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Develop Linux utilities to perform File processing, Directory handling and User Management					K1, K2
2	Understand and develop shell scripts using pipes, redirection, filters, Pipes and display system configuration					K2-K3
3	Develop simple shell scripts applicable to file access permission network Administration					K3
4	Apply and change the ownership and file permissions using advance Unix commands.					K4-K5
5	Create shell scripts for real time applications.					K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Programs				36 hours		
1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.						
2. Write a shell script to show the following system configuration : a. currently logged user and his log name b. current shell , home directory , Operating System type , current Path setting , current working directory c. show currently logged number of users, show all available shells d. show CPU information like processor type , speed e. show memory information						
3. Write a Shell Script to implement the following: pipes, Redirection and tee commands.						
4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.						
5. Write a shell script to implement the filter commands.						
6. Write a shell script to remove the files which has file size as zero bytes.						
7. Write a shell script to find the sum of the individual digits of a given number.						
8. Write a shell script to find the greatest among the given set of numbers using command line arguments.						
9. Write a shell script for palindrome checking.						

10. Write a shell script to print the multiplication table of the given argument using for loop.		
	Total Lecture hours	36 hours
Text Book(s)		
1	Operating System LINUX, NIIT, PHI, 2006, Eastern Economy Edition.	
2	N.B. Venkateswarlu , Introduction to Linux: Installation and Programming, BS Publications, 2008, 1 st Edition	
Reference Books		
1	Richard Petersen, Linux: The Complete Reference, Sixth Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	https://www.w3resource.com/linux-exercises/	
2	http://spoken-tutorial.org/	
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	M	M	M
CO3	S	S	S	M	S	M	S	S	M	M
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Course code		Lab – Web Programming	L	T	P	C
Core/Elective/Supportive		Skill Based Subject 2 (Lab) :1	0	0	4	3
Pre-requisite		Basic knowledge in internet and basic of html.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To gain knowledge about how to develop web applications						
2. To create web applications using HTML						
3. To create web applications using HTML with Style sheets						
4. To design interactive web sites with all the features given in Web programming						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the problems and create applications in basics of web programming				K2-K4, K6	
2	Understand and develop Web pages with formatting styles.				K2-K3	
3	Apply the features in HTML to present the details given				K3	
4	Analyze the problem, apply the concept for developing applications				K4-K5	
5	Create web sites of real time applications				K6	
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Programs			36 hours			
1. Develop a HTML document which displays you name as <h1> heading and displays any four of your friends. Each of your friend's names must appear as hot text. When you click your friend's name, it must open another HTML document, which tells about your friend.						
2. Write names of several countries in a paragraph and store it as an HTML document, world.html. Each country name must be a hot text. When you click India (for example), it must open india.html and it should provide a brief introduction about India.						
3. Design a HTML document describing you. Assign a suitable background design and background color and a text color.						
4. Develop a HTML document to print the following: Who can use the solar heaters? Anybody with a regular hot water demand. In houses for domestic purposes (cooking, bathing and washing). □□ For engineering / chemical industries, dairies and textile/leather process plants, to –preheat boiler feed water. For hostels, hospitals, guest houses and industrial canteens. □□ For food-processing plants and for process applications.						
5. Write a HTML document to print the following: The family has the following facilities: 1. Own House Living area 2400 square feet, Separate bungalow, Car shed, 2 Car Maruti Esteem, Registration Number TN 38 A 9650, 1996 Model, Farm, 35 acres Coconut Groves, 10 acres Mango Groves.						
6. Write a HTML document to print your class Time Table.						
7. Develop a Complete Web Page using Frames and Framesets which gives the Information						

about a Hospital using HTML.		
8. Write a HTML document to print your Bio-Data in the following format: NAME Religion Community Street Town District State Address PIN Code Office Phone Residence Mobile Educational Qualification Degree University/Institute Month& year Grade / Mark		
9. Develop complete set of web pages to describe you skills in various areas using HTML.		
10. Develop a web site to publish your family and the details of each member using HTML.		
11. Develop a HTML document to display a Registration Form for an inter-collegiate function.		
12. Develop a HTML document to design Alumni Registration form of your college.		
	Total Lecture hours	36 hours
Text Book(s)		
1	Internet and Web Design, ITL Education, Macmillan India Ltd.	
2	HTML and XML an Introduction, NIIT, Prentice Hall of India Pvt. Ltd	
Reference Books		
1	World Wide Web Design with HTML, C. Xavier, 2007, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	L	M	M	M
CO3	L	S	M	M	S	M	S	S	M	M
CO3	S	M	S	S	M	S	S	M	S	S
CO4	M	S	S	S	M	S	M	S	S	L
CO5	S	M	L	S	S	M	S	S	M	S

ALLIED-IV: BUSINESS ACCOUNTING

UNIT I: Introduction-Accounting Principles-Branched of accounting-accounting rules- Journalising-Ledger-Subsidiary Book including cash books-Trial Balance.

UNIT II: Preparation of Final Accounts: Trading, Profit and Loss Account and Balance sheet with simple adjustments-Outstanding Expenses and Income, Prepaid Expenses, Pre received Income, Depreciation –Provision for bad debts.

UNIT III: Cost Account-Meaning elements of cost-Preparation of cost sheet with simple adjustments.

UNIT IV: Material cost: Stores Ledger-FIFO-LIFO-weighted average, simple average method. Management Account-Meaning –Objectives- Management account with financial Account.

UNIT V: Budget and Budgetary control-Preparation of various budgets-Flexible Budget- Production Budget-Cash Budget – Sales Budget.

Note: Distribution of Marks between Problems and Theory shall be 60% and 40%.

TEXT BOOK:

1. Accounting for Management, N.P.Srinivasan and M.Sakthivel Murugan, S.Chand & Company Ltd., New Delhi.

REFERENCE BOOKS:

1. Double entry book Keeping, T.S Grewal, Sultan Chand & Sons, New Delhi.
2. Management Accounting, Sharma and Gupta, Kalyani Publishers, New Delhi.

BHARATHIAR UNIVERSITY : COIMBATORE 641 046
PART-IV GENERAL AWARENESS
FOR B.A.,B.Sc., B.C.A., B.S.W., B.Com., B.B.M. and B.B.A. DEGREE EXAMINATIONS

CONTENTS

1. VERBAL APTITUDE
2. NUMERICAL APTITUDE
3. ABSTRACT REASONING
4. TAMIL AND OTHER LITERATURE
5. GENERAL SCIENCE AND TECHNOLOGY
AND EDUCATION
6. COMPUTER SCIENCE
7. ECONOMICS AND COMMERCE
8. HISTORY AND FREEDOM STRUGGLE
9. SPORTS
10. CURRENT AFFAIRS

பாரதியாரர் பல்கலைக்கழகம் : கோயமுத்தூர்

பகுதி - IV : சிறப்புத் தமிழ் தான் - 2

நான்காம் பருவம்

**இளங்கலை 2010-11 கல்வி ஆண்டுமுதல் சேர்வோர்க்குரியது
(12-ம் வகுப்பு வரை தமிழ் மொழிப்பாடம் பயின்றவர்களுக்கு)**

கூறு - 1 திருக்குறள் - ஒழிபியலில் முதல் 5 அதிகாரங்கள் மட்டும்

கூறு - 2 எழுத்துப்பிழை நீக்க வழிகள் - பிழையும் திருத்தமும்
சொற்களைச் சரியாகப் பயன்படுத்தும் பாங்கு - வினைச் சொற்கள்
துணை வினைகள் (எடுத்துகாட்டுகளுடன் விளக்குதல்).

கூறு - 3 வழக்கறிதல் : மரபு வழக்கு - இயல்பு வழக்கு - தகுதி வழக்கு அறிதல்

கூறு - 4 படைப்பாற்றல் பயிற்சி
கட்டுரைகள் எழுதுதல்

கூறு - 5 : தமிழ்ச்செம்மொழி வரலாறு

மொழி - விளக்கம் - மொழிக்குடும்பங்கள் - உலகச் செம்மொழிகள் - இந்தியச் செம்மொழிகள் -
செம்மொழித் தகுதிகள் - வரையறைகள் - வாயும் தமிழ்ச்செம்மொழி - தமிழின் தொன்மை - தமிழின்
சிறப்புகள் - தமிழ்ச் செம்மொழி நூல்கள்.

தமிழ்ச் செம்மொழி அறிந்தேற்பு - பரிதியாற் கலைஞர் அவர்கள் முதல் கலைஞர் திரு. மு. கருணாநிதி
அவர்கள் வரை (அறிஞர்கள் - அமைப்புகள் - நிறுவனங்கள் - இயக்கங்கள் தொடர் முயற்சிகள் -
அறப்போராட்டங்கள் - உலகத் தமிழ்ச் செம்மொழி மாநாடு, கோவை-2010).

பார்வை நூல்கள் (அலகு -5)

1. கலைஞர் மு. கருணாநிதி, செம்மொழி வரலாற்றில் சில சேப்பேடுகள்.
2. ஆய்வரங்கர் சிறப்புமலர், உலகத் தமிழ்ச் செம்மொழி மாநாடு, கோவை-2010.
3. உலகத் தமிழ்ச் செம்மொழி மாநாட்டுச் சிறப்பு மலர், கோவை-2010.
4. சாலினி இளந்திரையன், தமிழ்ச் செம்மொழி ஆணை, மணிவாசகர் பதிப்பகம், சென்னை, 2005.
5. கால்தலெல், "திராவிட மொழிகளின் ஒப்பிலக்கணம்", கழக வெளியீடு, சென்னை.

குறிப்பு: கூறு-5க்கு உரிய பாடங்கள் பாடத்திட்டக்குழுவினால் உருவாக்கப்பட்டுள்ளது. அவை
இத்துடன் இணைக்கப்பட்டுள்ளன.



Fifth Semester

Course code		RDBMS & Oracle	L	T	P	C
Core/Elective/ Supportive		Core : 8	6	0	0	4
Pre-requisite	Basic knowledge about the data, table and database in computers		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. The course describes the data, organizing the data in database, database administration. 2. To grasp the different issues involved in the design of a database system. 3. To study the physical and logical database designs and database modeling like relational, Hierarchical, network models, database security, integrity and normalization. 4. It also gives introduction to SQL language to retrieve the data from the database with suitable application development. 5. Provide strong foundation of database concepts and to introduce students to application development in DBMS.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of Relational Data Model, Entity-Relationship Model and process of Normalization					K1-K2
2	Understand and construct database using Structured Query Language (SQL) in Oracle9i environment.					K1-K3
3	Learn basics of PL/SQL and develop programs using Cursors, Exceptions, Procedures and Functions.					K1-K4
4	Understand and use built-in functions and enhance the knowledge of handling multiple tables					K1-K3
5	Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
DATABASE CONCEPTS			15 hours			
Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De-normalization – Another Example of Normalization.						
Unit:2						
ORACLE9i			15 hours			
Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus – SQL *Plus Commands – Errors & Help – Alternate Text Editors – SQL *Plus Worksheet – iSQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.						
Unit:3						
WORKING WITH TABLE			15 hours			
Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from						

Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.		
Unit:4	PL/SQL	15 hours
PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.		
Unit:5	PL/SQL COMPOSITE DATA TYPES	12 hours
PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Database Systems using Oracle, Nilesh Shah, 2 nd edition, PHI.	
2	E-Book : Diana Lorentz, “Oracle® Database SQL Reference”, ORACLE, Dec, 2005.	
3	E-Book : Bill Pribyl, Steven Feuerstein, “Oracle PL/SQL Programming”, O’Reilly Media, Inc., 6 th Edition, February 2014.	
Reference Books		
1	Database Management Systems, Majumdar & Bhattacharya, 2007, TMH.	
2	Database Management Systems, Gerald V. Post, 3 rd edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1	http://www.digimat.in/nptel/courses/video/106105175/L01.html	
2	https://www.tutorialspoint.com/oracle_sql/index.htm	
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	M	M	M	L
CO2	S	S	S	M	S	M	M	M	M	L
CO3	S	S	S	S	S	S	S	S	M	M
CO4	S	S	S	S	S	M	S	S	M	L
CO5	S	S	S	S	S	M	S	S	M	L

*S-Strong; M-Medium; L-Low

Course code		Visual Basic	L	T	P	C
Core/Elective/Supportive	Core : 9		6	0	0	4
Pre-requisite	Knowledge in programming language and oops concept.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. The main aim of the course is to cover visual basic programming skills required for modern software development.						
2. To study the advantages of Controls available with visual basic.						
3. To gain a basic understanding of database access and management using data controls.						
4. To facilitate the learner to carry out project works using the tools available in VB and MS Access.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Demonstrate fundamental skills in utilizing the tools of a visual environment such as command, menus and toolbars.					K1
2	Implement SDI and MDI applications using forms, dialogs and other types of GUI components.					K2
3	Understand the connectivity between VB with MS-ACCESS database.					K3
4	Implement the methods and techniques to develop projects.					K4
5	Attain a good practical skill of managing ODBC and Data Access Objects					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
INTRODUCTION TO VB			15 hours			
Getting Started with VB6, Programming Environment, working with Forms, Developing an application, Variables, Data types and Modules, procedures and control structures, arrays. Working with Controls: Creating and using controls, working with control arrays.						
Unit:2						
MENUS IN VB			15 hours			
Menus, Mouse events and Dialog boxes: Mouse events, Dialog boxes, MDI and Flex grid: MDI, Using the Flex grid control.						
Unit:3						
ODBC AND DATA ACCESS OBJECTS			15 hours			
ODBC and Data Access Objects: Data Access Options, ODBC, Remote data objects, ActiveX EXE and ActiveX DLL: Introduction, Creating an ActiveX EXE Component, Creating ActiveX DLL Component.						
Unit:4						
OBJECT LINKING AND EMBEDDING			15 hours			
Object Linking and Embedding: OLE fundamentals, Using OLE Container Control, Using OLE Automation objects, OLE Drag and Drop, File and File System Control: File System Controls, Accessing Files.						
Unit:5						
CONTROLS IN VB			12 hours			
Additional controls in VB: sstab control, setting properties at runtime, adding controls to tab, list control, tabstrip control, MS Flexgrid control, Why ADO, Establishing a reference, Crystal and						

Data reports.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Visual Basic 6.0 Programming, Content Development Group, TMH, 8 th reprint, 2007. (Unit I to Unit IV)	
2	Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House, Fourth Reprint, 2006. (Unit V)	
Reference Books		
1	Gray Cornell (2003), "Visual Basic 6 from ground up" TMH, New Delhi, 1 st Edition,	
2	Deitel and Deitel, T.R.Nieto (1998), "Visual Basic 6 – How to Program", Pearson Education. First Edition.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	M	M	M	M	M	L
CO2	S	S	S	M	M	M	S	S	M	L
CO3	S	S	S	S	S	M	S	S	S	M
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Course code		Programming Lab – VB & Oracle	L	T	P	C
Core/Elective/Supportive		Core Lab : 6	0	0	6	4
Pre-requisite		Students should have the theoretical knowledge in visual basic and oops concept.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To develop applications using Graphical User Interface tools.						
2. To understand the design concepts.						
3. To design and build database systems and demonstrate their competence.						
4. To create requirement analysis and specification for software applications.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the concepts of Visual Basic.					K1
2	Learn the advantages of Controls in VB					K2
3	Design and develop the event- driven applications using Visual Basic framework.					K3
4	Apply the knowledge of database methods.					K4
5	Learn basics of PL/SQL and develop programs using Cursors, Exceptions, Procedures and Functions					K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Programs						
36 hours						
1. Construction of an Arithmetic Calculator (Simple).						
2. Writing simple programs using loops and decision-making statements.						
a. Generate Fibonacci series.						
b. Find the sum of N numbers.						
3. Write a program to create a menu and MDI Forms.						
4. Write a program to display files in a directory using DriveListBox, DirListBox and FileListBox control and open, edit and save text file using Rich text box control.						
5. Write a program to illustrate Common Dialog Control and to open, edit and save text file.						
6. Write a program to implement animation using timers.						
7. Write a simple VB program to accept a number as input and convert it into						
a. Binary b. Octal c. Hexa-decimal						
8. Create a table for Employee details with Employee Number as primary key and following fields:						
Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set, Sorting and Grouping operators.						
9. Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.						

10. Write a PL/SQL program to implement the concept of Triggers		
11. Write a PL/SQL program to implement the concept “Procedures”.		
12. Write a VB program to manipulate the student mark list with oracle database connectivity program.		
	Total Lecture hours	36 hours
Text Book(s)		
1	Visual Basic 6.0 Programming, Content Development Group, TMH, 8 th reprint, 2007. (Unit I to Unit IV)	
2	Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House, Fourth Reprint, 2006. (Unit V)	
3	E-Book : Bill Pribyl, Steven Feuerstein, “Oracle PL/SQL Programming”, O’Reilly Media, Inc., 6 th Edition, February 2014.	
Reference Books		
1	Gray Cornell (2003), ”Visual Basic 6 from ground up” TMH, New Delhi, 1 st Edition,	
2	Deitel and Deitel, T.R.Nieto (1998), “Visual Basic 6 – How to Program”, Pearson Education. First Edition.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	M	L	S	M	M	L
CO3	S	S	S	L	M	M	S	M	S	L
CO3	S	S	S	M	S	M	S	S	S	M
CO4	S	S	S	M	S	M	S	S	M	M
CO5	S	S	S	S	S	S	S	S	S	M

*S-Strong; M-Medium; L-Low

Course code		Introduction to Compiler Design	L	T	P	C
Core/Elective/Supportive		Elective : I	6	0	0	4
Pre-requisite	Basic knowledge in translators, compilation of high level language programming		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To understand the use of translators and compiler						
2. To enable students to learn the phases of a compiler						
3. To familiar with context free grammars, regular expressions and parsing techniques						
4. To learn about the intermediate codes in translation						
5. To enable the students to learn about code generations						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the use of translators and compiler, structure of a compiler					K1
2	Understand and apply the context free grammars and parsing techniques					K1-K4
3	Understand and remember the syntax directed translations, intermediate codes					K2
4	Understand the run time storage schemes, error detection and recovery					K3
5	Understand and apply knowledge on code optimization and code generator					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
Introduction to Compilers			15 hours			
Introduction to Compilers: Compilers and Translator – Need of Translator – The structure of a Compiler – Lexical analysis – Syntax analysis – Intermediate code generation – optimization – code generation – Compiler – writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the number of states of a DFA.						
Unit:2						
Syntactic programming languages and Parsing Techniques			15 hours			
The Syntactic specification of programming languages: context free grammars – derivations and parse trees – capabilities of context free grammars. Basic parsing techniques: Parsers – shift – reduce parsing – operator – precedence parsing – top down parsing – predictive parsers.						
Unit:3						
Syntax directed Translation and Symbol Table			15 hours			
Syntax – directed translation: syntax – directed translation schemes – implementation of syntax – directed translators – intermediate code – postfix notation – parse trees and syntax trees – 3 address code – quadruples and triples – translation of assignment statements – Boolean expressions – statements that alter the flow of control. Symbol tables: the contents of a symbol table – data structures for symbol table – representing scope information.						
Unit:4						
Storage allocation and Error detection and recovery			15 hours			
Run time storage administration: Implementation of a simple stack allocation scheme – implementation of block-structured languages – storage allocation in block structured languages. Error deduction and recovery: errors – lexical phase errors – syntactic phase errors – semantic						

errors.		
Unit:5	Code Optimization and Generation	12 hours
Introduction of code optimization: The principle sources of optimization – loop optimization – the DAG representation of basic blocks – value numbers and algebraic laws – Global data flow analysis. Code generation: Object programs – problems in code generation – a machine model – a simple code generator – register allocation and assignment – code generation from DAGs – peephholes optimization.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Principles of Compiler Design, Alfred V.Aho, Jeffrey D.Ullman, Narosa Publishing House.	
Reference Books		
1	Steven S. Muchnick, “Advanced Compiler Design and Implementation”, Morgan Kaufmann Publishers an imprint of Elsevier 2014.	
2		
3		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	L	M	M	M	M	M	L
CO2	M	S	M	M	M	M	S	S	M	L
CO3	S	M	S	S	S	M	S	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	L	S	M	M	S	S	S	S	M

*S-Strong; M-Medium; L-Low

Course code		PHP & Scripting Languages	L	T	P	C
Core/Elective/Supportive		Elective : I	6	0	0	4
Pre-requisite		Basic knowledge on HTML and CSS and OOPs concept.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To understand the scripting languages used while developing web applications						
2. To enable students to learn VB script and Java script for implementing event procedures.						
3. To familiar SSI and Cookies and plugins						
4. To learn about the server side scripting language to build web applications						
5. To enable the students to learn how to build applications in PHP with database.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basics of .VB script and Java script					K1
2	Understand the I/O handling, data validation, Activex control and validation					K2
3	Understand and remember the java script objects, form validations, cookies and plugins					K2
4	Understand the sever side scripting language basics					K3
5	Knowledge on PHP objects, cookies, connecting remote files, and database connections					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1 Introduction to .NET Framework 15 hours						
VB Script and Java Script: Language structure – control structure – Procedures and functions – Error handling.						
Unit:2 File I/O, Object Oriented Concepts and Message Queues 15 hours						
VB Script: Input & Output – Data Validation –Integration with Forms – Activex Control & Scripting						
Unit:3 VB.NET IDE and Controls 15 hours						
Java Script: Form Validation – SSI and Cookies – Frames and Windows – MIME Types – Plugins						
Unit:4 VB.NET & ASP.NET 15 hours						
PHP: Server side scripting Language: Basic syntax – Types – Variables – Constants – Expressions – Operators – Control Structures.						
Unit:5 Web Services 12 hours						
PHP: Functions – Classes and Objects – HTML forms – HTTP authentication with PHP – Cookies – Handling file uploads – Using remote files – Connection handling – Database Connections.						
Unit:6 Contemporary Issues 3 hours						
Expert lectures, online seminars – webinars						

	Total Lecture hours	75 hours
Text Book(s)		
1	Christopher J.Goddard, Mark White, Mastering VB Script, Galgotia Publications, New Delhi.	
2	Lee Purcell, Mary Jane Mara, The ABCs of Javascript.	
Reference Books		
1	Steven Holzner, PHP: The Complete Reference.	
2		
3		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	L	M	M	M	M	M	L
CO2	S	S	L	M	M	S	S	M	M	L
CO3	M	M	S	M	S	M	M	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	L	S	M	M	S	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		PYTHON Programming	L	T	P	C
Core/Elective/Supportive	Elective : I		6	0	0	4
Pre-requisite	Knowledge on logic of the programs and oops concept.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To introduce the fundamentals of Python Programming. 2. To teach about the concept of Functions in Python. 3. To impart the knowledge of Lists, Tuples, Files and Directories. 4. To learn about dictionaries in python. 5. To explores the object-oriented programming, Graphical programming aspects of python with help of built in modules..						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Remembering the concept of operators, data types, looping statements in Python programming.					K1
2	Understanding the concepts of Input / Output operations in file..					K2
3	Applying the concept of functions and exception handling					K3
4	Analyzing the structures of list, tuples and maintaining dictionaries					K4
5	Demonstrate significant experience with python program development environment					K4-K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
BASICS OF PYTHON			10 hours			
BASICS : Python – Variables – Executing Python from the Command Line – Editing Python Files – Python Reserved Words – Basic Syntax-Comments – Standard Data Types – Relational Operators – Logical Operators – Bit Wise Operators – Simple Input and Output.						
Unit:2						
CONTROL STATEMENTS			10 hours			
CONTROL STATEMENTS: Control Flow and Syntax – Indenting – if Statement – statements and expressions- string operations- Boolean Expressions –while Loop – break and continue – for Loop. LISTS: List-list slices – list methods – list loop – mutability – aliasing – cloning lists – list parameters. TUPLES: Tuple assignment, tuple as return value –Sets – Dictionaries						
Unit:3						
FUNCTIONS			10 hours			
FUNCTIONS: Definition – Passing parameters to a Function – Built-in functions- Variable Number of Arguments – Scope – Type conversion-Type coercion-Passing Functions to a Function – Mapping Functions in a Dictionary – Lambda – Modules – Standard Modules – sys – math – time – dir – help Function.						
Unit:4						
ERROR HANDLING			12 hours			
ERROR HANDLING: Run Time Errors – Exception Model – Exception Hierarchy – Handling Multiple Exceptions – Data Streams – Access Modes Writing – Data to a File Reading – Data From a File – Additional File Methods – Using Pipes as Data Streams – Handling IO Exceptions – Working with Directories.						

Unit:5	OBJECT ORIENTED FEATURES	12 hours
OBJECT ORIENTED FEATURES: Classes Principles of Object Orientation – Creating Classes – Instance Methods – File Organization – Special Methods – Class Variables – Inheritance – Polymorphism – Type Identification – Simple Character Matches – Special Characters – Character Classes – Quantifiers – Dot Character – Greedy Matches – Grouping – Matching at Beginning or End – Match Objects – Substituting – Splitting a String – Compiling Regular Expressions.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	55 hours
Text Book(s)		
1	Mark Summerfield, Programming in Python 3: A Complete introduction to the Python Language , Addison-Wesley Professional, 2009.	
2	Martin C. Brown, PYTHON: The Complete Referencel, McGraw-Hill, 2001	
3	E. Balagurusamy (2017), “Problem Solving and Python Programming”, McGraw-Hill, First Edition.	
Reference Books		
1	Allen B. Downey, “Think Python: How to Think Like a Computer Scientist”, 2 nd edition, Updated for Python 3, Shroff/O‘Reilly Publishers, 2016	
2	Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011	
3	Wesley J Chun, —Core Python Applications Programmingl, Prentice Hall, 2012.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	L	S	M	L	M	S	S
CO2	S	S	S	L	S	M	L	M	S	S
CO3	S	S	S	L	S	M	L	M	S	S
CO4	S	S	S	L	S	M	L	M	S	S
CO5	S	S	S	L	S	M	L	M	S	S

*S-Strong; M-Medium; L-Low

Course code		CASE Tools Concepts and Applications	L	T	P	C
Core/Elective/Supportive		Skill based Subject – 3	6	0	0	3
Pre-requisite		Basic knowledge in software project, testing in SDLC	Syllabus Version	2020-21 Onwards		
Course Objectives:						
The main objectives of this course are to: 1. To enhance the basic software engineering methods and practices. 2. To learn the techniques for developing software systems. 3. To understand the object oriented design. 4. To understand software testing approaches						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of software engineering					K1
2	Apply the software engineering models in developing software applications					K2-K3
3	Implement the object oriented design in various projects					K4
4	Knowledge on how to do a software project with in-depth analysis.					K3
5	To inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.					K1-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
SOFTWARE ENGINEERING			15 hours			
Data Modeling: Business Growth-Organizational Model-Case Study of student MIS-What is the purpose of such Models-Understanding the business-Types of models-model development approach-the case for structural development-advantages of using a case tool. System analysis and design-what is DFD-General Rules for Drawing DFD-Difference Between Logical data flow diagram and Physical data flow diagram-Software verses Information Engineering-How case tools store information.						
Unit:2						
SOFTWARE DESIGN			12 hours			
Approach used to solve the problem statement: How to deal with a problem statement-Data flow diagram for Payroll System-Presentation Diagram for Payroll System-sehematics of the model-Forms-Screens-Menu Screens-Data entry Screens-Report Output Format-Utilities. Installation of Ubridge and Synthesis: How to use the tools in Ubridge Synthesis for case-Installation of Ubridge Synthesis-Computer Aided Software Engineering-Getting Ubridge to work-Setup-Assign-Housekeep-The Ubridge page.						
Unit:3						
SOFTWARE TESTING			15 hours			
Introduction to Ubridge: Introduction – Main flow of the system prototyping your Report-Introducing the Novice Model of the Operation. Introducing Synthesis – Synthesis basic – Synthesis – Menu Drawing the screen-Requirement Definition-Diagram-Data Dictionary-Document-Synthesis Main Administration – Synthesis reference – importing and exporting screen.						

Unit:4	SOFTWARE CONFIGURATION MANAGEMENT	15 hours
Diagram definition tool: Introduction-Starting DDT-Drawing your own Icon – Defining the connection rules-Rebuilding your icon. Object oriented methodologies: Rumbaugh et.al.'s object modeling techniques-The Booch methodology –The Jacobson et.al. Methodologies-Pattern-Frameworks-The Unified Approach.		
Unit:5	ESTIMATION	15 hours
Introduction to UML-UML Diagram-Class Diagram-Use Case Diagram-Interaction Diagram-Sequence Diagram-Collaboration Diagram-State Chart Diagram-Activity Diagram-Component Diagram-Deployment Diagram.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Case Tools Concepts and Applications, Ivan N Bayross, BPB Publications	
2	Object Oriented System Development using the Unified Modeling Language, McGraw Hill International edition.	
3		
Reference Books		
1	Software Engineering: A Practitioner's Approach, Roger S Pressman, McGraw Hill International Edition.	
2		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	L	M	M	M	M	M	L
CO2	S	S	L	S	M	S	S	S	M	L
CO3	M	M	M	M	S	M	M	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	L	S	S	M	S	S	M	M	M

*S-Strong; M-Medium; L-Low



Sixth Semester

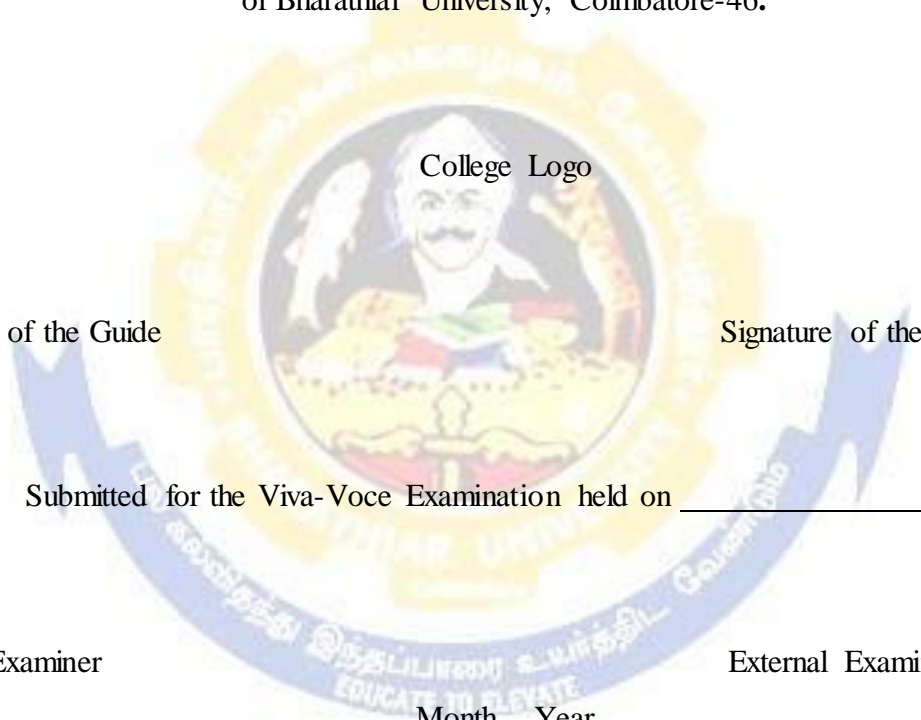
Course code		Graphics & Multimedia	L	T	P	C
Core/Elective/Supportive	Core: 10		5	0	0	4
Pre-requisite	Basic knowledge in 2D, 3D and multimedia file formats		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. Design and apply two dimensional graphics and transformations. 2. Design and apply three dimensional graphics and transformations. 3. Apply Illumination, color models and clipping techniques to graphics. 4. Understood Different types of Multimedia File Format.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Explain applications, principles, commonly used and techniques of computer graphics and algorithms for Line-Drawing, Circle- Generating and Ellipse-Generating.					K2
2	Students will get the concepts of 2D and 3D, Viewing, Curves and surfaces, Hidden Line/surface elimination techniques					K3
3	Studies concepts of Multimedia Systems, Text, Audio and Video tools					K3
4	Compressing audio and video using MPEG-1 and MPEG-2					K4
5	Creates Animation with special effects using algorithms					K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
OUTPUT PRIMITIVES			15 hours			
Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. Attributes of Output Primitives: Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – Character Attributes.						
Unit:2						
2D GEOMETRIC TRANSFORMATIONS			15 hours			
2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. 2D Viewing: The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation – 2D Viewing Functions – Clipping Operations.						
Unit:3						
TEXT			15 hours			
Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.						
Unit:4						
AUDIO			15 hours			
Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound						

– Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response – Audio Processing Software.		
Unit:5	VIDEO AND ANIMATION	12 hours
Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software. Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio – MPEG-1 Video – MPEG-2Audio – MPEG-2 Video.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Computer Graphics, Donald Hearn, M.Pauline Baker, 2 nd edition, PHI. (UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)	
2	Principles of Multimedia, Ranjan Parekh, 2007, TMH. (UNIT III: 4.1-4.7,5.1-5.16 UNIT-IV: 7.1-7.3,7.8-7.14,7.18-7.20,7.22,7.24,7.26-28 UNIT- V: 9.5-9.10,9.13,9.15,10.10-10.13)	
Reference Books		
1	Computer Graphics, Amarendra N Sinha, Arun D Udai, TMH.	
2	Multimedia: Making it Work, Tay Vaughan, 7 th edition, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	M	S	S	S	M
CO2	S	S	S	M	S	M	M	M	S	M
CO3	S	M	M	M	S	M	M	M	S	M
CO4	S	S	S	M	S	M	M	M	S	M
CO5	S	S	S	M	S	M	S	S	S	M

*S-Strong; M-Medium; L-Low

Course code		Project Work Lab	L	T	P	C
Core/Elective/Supportive		Core: 11	0	0	5	8
Pre-requisite	Students should have the strong knowledge in any one of the programming languages in this course.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To understand and select the task based on their core skills. 2. To get the knowledge about analytical skill for solving the selected task. 3. To get confidence for implementing the task and solving the real time problems. 4. Express technical and behavioral ideas and thought in oral settings. 5. Prepare and conduct oral presentations						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Formulate a real world problem and develop its requirements develop a design solution for a set of requirements.					K3
2	Test and validate the conformance of the developed prototype against the original requirements of the problem.					K5
3	Work as a responsible member and possibly a leader of a team in developing software solutions.					K3
4	Express technical ideas, strategies and methodologies in written form. Self-learn new tools, algorithms and techniques that contribute to the software solution of the project.					K1-K4
5	Generate alternative solutions, compare them and select the optimum one.					K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
AIM OF THE PROJECT WORK						
6. The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.						
7. Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.						
8. The project work should be compulsorily done in the college only under the supervision of the department staff concerned.						
Viva Voce						
1. Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the Annexure Report available in the College, for a total of 200 marks at the last day of the practical session.						
2. Out of 200 marks, 160 marks for project report and 40 marks for Viva Voce.						

Project Report Format	
<p style="text-align: center;">PROJECT WORK TITLE OF THE DISSERTATION</p> <p style="text-align: center;">Bonafide Work Done by STUDENT NAME REG. NO.</p> <p style="text-align: center;">Dissertation submitted in partial fulfillment of the requirements for the award of <Name of the Degree> of Bharathiar University, Coimbatore-46.</p> <p style="text-align: center;"> College Logo</p> <p>Signature of the GuideSignature of the HOD</p> <p style="text-align: center;">Submitted for the Viva-Voce Examination held on _____</p> <p>Internal ExaminerExternal Examiner</p> <p style="text-align: center;">Month – Year</p>	
<p>CONTENTS</p> <p>Acknowledgement</p> <p>Contents</p> <p>Synopsis</p> <p>1. Introduction</p> <p>1.1 Organization Profile</p> <p>1.2 System Specification</p> <p>1.2.1 Hardware Configuration</p> <p>1.2.2 Software Specification</p> <p>2. System Study</p> <p>2.1 Existing System</p> <p>2.1.1 Drawbacks</p>	

2.2 Proposed System
2.2.1 Features
3. System Design and Development
3.1 File Design
3.2 Input Design
3.3 Output Design
3.4 Database Design
3.5 System Development
3.5.1 Description of Modules (Detailed explanation about the project work)
4. Testing and Implementation
5. Conclusion
Bibliography
Appendices
A. Data Flow Diagram
B. Table Structure
C. Sample Coding
D. Sample Input
E. Sample Output
Course Designed By:

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	S	M	M	S	S	S	S
CO2	S	S	S	S	S	M	S	S	S	S
CO3	S	S	S	M	M	S	S	S	S	S
CO4	S	S	S	M	S	S	S	S	S	S
CO5	S	S	S	M	S	S	S	S	S	S

*S-Strong; M-Medium; L-Low

Course code		Programming Lab – Graphics & Multimedia	L	T	P	C
Core/Elective/Supportive		Core Lab : 7	0	0	6	4
Pre-requisite		Students should have the basic knowledge on C and C++ to do computer graphics and multimedia applications.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To learn the basic principles of 2-dimensional computer graphics. 2. Provide an understanding of how to scan convert the basic geometrical primitives, how to transform the shapes to fit them as per the picture definition. 3. Provide an understanding of mapping from a world coordinates to device coordinates, clipping and projections. 4. To be able to discuss the application of computer graphics concepts in the development of computer games, information visualization and business applications. 9. To comprehend and analyse the fundamentals of animation, virtual reality, underlying technologies, principles and applications.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basic concepts of computer graphics.					K1
2	Design scan conversion problems using C and C++ programming.					K2
3	Apply clipping and filling techniques for modifying an object.					K3
4	Understand the concepts of different type of geometric transformation of objects in 2D.					K4
5	Understand and develop the practical implementation of modeling, rendering, viewing of objects in 2D					K6
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Programs			36 hours			
Graphics						
1. Write a program to rotate an image.						
2. Write a program to drop each word of a sentence one by one from the top.						
3. Write a program to draw a line using DDA Algorithm.						
4. Write a program to move a car with sound effect.						
5. Write a program to bounce a ball and move it with sound effect.						
6. Write a program to test whether a given pixel is inside or outside or on a polygon.						
Multimedia						
7. Create Sun Flower using Photoshop.						
8. Animate Plane flying in the Clouds using Photoshop.						
9. Create Plastic Surgery for the Nose using Photoshop.						
10. Create See-through text using Photoshop.						
11. Create a Web Page using Photoshop.						
12. Convert Black and White Photo to Color Photo using Photoshop.						
			Total Lecture hours		36 hours	

Text Book(s)	
1	Computer Graphics, Donald Hearn, M.Pauline Baker, 2 nd edition, PHI.
2	Principles of Multimedia, Ranjan Parekh, 2007, TMH.
Reference Books	
1	Computer Graphics, Amarendra N Sinha, Arun D Udai, TMH.
2	Multimedia: Making it Work, Tay Vaughan, 7 th edition, TMH.
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]	
1	
2	
3	
Course Designed By:	

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	L	L	M	L
CO2	S	S	S	M	M	M	M	M	M	L
CO3	S	S	S	M	S	M	M	M	M	L
CO4	S	S	S	S	S	M	M	M	M	M
CO5	S	S	S	S	S	M	S	S	S	M

*S-Strong; M-Medium; L-Low



Course code		Computer Networks	L	T	P	C
Core/Elective/Supportive		Elective : II	5	0	0	4
Pre-requisite	Students should have the knowledge on computer connectivity and connectivity peripherals.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To identify various components in a data communication system and understand state-of-the-art in network protocols, architectures and applications.						
2. To enable students through the concepts of computer networks, different models and their involvement in each stage of network communication.						
3. To educate the concepts of terminology and concepts of the OSI reference model and the TCP/IP reference model and protocols such as TCP, UDP and IP.						
4. To be familiar with the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.						
5. Introduce the student to a network routing for IP networks and how a collision occurs and how to solve it and how a frame is created and character count of each frame.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Remember the organization of computer networks, factors influencing computer network development and the reasons for having variety of different types of networks.					K1
2	Understand Internet structure and can see how standard problems are solved and the use of cryptography and network security.					K2
3	Apply knowledge of different techniques of error detection and correction to detect and solve error bit during data transmission.					K3
4	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies					K4
5	Knowledge about different computer networks, reference models and the functions of each layer in the models					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1						
BASICS OF NETWORKS AND OSI MODEL			15 hours			
Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. Reference Models: OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP –Critique of OSI and protocols – Critique of the TCP/IP Reference model.						
Unit:2						
PHYSICAL LAYER			15 hours			
PHYSICAL LAYER – Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.						

Unit:3	DATA-LINK LAYER	15 hours
DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. MEDIUM-ACCESS CONTROL SUB LAYER: Multiple Access Protocols – Ethernet – Wireless LANs – Broadband Wireless – Bluetooth.		
Unit:4	NETWORK LAYER	15 hours
NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements of Transport Protocols – Internet Transport Protocols: TCP.		
Unit:5	APPLICATION LAYER	12 hours
APPLICATION LAYER: DNS – E-mail. NETWORK SECURITY: Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Computer Networks, Andrew S. Tanenbaum, 4 th edition, PHI. (UNIT-I:1.2-1.4 UNIT-II:2.2-2.4 UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)	
Reference Books		
1	Data Communication and Networks, Achyut Godbole, 2007, TMH.	
2	Computer Networks: Protocols, Standards, and Interfaces, Uyless Black, 2 nd ed, PHI	
3		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	L	M	S	M	S	M	M
CO2	S	S	L	S	M	S	M	M	S	L
CO3	M	M	S	M	S	M	M	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	M	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Dot Net Programming	L	T	P	C
Core/Elective/Supportive		Elective : II	5	0	0	4
Pre-requisite	Basic knowledge in web programming and VB programming		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
6. To understand .NET framework to develop web centric applications.						
7. To enable students to learn the basics of I/O and object oriented programming.						
8. To familiar with VB.NET and ASP.NET IDE						
9. To learn about the ASP.NET controls and ADO.NET.						
10. To enable the students to learn how to build and deployment of web services.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the basics of .NET framework and the object oriented programming.					K1
2	Understand the procedures, File I/O, Error handling and Message queues.					K2
3	Understand and remember the components in VB.NET IDE, ADO.NET and also the window forms.					K2
4	Understand the HTML server controls, Web controls, Validation controls and state management and tracing.					K3
5	Knowledge on SOAP, building web services and deploying and publishing web services, Finding and consuming web services.					K2-K4
K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create						
Unit:1 Introduction to .NET Framework 15 hours						
Introduction to .Net: .NET framework- difference between VB6 and VB .Net-Object-Oriented programming and VB .Net-Data types-Variables-Operators-Arrays-Conditional logic.						
Unit:2 File I/O, Object Oriented Concepts and Message Queues 15 hours						
Procedures- Dialog boxes- File IO and System objects- Error handling- Namespaces-Classes and Objects- Multithreading-Message Queue- Programming MSMQ.						
Unit:3 VB.NET IDE and Controls 15 hours						
VB.Net IDE-Compiling and Debugging-Customizing- Data access: ADO.Net- Visual studio .Net and ADO .Net. Windows Forms: Controls-Specific controls- Irregular forms.						
Unit:4 VB.NET & ASP.NET 15 hours						
VB.Net and web: Introduction to ASP .Net page framework- HTML server controls- Web controls- Validation controls- Events-CSS- State management- Tracing- Security.						
Unit:5 Web Services 12 hours						
UNIT V: Web Services: Introduction- Infrastructure- SOAP-Building web services- Deploying and publishing web services- Finding and consuming web services						

Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Bill Evjen, Jason Beres, et.al, Visual Basic .Net programming, Wiley Dreamtech India (p) Ltd. ISBN 81-265-0254-1. (Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 25, 26, 27, 29, 31, 32, 33, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50).	
Reference Books		
1	Fergal Grimes, Microsoft .NET for programmers, Shroff Publishers & Distributors (P) Ltd. ISBN 81-7366-540-0.	
2	Thuan Thai & Hoang Q.Lam, .NET Framework Essentials, Shroff Publishers & Distributors (P) Ltd. ISBN 81-7366-654-7	
3		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	L	M	M	M	M	M	L
CO2	M	S	L	M	M	S	S	M	L	L
CO3	M	M	S	M	S	S	S	L	S	M
CO4	M	M	S	S	S	S	M	S	M	S
CO5	S	L	S	M	M	S	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Distributed Computing	L	T	P	C
Core/Elective/ Supportive		Elective : II	5	0	0	4
Pre-requisite	Basic knowledge in databases, client and server		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To enable the students to learn the concepts and techniques in distributed computing and client server computing. 2. To learn the pros and cons of distributed computing, distributed databases. 3. To familiar with design considerations in distributed computing 4. To understand the client server models and R* projection techniques						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand the concepts and techniques in distributed computing and client server computing.					K1
2	Understand the pros and cons of distributed processing, databases, challenges.					K2
3	Understand the design considerations in distributed computing					K2
4	Understand and analyse the client server network model, file server, printer server and email server.					K3
5	Understand and obtaining the Knowledge on distributed databases, R* project techniques.					K2-K4
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1	Introduction to Distributed Systems				15 hours	
Distributed Systems: Fully Distributed Processing systems – Networks and interconnection structures – designing a distributed processing g system.						
Unit:2	Challenges and Managing Distributed Resources				15 hours	
Distributed systems: Pros and Cons of distributed processing – Distributed databases – the challenges of distributed data – loading, factors – managing the distributed resources division of responsibilities.						
Unit:3	Design Considerations				15 hours	
Design considerations: Communication Line loading – line loading calculations- partitioning and allocation - data flow systems – dimensional analysis- network database design considerations- ration analysis- database decision trees- synchronization of network databases						
Unit:4	Client Server Network Model				15 hours	
Client server network model: Concept – file server – printer server and e-mail server.						
Unit:5	Distributed Databases				12 hours	
Distributed databases: An overview, distributed databases- principles of distributed databases – levels of transparency- distributed database design- the R* project techniques problem of heterogeneous distributed databases.						

Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	John A. Sharp, An introduction to distributed and parallel processing, Blackwell Scientific Publication(Unit I & III)	
2	Uyless D. Black, Data communication and distributed networks (unit II)	
3	Joel M.Crichlow , Introduction to distributed & parallel computing (Unit IV)	
Reference Books		
1	Stefans Ceri, Ginseppe Pelagatti , Distributed database Principles and systems, McGraw Hill	
2		
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	L	M	M	M	M	M	L
CO2	S	S	L	S	S	S	S	S	M	L
CO3	S	M	L	M	S	M	S	L	S	M
CO4	M	M	M	S	S	S	M	S	M	M
CO5	M	L	M	M	M	S	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Internet of Things (IoT)	L	T	P	C
Core/Elective/Supportive		Elective: III	5	0	0	4
Pre-requisite		Students should have the basic understanding of logical circuits and hardware architecture.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To learn the concepts of IoT and its protocols. 2. To learn how to analysis the data in IoT. 3. To develop IoT infrastructure for popular applications. 4. To report about the IoT privacy, security and vulnerabilities solution						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	To understand the fundamentals of Internet of Things.					K1
2	To know the basics of communication protocols and the designing principles of Web connectivity.					K2
3	To gain the knowledge of Internet connectivity principles					K2-K3
4	Designing and develop smart city in IoT					K2-K3
5	Analyzing and evaluate the data received through sensors in IOT.					K4-K5
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1						
INTRODUCTION			15 hours			
Introduction - Definition & characteristics of IoT - physical design of IoT - logical design of IoT - IoT enabling Technologies - IoT levels & Deployment templates. Domain specific Iots : Home Automation - cities - Environment - Energy - retail - logistics - Agriculture - Industry i Health and life style.						
Unit:2						
IOT and M2M			12 hours			
IoT and M2M - Deference between Iot and M2M - SDN and NFV for lot - IoT systems management - SNMP - YANG - NETOPEER						
Unit:3						
IOT SPECIFICATION			15 hours			
IoT platforms design Methodology - purpose and specification - process specification - Domain model specification - Information model specification - Service specification - IoT level specification - functional view specification - operational view specification - Device and component Integrators - Application Development.						
Unit:4						
LOGICAL DESIGN USING PYTHON			15 hours			
Logical design using python - Installing python - type conversions - control flow - functions - modules - File handling - classes. IoT physical devices and End points, building blocks of IoT device - Raspberry Pi - Linux on Raspberry Pi - Raspberry Pi interfaces.						

Unit:5	IOT AND CLOUD COMPUTING	15 hours
IoT physical servers & cloud computing - WAMP - Xively cloud for IoT - python Web application frame work - Amazon web services for IoT.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars – webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Internet of Things - A hands on Approach Authors: Arshdeep Bahga, Vijay Madiseti Publisher: Universities press.	
Reference Books		
1	Internet of Things - Srinivasa K.G., Siddesh G.M. Hanumantha Raju R. Publisher: Cengage Learning India pvt. Ltd (2018)	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	S	L	M	M	M	M	M	L
CO2	S	S	L	M	M	S	S	M	M	L
CO3	M	M	S	M	S	M	M	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	L	S	M	M	S	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Web Services	L	T	P	C
Core/Elective/ Supportive		Elective : III	5	0	0	4
Pre-requisite	Fundamentals of mark-up language, basic knowledge on distributed services.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are : 1. To familiar with distributed services, XML and web services, XML, SOAP, WSDL, UDDI specification. 2. To learn about orchestration and refinement, transactions, security issues, the common attacks. 3. To study the QOS metrics, mobile and wireless service, building real world web service applications. 4. To learn about the deployment of Web services and applications onto application servers.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Understand about the distributed computing, web services, technologies and applications, XML document (WSDL) and the concepts of XML, protocol (SOAP), locating the remote web services					K1
2	Understand the concepts of UDDI and its specifications, Understand the concepts of system interface and its workflow, the common attacks.					K2
3	Examining the concepts of architecture of system to meet the user requirements and analyse the concepts of mobile and wireless services, Design and develop the real-world enterprise applications using web services.					K3
4	Analysing the steps necessary to build and deploy the web services.					K4
5	Applying the applications created based on the web services on different web servers.					K4-K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1	Introduction to Web services				10 hours	
UNIT I: Introduction to Web Services – Industry standards, Technologies and Concepts underlying Web Services – their support to Web Services, Applications that consume Web Services.						
Unit:2	XML				10 hours	
XML– its choice for web services – network protocols to back end databases technologies – SOAP, WSDL – exchange of information between applications in distributed environment – locating remote web services – its access and usage. UDDI specification – an Introduction						
Unit:3	Work flow, security attacks and QoS Metrics				10 hours	
A brief outline of web services – conversation – static and interactive aspects of system interface and its implementation, work flow – orchestration and refinement, transactions, security issues – the common attacks – security attacks facilitated within web services quality of services –						

Architecting of systems to meet users requirement with respect to latency, performance, reliability, QOS metrics, Mobile and wireless services – energy consumption, network bandwidth utilization, portals and services management..		
Unit:4	Building real world enterprise applications	12 hours
Building real world enterprise applications using web services – sample source codes to develop web services – steps necessary to build and deploy web services and client applications to meet customer s requirement – Easier development, customization, maintenance, transactional requirements, seamless porting to multiple devices and platforms.		
Unit:5	Deployment of Web services	12 hours
Deployment of Web services and applications onto Tomcat application server and axis SOAP server (both are free wares) – Web services platform as a set of enabling technologies for XML based distributed computing.		
Unit:6	Contemporary Issues	3 hours
	Total Lecture hours	55 hours
Text Book(s)		
1	Sandeep Chatterjee, James Webber, Developing Enterprise Web Services: An Architects Guide, Prentice Hall, Nov 2003.	
2	Keith Ballinger, NET Web services: Architecture and Implementation with .Net, Pearson Education, First Education Feb 2003.	
3	Sandeep Chatterjee, James Webber, Developing Enterprise Web Services: An Architects Guide, Prentice Hall, Nov 2003.	
Reference Books		
1	Ramesh Nagappan, Developing Java Web Services: Architecting and developing secure Web Services Using Java, John Wiley and Sons, 2003.	
2	Eric A Marks and Mark J Werrell, Executive Guide to Web Services, John Wiley and Sons, 2003	
3	Anne Thomas Manes, Web Services: A Managers Guide, Addison Wesley, 2003.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	M	M	S	L	M	S	M	S	M	M
CO2	S	S	L	S	M	S	M	M	S	L
CO3	M	M	S	M	S	M	M	L	S	M
CO4	M	S	M	S	S	S	M	S	M	S
CO5	S	M	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low

Course code		Software Testing	L	T	P	C
Core/Elective/Supportive		Elective - III	5	0	0	4
Pre-requisite	Students should know about the software and Software Development Life Cycle.		Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to: 1. To study fundamental concepts in software testing 2. To discuss various software testing issues and solutions in software unit test, integration and system testing. 3. To expose the advanced software testing topics, such as object-oriented software testing methods. 4. List a range of different software testing techniques and strategies and be able to apply specific automated unit testing method to the projects.						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Explain the basic concepts and the processes that lead to software testing					K2
2	Design test cases from the given requirements using Black box testing techniques					K3
3	Identify the test cases from Source code by means of white box testing techniques					K3
4	Know about user acceptance testing and generate test cases for it					K4
5	Examine the test adequacy criteria to complete the testing process					K4
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create						
Unit:1 SOFTWARE DEVELOPMENT LIFE CYCLE MODELS 15 hours						
Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing – Challenges in White-Box Testing.						
Unit:2 BLACK-BOX TESTING 15 hours						
Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.						
Unit:3 SYSTEM AND ACCEPTANCE TESTING 15 hours						
System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.						
Unit:4 PERFORMANCE TESTING 15 hours						
Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.						

Unit:5	TEST PLANNING, MANAGEMENT, EXECUTION AND REPORTING	12 hours
Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.		
Unit:6	Contemporary Issues	3 hours
Expert lectures, online seminars - webinars		
	Total Lecture hours	75 hours
Text Book(s)		
1	Software Testing Principles and Practices, Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education. (UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6 .1-6.7 (UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)	
2	Limaye M.G., “Software Testing Principles, Techniques and Tools”, Second Reprint, TMH Publishers, 2010.	
3	Aditya P.Mathur, “Foundations of Software Testing”, 2nd Edition, Pearson Education, 2013.	
Reference Books		
1	Effective Methods of Software Testing, William E. Perry, 3rd ed, Wiley India.	
2	Software Testing, Renu Rajani, Pradeep Oak, 2007, TMH.	
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]		
1		
2		
3		
Course Designed By:		

Mapping with Programme Outcomes										
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	M	M	M	S	M	L	L	M	L
CO2	S	S	S	M	M	M	M	M	M	L
CO3	S	S	S	M	S	M	M	M	M	L
CO4	S	S	S	S	S	M	M	M	M	M
CO5	S	S	S	S	S	M	S	S	S	M

*S-Strong; M-Medium; L-Low

Course code		Lab – CASE TOOLS LAB	L	T	P	C
Core/Elective/Supportive		Skill Based Subject 4 (Lab) :2	0	0	4	3
Pre-requisite		Students must have the basic understanding on verification and validations in software engineering.	Syllabus Version		2020-21 Onwards	
Course Objectives:						
The main objectives of this course are to:						
1. To enable the students to get better understanding and knowledge in the field of CASE tools.						
2. To gain practical knowledge on developing case tools						
3. To develop UML diagrams for the real time problems						
Expected Course Outcomes:						
On the successful completion of the course, student will be able to:						
1	Prepare the CASE tools for the given specification.					K1, K2
2	Understand and develop the UML diagram for real time applications.					K2-K3
3	Design the real time test cases					K3
4	Analyze the development of CASE tools					K4-K5
5	Design the CASE tools and generate VB code					K6
K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 – Create						
Programs						
36 hours						
1. To design an ATM transfer system using UML diagram and to generate VB code.						
2. To design a student mark analysis using UML diagram and to generate VB code.						
3. To design a platform assignment system using UML diagram and to generate VB code.						
4. To design a railway reservation system using UML diagram and to generate VB code.						
5. To design an expert system for medicine field using UML diagram and to generate VB code.						
6. To design a stock maintenance system using UML diagram and to generate VB code.						
7. To design a quizzing system using UML diagram and to generate VB code.						
8. To design a remote computer monitoring system using UML diagram and to generate VB code.						
9. To design an online ticket reservation system using UML diagram and to generate VB code.						
10. To design an E-mail client server system using UML diagram and to generate VB code.						
		Total Lecture hours			36 hours	
Text Book(s)						
1						
Reference Books						
1						
Related Online Contents [MOOC, SWAYAM, NPTEL, Websites etc.]						
1						

2	
3	
Course Designed By:	

Mapping with Programme Outcomes										
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	M	M	S	M	S	L
CO2	L	M	S	M	M	L	S	L	S	L
CO3	S	S	L	M	M	M	S	M	S	M
CO4	S	M	S	M	S	M	S	M	S	M
CO5	M	S	S	M	M	M	S	M	S	M

*S-Strong; M-Medium; L-Low





Annexure

BACHELOR OF COMPUTER APPLICATIONS

Syllabus

(With effect from 2020 -2021)

Program Code : 22J



DEPARTMENT OF COMPUTER APPLICATIONS

Bharathiar University

**(A State University, Accredited with “A“ Grade by NAAC and
13th Rank among Indian Universities by MHRD-NIRF)**

Coimbatore 641 046, INDIA

BHARATHIAR UNIVERSITY :: COIMBATORE 641046
DEPARTMENT OF COMPUTER APPLICATIONS

MISSION

- ✓ To develop IT professionals with ethical and human values.
- ✓ To organize, connect, create and communicate mathematical ideas effectively, through industry 4.0.
- ✓ To provide a learning environment to enhance innovations, problem solving abilities, leadership potentials, team-spirit and moral tasks.
- ✓ To nurture the research values in the developing areas of Computer Science and interdisciplinary fields.
- ✓ Promote inter-disciplinary research among the faculty and the students to create state of art research facilities.
- ✓ To promote quality and ethics among the students.
- ✓ Motivate the students to acquire entrepreneurial skills to become global leaders.

