



ALAGAPPA UNIVERSITY

(A State University Established in 1985)
Karaikudi - 630003, Tamil Nadu, India



2017 Accredited with A+ Grade by NAAC (CGPA : 3.84)	2018 MHRD Govt. of India UGC University Grants Commission Graded as Category - 1 & Granted Autonomy	2018 MHRD GOVERNMENT OF INDIA Swachh Campus Rank : 4	2019 nirf NATIONAL INSTITUTIONAL RANKING FRAMEWORK Rank : 26	2019 QS India Rank : 20 BRICS Rank : 194 Asia Rank : 216
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ALAGAPPA INSTITUTE OF SKILL DEVELOPMENT



B.Voc., SOFTWARE DEVELOPMENT

[Choice Based Credit System (CBCS)]

[For the candidates admitted from the academic year 2019 -2020]

PROGRAMME OBJECTIVES

- To offer skill / vocational curriculum adhere to the National Occupational Standards (NOS) towards improving the employability of the youth and industrial revolution of the Country.
- To create strong linkage with respective Sector Skill Council (SSC), Industries and academia to offer and vet the progress of the pedagogical process of Skill Vocational training

PROGRAMME SPECIFIC OBJECTIVES

- To inculcate the students with Technical, Generic and Industry specific skills related to Software Development for better employment possibilities and to open avenues for self-employment.
- To empower the students in terms of career goals, decision making and livelihood options.

OUTCOME

The curriculum of the B.Voc. (Software Development) Programme enables the students to become any of the below mentioned Job Roles:

- Junior Software Developer
- Web Developer
- Master Trainer for Junior Software Developer
- Software Developer

The above-mentioned job roles are designed by the SSC-NASSCOM. It is an authorized Sector Skill Council (SSC) by NSDC for evolving and assessing proficiencies of skills of trainees for the IT/ITeS sector.

1. ELIGIBILITY

- i) **For Admission:** Students already acquired NSQF certification Level 4 in a particular industry sector / at school level.
- ii) A pass in the Higher Secondary Examination (Academic / Vocational Stream) conducted by the Government of Tamil Nadu, or an examination accepted as equivalent thereto (like PUC) by the Syndicate, subject to such conditions as may be prescribed therefore.
 - Provided that the candidates who have passed the qualifying examination with Science group shall be considered for 1/2 of seats in B.Voc (Software Development) and 1/2 of seats for other subject students.
- iii) Candidates who have passed vocational programme at the higher secondary stage



through Open and Distance Learning (ODL), for example, from the National Institute of Open Schooling, State Open Schools, or equivalent.

- iv) Candidates qualifying from Polytechnics with equivalent qualification to higher secondary.

2. DURATION

The course is for a period of three years. Each academic year shall comprise of two semester viz. Odd and Even semesters. Odd semesters shall be from June / July to October / November and Even Semesters shall be from November / December to April /May. There shall be not less than 90 working days which shall comprise 450 teaching clock hours for each semester. (Exclusive of the days for the conduct of University end-semester examinations).

i) The B.Voc.Course is for a period of three years.

The B.Voc. Course has single entry and multiple exit points. **Thus, the Students can opt to leave** (if passed the examinations) in the following stages with appropriate Certificate / Diploma / Advanced Diploma / B.Voc. Degree as indicated in Table 1:

Table 1. B.Voc. Programme duration and credit framework with exit points

NSQF Level	Skill Component Credits	General Education Credits	Total Credits for Award	Normal Duration	Exit Points / Awards
7	108	72	180	Six Semesters	B.Voc. Degree
6	72	48	120	Four Semesters	Advanced Diploma
5	36	24	60	Two Semesters	Diploma
4	18	12	30	One Semester	Certificate

- i) **For the Degree (B.Voc):** The candidates shall have subsequently undergone the prescribed course of study for a period of not less than **three academic years**, passed the examinations prescribed and fulfilled such conditions as have been prescribed therefore.



- ii) **For the Advanced Diploma:** The candidates shall have subsequently undergone the prescribed course of study for a period of not less than **two academic years**, passed the examinations prescribed and fulfilled such conditions as have been prescribed therefore.

- iii) **For the Diploma:** The candidates shall have subsequently undergone the prescribed course of study for a period of not less than **one academic year**, passed the examinations prescribed and fulfilled such conditions as have been prescribed therefore.



**ALAGAPPA INSTITUTE OF SKILL DEVELOPMENT
ALAGAPPA UNIVERSITY, KARAIKUDI.**

SYLLABUS UNDER CBCS PATTERN (w.e.f. 2019-20)

B.Voc. (SOFTWARE DEVELOPMENT

Course Code : 302

Year : I

NSQF Level	Sem.	Part	Course Code	Course Name	Credits Skill (S) / General (G)		Theory / practical	Hrs. / Week	Marks		Total
					S	G			Int	Ext	
					NSQF Level – 4 : Certificate						
I	I		9BV1T1	Tamil Chemozhiyum Tamilarkalin Panmugathiranam		3	T	3	25	75	100
	II		9BV1E1	English Skills for Career Development		3	T	3	25	75	100
	IV		9BV1G1	Life Coping Skills		4	T	4	25	75	100
			9BS1G2	Office Automation – Lab		2	P	2	25	75	100
	III		9BS1C1	Core-I-Fundamentals of C Programming	5		T	5	25	75	100
			9BS1C2	Core-II- Fundamentals of Digital Computer & Programming	4		T	4	25	75	100
			9BS1P1	Core-III- Practical - C Programming - Lab	4		P	4	25	75	100
			9BS1J1	NSQF Level – 4 Job role Junior Software Developer (SSC/Q0508) @	5		P	5	100	--	100
			Sub-Total	18	12						
			Total for Semester - I	30			30	--	--	800	
NSQF Level – 5 : Diploma											
II	I		9BV2T1	Ilakkanamum Padaipilakkiyamum		3	T	3	25	75	100
	II		9BV2E1	Grammatical and Technical English		3	T	3	25	75	100
	IV		9BV2G1	Environmental Studies *		2	T	2	25	75	100
			9BV2G2	Advanced Communicative English @		2	P	2	100	-	100
			9BS2G3	GUI Programming using Visual Basic – Lab		2	P	2	25	75	100
	III		9BS2C1	Core- IV - Web Technology	5		T	5	25	75	100
			9BS2C2	Core-V- Introduction to Multimedia	4		T	4	25	75	100
			9BS2P1	Core- VI - Practical – Web Designing- Lab	4		P	4	25	75	100
			9BS2J1	NSQF Level – 5 Job role Web Developer (SSC/Q0503) @	5		P	5	100	--	100
				Sub-Total	18	12					
			Total for Semester – II	30			30	--	--	900	



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SYLLABUS UNDER CBCS PATTERN (w.e.f. 2019-20)

B.Voc. (SOFTWARE DEVELOPMENT)

Course Code : 302

Year : II

Degree	Sem	Part	Course Code	Course Name	Credits Skill (S) / General (G)		Theory / practical	Hrs. / Week	Marks		Total
					S	G			Int	Ext	
NSQF Level – 6 : Advanced Diploma	III	IV	9BV3G1	Interview Techniques & Interpersonal Communications @		5	P	5	25	75	100
			9BV3G2	PC Assembling and Troubleshooting – Lab		4	P	4	25	75	100
				Non-Major Elective – I		2	-	3	25	75	100
				Self-Learning Course - I – MOOCs - I ^		(E)	-	--	--	--	--
		V	9BV3G3	Extension Activities #		1	P	--	100	--	100
		III	9BS3C1	Core- VII - Fundamentals of Operating Systems	5		T	5	25	75	100
			9BS3C2	Core- VIII - Practical – Data Structure & Algorithms in C – Lab	5		P	5	25	75	100
			9BS3P1	Core - IX– Practical – RDBMS – Lab	5		P	5	25	75	100
			9BS3P2	Core – X – Practical - Web Graphics – Lab	3		P	3	25	75	100
				Sub-Total	18	12					
			Total for Semester - I	30 + (E)			30	--	--	800	
	IV	IV	9BV4G1	Professional Etiquettes		4	T	4	25	75	100
			9BS4G2	Introduction to BPO		4	T	4	25	75	100
				Non-Major Elective – II		2	-	3	25	75	100
			9BV4G3/ 9BV4G4/ 9BV4G5	Value Education / Manavalakalai Yoga / Introduction to Gender Studies @*		2	P	2	25	75	100
			Self-Learning Course - II - MOOCs - II ^		(E)	-	--	--	--	--	
III		9BS4C1	Core - XI - Object Oriented Programming and C++	4		T	5	25	75	100	
		9BS4C2	Core - XII - Computer Networks and Administration	4		T	4	25	75	100	
		9BS4P1	Core- XIII - Practical – Programming in C++ - Lab	3		P	3	25	75	100	
		9BS4P2	Domain Study @	2		P	--	25	75	100	
		9BS4J1	NSQF Level – 6 Job role Master Trainer for Junior Software Developer (SSC/Q0509) @	5		P	5	100	--	100	
		Sub-Total	18	12							
		Total for Semester – II	30 + (E)			30	--	--	900		



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SYLLABUS UNDER CBCS PATTERN (w.e.f. 2019-20)

B.Voc. (SOFTWARE DEVELOPMENT)

Course Code : 302

Year : III

Degree	Sem	Part	Course Code	Course Name	Credits Skill (S) / General (G)		Theory / practical	Hrs. / Week	Marks		Total		
					S	G			Int	Ext			
					NSQF Level – 7 : B.Voc. Degree	V			IV	9BV5G1		Entrepreneurship / Start-up Skills @	
9BV5G2	Quantitative Aptitude #		4	P			4	100		-	100		
9BV5G3	Accounting Skills @		4	P			4	25		75	100		
III	9BS5C1	Core-XIV-Programming with Java	5				T	5	25	75	100		
	9BS5E1/ 9BS5E2	Elective I – Optimization Techniques (or) Discrete Mathematics	5				T	5	25	75	100		
	9BS5P1	Core-XV- Practical – Programming with Java – Lab	4				P	4	25	75	100		
	9BS5P2	Core-XVI- Practical – XML – Lab	4				P	4	25	75	100		
Sub-Total							18	12					
Total for Semester – I							30		30	--	--	700	
VI	IV	9BV6G1	Corporate Grooming and Finishing skills @			4	P	4	25	75	100		
		9BV6G2	Fundamentals of Digital Marketing			4	T	4	25	75	100		
		9BS6G3	Comprehensive Study #			4	P	--	100	-	100		
	III	9BS6E1/ 9BS6E2	Elective II – Software Engineering (or) Software Project Management	4			T	4	25	75	100		
		9BS6E3/ 9BS6E4	Elective III – PHP Programming – Lab (or) Distributed Programming – Lab	3			P	4	25	75	100		
		9BS6I1	Industrial Internship with Project	6		P	9	25	75	100			
		9BS6J1	NSQF Level – 7 Job role Software Developer (SSC/Q6702) @	5		P	5	100	--	100			
	Sub-Total					18	12						
Total for Semester – II					30		30	--	--	700			
Total Credits (B.Voc. Degree Programme)					180 + (E)								

*Syllabus of Affiliated colleges of Alagappa University will be followed

Fully-internal Course – Examination will be conducted internally

@ External Examination will be conducted as Viva-voce Examination

^ Self-Learning Course – MOOCs – Extra Credits (E) – Extra credits earned through MOOCs

Non-Major Elective Courses:

Sem.	Course Code	Non-major Elective Course Name	Credits	Hrs. / Week	Marks		Total
					Int.	Ext.	
III	9BS3N1	Non-major Elective – I : Office Automation	2	3	25	75	100
IV	9BS4N2	Non-major Elective – II : Web Designing	2	3	25	75	100



Semester-I			
Course Code: 9BV1T1	தமிழ்ச் செம்மொழியும் தமிழர்களின் பன்முகத்திறனும்	Credits:3	Hours:3
நோக்கம்	<ul style="list-style-type: none"> ➤ மொழிபற்றியும் தமிழ்ச் செம்மொழி மற்றும் உலகச் செம்மொழி பற்றியும் அறிதல். ➤ சங்க இலக்கியங்களில் தமிழர்களின் ஆடை அணிகலன்கள் கலைகள் குறித்த பதிவுகளை அறிதல். 		
அலகு 1	<p>செம்மொழி</p> <p>மொழிவிளக்கம்-மொழிக்குடும்பங்கள்-உலக இந்திய மொழிக்குடும்பங்கள்-திராவிட மொழிக்குடும்பம்-செவ்வியல் விளக்கம்- உலகச்செம்மொழிகள், இந்தியச் செம்மொழிகள் அறிமுகம்- செம்மொழித் தகுதிகளும் வரையறைகளும் -தமிழின் தொன்மைச் சிறப்புகள்-தமிழ்ச்செம்மொழி நூல்களும் தனித்தன்மையும்-செம்மொழிமுயற்சியும் வளர்ச்சியும்.</p>		
அலகு 2	<p>இலக்கியங்களில் ஆடைகள்</p> <p>ஆடை குறிக்கும் பெயர்கள்-ஆடை வகைகள்-ஒற்றை ஆடை, இரட்டை ஆடை,வண்ணஆடை,தழை ஆடை, நூலாடை,பட்டாடை,மேலாடைஅணியும் வழக்கம்-பெண்கள்,ஆண்களுக்குரியஆடைகள்-காலத்துக்குஏற்ற ஆடை-ஆடையில் வேலைப்பாடு போர்வை-ஆடைவெளுத்தல்.</p>		
அலகு 3	<p>இலக்கியங்களில் அணிகலன்கள்</p> <p>அணிகலன் விளக்கம்-அணிகலன் வகைகள்-ஆண்கள் அணிவது-பெண்கள் அணிவது-குழந்தைகள் அணிவது-நவமணிகள் போன்ற அணிகலன்கள் பற்றிய பதிவுகள்-பிற்பொருள் அணிகலன்கள் (சங்கு,தந்தம் மற்றும் சிப்பி)</p>		
அலகு 4	<p>இலக்கியங்களில் கலைகள்</p> <p>இசைக்கலை-ஓவியக்கலை-நடனக்கலை-சிற்பக்கலை-கட்டடக்கலை-இலக்கியக்கலை-கலைகளைப் போற்றுதல் போன்றவை.</p>		
அலகு 5	<p>இலக்கியங்களில் பல்துறைச் சிந்தனைகள்</p> <p>அறிவியல்-வானியல்-பொருளாதாரம்-வாணிபம்-மருத்துவம்-மேலாண்மை சோதிடம்-கல்வி-விருந்தோம்பல்எனஇலக்கியங்களில்காணலாகும் பல்துறைப்பதிவுகள்.</p>		
<p>பார்வை நூல்கள்</p> <p>மு.சண்முகம்பிள்ளை, (2004). <i>சங்கத் தமிழர் வாழ்வியல்</i>. சென்னை: உலகத் தமிழாராய்ச்சி நிறுவனம்.</p> <p>முனைவர் மு.சந்தானம், (1998). <i>தமிழர் பண்பாடு</i>. மதுரை: அருளானந்தர் கல்லூரி.</p> <p>முனைவர் பாக்கியமேரி, (2012). <i>தமிழின் செம்மொழிப்பண்புகள்</i>. சென்னை: அஞ்சனச்சிமிழ்ப்பதிப்பகம்.</p> <p>மயிலைசீனிவேங்கடசாம, (2003). <i>தமிழர் வளர்த்த அழகுக் கலைகள்</i>. சென்னை: நாம் தமிழர் பதிப்பகம்.</p> <p>இராகவன், <i>தமிழர் அணிகலன்கள்</i>.</p>			
மாணவர் பெறும் திறன்	<ul style="list-style-type: none"> ➤ தமிழ்ச்செம்மொழிபற்றியும் உலகச்செம்மொழிகள் பற்றியும் அறிவர். ➤ இலக்கியங்களில் ஆடை,அணிகலன் பற்றியும் அறிவர். ➤ கலைகள் மற்றும் பல்துறைச்சிந்தனைகளைக் குறித்தஅறிவைபெறுவர். 		



Semester – I			
Course Code : 9BV1E1	English Skills for Career Development	Credits: 3	Hours: 3
Objectives	<ul style="list-style-type: none"> ➤ To impart the knowledge about Grammar rules, Parts of Speech, Verbs and Tenses of English language. ➤ To develop the Listening, Speaking and Reading Skills of the students to communicate in formal and informal situations. 		
Unit-I	Parts of Speech in English: Noun, Pronoun, Adjective, Verb, Adverb, Preposition and Conjunction.		
Unit-II	Tenses: Present Past and Future.		
Unit-III	Listening: Active listening –Barriers to listening –Listening and note taking – Listening to announcements – Listening to news on the radio and television.		
Unit-IV	Speaking: Word stress and rhythm –Pauses and sense groups – Falling and rising tones – Fluency and pace of delivery – Art of small talk – Participating in conversations – Making a short formal speech – Describing people, place, events and things – Group discussion skills and telephone skills.		
Unit-V	Reading: Theory and Practice – Scanning – Surveying a textbook using an index – reading with a purpose – Making predictions – Understanding text structure – Locating main points – Making inferences – Reading graphics – Reading critically – Reading for research.		
Reference and Text Books:-			
Anderson Kenneth, Joan Maclean & Tony Lynch. (2008). <i>Study Speaking - A Course in Spoken English for Academic Purposes</i> . New Delhi: Cambridge University Press India.			
Krishnaswamy, N. (2014). <i>Active English Grammar and Usage</i> . New Delhi: Macmillan Publisher India Pvt. Ltd.			
Sasikumar, V., Kiranmai Dutt, P. & Geetha Rajeevan. (2015). <i>Communication Skills in English</i> . India: Cambridge University Press and Mahatma Gandhi University year of publishing.			
Sasikumar, V., Kiranmai Dutt, P. & Geetha Rajeevan. (2007). <i>A Course in Listening and Speaking I & II</i> . New Delhi: Cambridge University Press India.			
Tony Lynch, (2008). <i>Study Listening - A Course in Listening to Lectures and Not –taking</i> . New Delhi: Cambridge University Press India.			
Outcomes	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the usage of parts of English grammar in real life situations. ➤ comprehend the essential skills of communicative English such as, Listening, Speaking and Reading 		



General Subject

Theory

Semester – I			
Course Code : 9BV1G1	Life Coping Skills	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To understand the concepts, processes and practices of life skills. ➤ To develop the competence in applying life skills towards effective learning and planning for career. ➤ To provide orientation in Life Coping Skills. 		
Unit-I	Self-Concept, Self Acceptance and Personality Development Concept and definition of Self-Esteem, Factors influence Self-Esteem, Low Vs High Self-Esteem, Step to raise Self Esteem, Definition of Self of Self Concept, Characteristics of the Self-Concept, Introduction, Definition and Theoretical perspective of self-Acceptance, Benefits of Self-Acceptance, Characteristics and Elements of Personality and Identity of the Individual.		
Unit-II	Goal Setting Definition of Goal Setting, Different types of Goals, Importance of Goal setting, Obstacles to set Goals and Steps to Goal Setting.		
Unit-III	Coping Skills: Depression, Fear, Anger and Failure Definition, Symptoms, Causes and Impact of Depression, How to overcome Depression, Theoretical Input of Fear, Kinds of Fear, Coping with Fear, Ways to overcome Fear, Consequence of Anger, Managing Anger, Steps toward Anger Management, Positive Attitude towards Failure, Coping with Failure.		
Unit-IV	Time management and Stress Management Meaning and Importance of Time Management-Time factor-Steps for Avoiding Lateness Problems-Tips for time management. Meaning and Kinds of Stress -Types of Stress-How does Stress affect you- Source of Stress-Responses to Stress -Good, Bad and Ugly forms of Stress-How to manage stress-Commandments for Managing Stress.		
Unit-V	Team Work Meaning of Team Work-Needed qualities for working as a Team-Team Learning: Questioning. Valuing Diversity – Communicating - Learning Review.		
Reference and Text Books:- Xavier Alphones, S.J. (2004). We Shall Overcome - A Textbook on Life Coping Skills. Chennai: ICRDCE Publication.			
Outcomes	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ identify their conflict styles and the basic values of self and others in order to develop meaningful inter-personal relationships in different environments. ➤ inculcate a positive mindset and a humanistic attitude. 		



Semester-I			
Course Code :9BS1G2	Office Automation -Lab	Credits:2	Hours:2
Objectives	<ul style="list-style-type: none"> ➤ To impart the principles of Office Automation and the features of MS-Office package ➤ To enable the students towards effective usage of Office Automation package 		
MS-Word			
<ol style="list-style-type: none"> 1) Create a document file for your Resume 2) Create a document file for a Leave Letter 3) Use of Header & Footer, Bullets & Numbering in a document 4) Create class Time Table using Table option in word – use different table formats 5) Create mail and cover using Mail Merge feature 			
MS-Excel			
<ol style="list-style-type: none"> 1) Create a spreadsheet to Calculate Student Marks Total and average 2) Create a spreadsheet for Tax Calculation 3) Use Math Functions in cells 4) Create a spreadsheet for Sorting a Database 5) Draw Chart – use different formats 			
MS-PowerPoint			
<ol style="list-style-type: none"> 1) Design a Slide Show to explain C data types / operators and control statements. 2) Design a Slide Show for your College function. 			
Outcomes	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the dynamics of tools for office automation ➤ work effectively with MS – Word, MS-Excel and MS-PowerPoint 		



Semester-I			
Course Code : 9BS1C1	Core-I-Fundamentals of C Programming	Credits:5	Hours:5
Objectives	<ul style="list-style-type: none"> ➤ To understand the fundamentals of 'C' programming language. ➤ To impart Programming skills with C language ➤ To enable the students to make use of the constructs in 'C' language for programming. 		
Unit I	Introduction to Computers, Programming and the C Language: Computer Architecture – Program Development Process – Structured and Modular Programming – Flowcharts – The C Programming Language.		
Unit II	<p>Overview of C:Importance of C – Sample C Programs - Basic Structure of C Programs – Executing a 'C' Program Constant, Variables and Data Types: Introduction – Character Set – C Tokens – Keywords and Identifiers – Constants – Variables- Data Types – Declaration of Variables – Assigning Values of Variables.</p> <p>Operators and Expressions: Introduction – Arithmetic of Operators- Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operator – Conditional Operators – Bitwise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversion in Expression- Operator Precedence and Associativity</p>		
Unit III	<p>Managing Input and Output Operators: Introduction – Reading a Character- Writing a Character – Formatted Input – Formatted Output Decision Making and Branching: Introduction – Decision Making with If Statement- Simple If Statement – The If...Else Statement – Nesting of If...Else Statements – The Else If Ladders – The Switch Statement – The?: Operators – The goto Statement Decision Making and Looping: The While Statement – The do Statement – The for Statement – Jump in Loops</p>		
Unit IV	<p>.Arrays: Introduction – One-Dimensional Arrays– Declaration of One-Dimensional Arrays – Initialization of One-Dimensional Arrays – Two-Dimensional Arrays – Initializing Two-Dimensional Arrays–Multi-Dimensional Arrays.</p> <p>Character Arrays and Strings: Introduction - Declaring and Initializing String Variables – Reading String from Terminal – Writing String to Screen – Arithmetic Operation on Characters – Putting Strings Together – Comparison of Two Strings – String-Handling Function</p>		



<p>Unit V</p>	<p>User Defined Functions: Introduction – Need for User-Define Functions – A Multi-Function Program – Elements of User-Define Functions – Definition of Functions – Return Values and Their Types – Function Calls – No Argument and No Return Values – Arguments but No Return Values – Arguments with Return Values – No Argument but Returns a Values – Functions that Return Multiple Values – Nesting of Functions – Recursion – Passing Arrays to Functions – Passing Strings to Functions</p> <p>Pointers: Introduction – Understanding Pointers – Accessing the Address of Variables – Declaring Pointer Variables – Initializing of Pointers Variables – Accessing a Variable Through its Pointer – Pointer Expressions – Pointer Increments and Scale Factor – Pointers and Character Strings – Array of Pointers – Pointers as Functions Arguments</p>
<p>Reference and Textbooks:-</p> <p>Byron S.Gottfried.(2017). <i>Programming with C</i> (3rd ed.). Schaum’s Outline Series, McGraw Hill Education.</p> <p>Brian W. Kernighan, Dennis M.Ritchie. (1990). <i>The C Programming Language</i>. (2nd ed.). New Delhi : Prentice Hall of India Pvt. ltd.</p> <p>E Balagurusamy (2017). <i>Programming in ANSIC</i> (7th ed.). New Delhi: Tata McGraw Hill Education Pvt. Ltd.</p> <p>R S Bichkar (2012). <i>Programming with C</i>. Orient Blackswan Pvt. Ltd.</p>	
<p>Outcomes</p>	<p>This course gave insights about:</p> <ul style="list-style-type: none"> ➤ principles and building blocks of ‘C’ language ➤ to develop programs using ‘C’ language.



Semester- I			
Course Code : 9BS1C2	Core II: Fundamentals of Digital Computer and Programming	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To facilitate the students with fundamentals of Logic Gates and Circuits ➤ To impart the knowledge about principles of Digital Computers. ➤ To enable the students to learn the design of flowcharts for solving problems. 		
Unit – I	Number Systems and Codes: Binary Number System – Binary to Decimal Conversion – Decimal to Binary Conversion – Binary Addition – Binary Subtraction – Binary Multiplication and Division – Octal Numbers – Hexadecimal Numbers – Binary Codes – Error Detecting Codes – Error Correcting Codes- Logic Gates and Circuits: Boolean Algebra and Logic Gates – AND, OR, NOT, NAND, NOR, Exclusive OR and Exclusive OR Gates – Applications of XOR Gate – The Exclusive NOR Gate – Positive and Negative Logic – Logic Characteristics – Bipolar Logic Families – Integrated Circuits.		
Unit – II	Boolean Algebra: Definitions – Fundamentals of Boolean Algebra – Boolean Functions – Minterms and Maxterms – Laws and Theorems of Boolean Algebra – DeMorgan’s Theorem – Universal Building Blocks (UBB) – NAND Gate as UBB – NOR Gate as UBB- Simplifying Logic Circuits – Sum of Products – AND-OR Networks – Sum of Products and Product of Sums Forms – Karnaugh Maps – Product of Sums Simplification – NAND and NOR Implementation – AND-OR-INVERT Implementation – OR-AND-INVERT Implementation – Don’t Care Conditions – Overlapping Groups – Rolling the Map – Eliminating Redundant Groups- Combinational.		
Unit – III	Logic Circuits: Introduction – Adders – The Half Adder – The Full Adder – Subtractors – BCD Adder – Multiplexers – Demultiplexers – Decoders – Encoders – Floating Point Number System – Range of Stored Numbers. Sequential Logic Circuits: Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop – Conversion of D Flip Flop – Conversion of T Flip Flop.		
Unit – IV	Programming: Introduction- Data Structures- Variable and Constants- Primitive types- Structured types- Array- Linked List: insertions and Deletions- Stack- Queue- Graph- Tree- Hash Table- Record- File. Design of Algorithms: Flow Chart and Structured Programming- Sum of Three numbers- Sum of Three numbers in Loop- Sorting numbers with in an Array- Maximum/ Minimum search- searching Problem- Linear/ Sequential Search- Binary Search- Sorting Problem- Bubble Sort- Selection Sort- Merge two sorted arrays- Reading Chars from text file- Functions and sub programs- Working with Stack: The Algorithm- Recursion.		



Unit – V	Implementation of Algorithms: C Programming Language- C Code list- Sum of three numbers- Sum of three numbers in loop- Sorting numbers with in a array- Converting decimal number to a binary number-Source programs and outputs.
Reference and Textbooks:- Dr. K. Meena, (2009). <i>Principles of Digital Electronics</i> , New Delhi: PHI Learning Private Limited. Luciano Manelli, (2017). <i>Understating Algorithms and Flowcharts</i> , Create Space Independent Publishing Platform.	
Outcomes	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the various components of computer systems and its circuits ➤ analyze and design flowcharts for solving problems.



Semester-I			
Course Code :9BS1P1	Core-III- Practical - C Programming - Lab	Credits:4	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To understand the basic concept of C Programming, and its different modules that include conditional, looping expressions, Arrays and Functions. 		
<ol style="list-style-type: none"> 1. Write a C program to perform all arithmetic operations. 2. Write a C program to find the sum and average of given set of numbers. 3. Write a C program to check the given number is prime or not. 4. Write a C program to calculate simple interest and compound interest. 5. Write a C program to find the area of a triangle. 6. Write a C program to prepare EB bill using if...elseif ladder. 7. Write a C program to print the grade of a student using switch... case statement. 8. Write a C program to print Fibonacci Series using while statement. 9. Write a C program to sort numbers in ascending order using for statement. 10. Write a C program to search an element in an array. 11. Write a C program to swap/interchange two variables without using temporary variable. 12. Write a C program to find factorial of given number using recursion. 13. Write a C program to add two matrices. 14. Write a C program to multiply two matrices. 15. Write a C program to transpose a matrix. 			
Outcomes	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ obtain practical knowledge in structured programming ➤ develop simple applications using C language. 		



Semester- I			
Course Code : 9BS1J1	NSQF Level – 4 Job Role Junior Software Developer(SSC/Q0508) @	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To prepare students to undertake careers that involve problem solving skills using various programming techniques and technologies ➤ To learn the fundamental aspects of IT Sector and software developing skills. 		
Unit – I	Basic computer and internet literacy - operating a computer and its major components - using Windows and Linux OS - operating a browser, searching the internet, managing mails - using social internet media - Aptitude for analyzing information - making logical conclusions - foundational mathematical concepts in computing - Design algorithms to solve problems - convert them into code using the appropriate programming language constructs - test case - Communicate effectively in simple English – both oral and written.		
Unit – II	Establish work requirements - Work area clean and tidy - Utilize time effectively - Use resources correctly - Treat confidential information correctly - Organizations policies and procedures - Limits of job role - Ensure work meets the agreed requirements - Analysis on the performed data - Data analysis outside their area of competence - Review the results - Undertake modifications based on inputs - Communicate with colleagues - Work with colleagues - Pass on essential information to colleagues - Respect for colleagues - Carry out commitments to colleagues - Explaining the reasons of cannot carry out commitments- Identify any problems and solve these problems - Organizations policies and procedures..		
Unit – III	Organizations health, safety and security policies and procedures - Report any breaches in policies and procedures - Identify and correct any hazards - Report any hazards that warn – Follow organizations emergency Procedures - Identify and recommend opportunities - Complete any health and safety records.		



Unit – IV	Obtain the data/information from reliable sources - Check the data/information - Advice or guidance from appropriate people where there are problems with the data/information - Carry out rule based analysis - Insert the data/information into the agreed Formats - Check the accuracy of work, involving colleagues - Report any unresolved anomalies in the data/information - Complete, accurate and up-to-date data/information .
Unit – V	Develop knowledge, skills and competence –Identify knowledge and skills -Identify current level of knowledge, skills and development needs - Plan of learning and development activities - Undertake learning and development activities - Apply new knowledge and skills in the workplace - Feedback from appropriate people - Review knowledge, skills and competence .
Reference and Textbooks:-	
SSC – NASSCOM – Qualification Pack : https://www.sscnasscom.com/qualification-pack/SSC/Q0508/	
Note – Occupational standards	
<ol style="list-style-type: none"> 1. SSC/N9001 (Manage your work to meet requirements) 2. SSC/N9002 (Work effectively with colleagues) 3. SSC/N9003 (Maintain a healthy, safe and secure working enviro) 4. SSC/N9004 (Provide data/information in standard formats) 5. SSC/N9005 (Develop your knowledge, skills and competence) 6. SSC/N0506 (Assist in Software Construction and Testing) 	
Outcome	After Completing this course, the students are able to: <ul style="list-style-type: none"> ➤ acquire knowledge about the job role ‘Junior Software Developer’.

Note: The evaluation for this paper for 100 marks will be carried out in three stages. Basic Computer and Internet Knowledge (10 marks) and writing program and Debugging (15 Marks) will be evaluated by the faculty who are handling the subject. A Mock Interview (Viva-voce) (75 marks) will be conducted and evaluated by the Internal Examiner (faculty member of the Department) and an External Examiner. The cumulative 100 marks will be given by the Department.



Semester - II			
Course code: 9BV2T1	இலக்கணமும் படைப்பிலக்கியமும்	Credits:3	Hours:3
நோக்கம்	<ul style="list-style-type: none"> ➤ அடிப்படையாப்பு இலக்கணம் பற்றி அறிதல். ➤ கவிதை இலக்கணம் மற்றும் சிறுகதை இலக்கணம் தோற்றமும் அவற்றின் வளர்ச்சியும் பற்றி பயிற்றுவித்தல். ➤ தமிழ் மொழியும் இணையமும் பற்றிவிளக்குதல். 		
அலகு 1	அடிப்படையாப்பு இலக்கணம்: எழுத்து-அசை-சீர்-தளை-அடி-தொடை-பா-பாவினம்		
அலகு 2	கவிதை இலக்கணம்-தோற்றமும் வளர்ச்சியும்- புதுக்கவிதை மரபு: பாரதி-செந்தமிழ் நாடு பாரதிதாசன்-தமிழின் இனிமை கண்ணதாசன்-அனுபவமேகடவுள் மு.மேத்தா-தன்னம்பிக்கை அறிவுமதி-நட்புகாலம்(முதல் 10) வைரமுத்து-தோழிமார் கதை		
அலகு 3	சிறுகதை இலக்கணம்-தோற்றமும் வளர்ச்சியும்: கு.அழகிரிசாமி-அன்பளிப்பு புதுமைப்பித்தன்-கடவுளும் கந்தசாமி பிள்ளையும் அசோகமித்ரன்-புலிக்கலைஞன் குபா.ரா-விடியுமா அய்க்கண்-மாண்புமிகு மாணவன் கி.இராசநாராயணன்-கதவு		
அலகு 4	இணையத்தில் தமிழும் படைப்பிலக்கியமும் இணையம் அறிமுகம்-இணையமும் தமிழும்-மின்னஞ்சலும் மின் நூலகமும்- இணைய இதழ்கள்-படைப்பிலக்கிய வளர்ச்சி-வலைப்பூ-தமிழ் வளர்ச்சித்துறை- இணைய வேலைவாய்ப்பு மையங்கள்-வேலைவாய்ப்புத் தகவல்கள்		
அலகு 5	படைப்பாற்றல் கவிதை படைத்தல்-சிறுகதை படைத்தல்		
பார்வை நூல்கள் முனைவர் பாக்கியமேரி, (2011). <i>தமிழ் இலக்கியவரலாறு</i> . சென்னை: நியசெஞ்சரி. கே.சுந்தர்ராஜன், <i>இன்டர்நெட்</i> . சென்னை: கண்ணதாசன் பதிப்பகம். மு.பழனியப்பன், <i>கணினியும் இணையமும்</i> . புதுக்கோட்டை: மீனாட்சி நூலக வெளியீடு.			
மாணவர் பெறும் திறன்	<ul style="list-style-type: none"> ➤ செய்யுள் உறுப்புகள் பா வகைகள்,பாவினங்கள் பற்றி அறிவர். ➤ கவிதை, சிறுகதைகளின் இலக்கணம்,தோற்றம்- வளர்ச்சி பற்றி தெரிவர். ➤ தமிழ் இணையம் பற்றி அறிவர். ➤ கவிதைசிறுகதைபடைக்கும் தூண்டுதலைப் பெறுவர். 		



Semester - II			
Course code: 9BV2E1	Grammatical and Technical English	Credits: 3	Hours:3
Objectives	<ul style="list-style-type: none"> ➤ To improve the students in critical thinking and to give knowledge about various types of sentences. ➤ To develop the students skills in Technical English such as, writing, speaking and presentation. 		
Unit I	Critical Thinking: Introduction to critical thinking – Benefits - Barriers – Reasoning - Arguments - Deductive and inductive arguments – Fallacies - Inferential comprehension- Critical thinking in academic writing - Clarity - Accuracy – Precision – Relevance.		
Unit II	Types of Sentences: Simple, Compound and Complex		
Unit III	Academic Writing Process: Data collection - Use of print, electronic sources and digital sources - Selecting key points - Note making, paraphrasing, summary – Introduction and conclusion		
Unit IV	Writing Models: Letters - Letters to the editor - Resume and covering letters - e-mail - Seminar papers - Project reports - Notices - Filling application forms - Minutes, agenda – Essays.		
Unit V	Presentation Skills: Soft skills for academic presentations - Effective communication skills – Structuring the presentation - Choosing appropriate medium – Flip charts – OHP – Power Point presentation – Clarity and brevity - Inter-action and persuasion - Interview skills – Group Discussions		
Reference and Textbooks:-			
Alison Pohl & Nick Brieger. (2013). <i>Technical English Vocabulary and Grammar</i> . New Delhi: Cengage publisher.			
Marilyn Anderson, Pramod K. Nayar. & Madhuchandra Sen. (2010). <i>Critical Thinking, Academic Writing and Presentation Skills</i> . India: Pearson Education & Mahatma Gandhi University.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand about critical thinking in academic writing and various types of sentences ➤ develop their skills in academic writing, speaking and presentation. 		



General Subject

Theory

Semester - II			
Course code: 9BV2G1	Environmental Studies	Credits: 2	Hours:2
Objectives	<ul style="list-style-type: none"> ➤ To impart the knowledge about Environmental sciences and to demonstrate the in-depth understanding about the environment ➤ To make the students to learn about Environmental problems ➤ To create awareness about various pollutions and its impact on Environment 		
Unit I	The Multidisciplinary Nature of Environmental Studies : Definition, Scope and importance Need for public awareness		
Unit II	<p>Natural Resources: Renewable and non-renewable resources</p> <p>Forest Resources: Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effect on forests and tribal people</p> <p>Water Resources: Use and over-Utilization of surface and ground water, floods, drought, conflicts over water, dams- benefits and problems.</p> <p>Mineral resources: Use and exploitation, experimental effects of extracting and using mineral resources, case studies.</p> <p>Food resources: world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.</p> <p>Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy resources, Case studies.</p> <p>Land resources: Land as a resource, land degradation, main induced landslides, soil-erosion and desertification</p> <p>Role of individual in conservation of natural resources Equitable use of resources for sustainable lifestyle</p>		
Unit III	<p>Ecosystems, Bio-diversity and its conservation</p> <p>Ecosystems: Concept of an Ecosystem Structure and function of an Ecosystem Energy Flow in the Ecosystem Food Chains, Food Webs and Ecological Pyramids Biodiversity and its conservation Introduction- Definition: Genetic, Species and Ecosystem Diversity Bio-Geographical 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</p>		



Unit IV	Environmental Pollution <ul style="list-style-type: none"> • Causes, Effects and Control measures of:- <ul style="list-style-type: none"> a. Air Pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards
Unit V	Field Work <ul style="list-style-type: none"> ➤ 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 ecosystem-pond, River, Hill slopes, etc
Reference and Text Books:- <p>AUPD, (2006). <i>Environmental studies</i>. Karaikudi: Alagappa University Publication Division.</p> <p>Agarwal, K.C. (2001). <i>Environmental Biology</i>. Bikaner: Nidi Publ. Ltd.</p> <p>Bharucha Erach, (2002). <i>The Biodiversity of India</i>. Ahamedabad: Mapin Publishing Pvt. Ltd.</p> <p>Burnner, R.C. (1989). <i>Hazardous Waste Inclineration</i>. New York: McGraw Hill Inc.</p> <p>Cunningham, Cooper, W.P., T.H. Gorhani. E, & Hepworth, M.T. (2001). <i>Environmental Encyclopedia</i>, Mumbai: Jaico Publ. House.</p> <p>De, A.K. (2007). <i>Environmental Chemistry</i>. New Delhi: Wiley Eastern India Ltd.</p> <p>Gleick, H.P. (1993). <i>Water in Crisis, Pacific Institute for Studies in Environment & Security</i>. Stockholm env. Institute. UK, Oxford: Oxford Univ. Press.</p> <p>Hawkins, R.E. (1987). <i>Encyclopedia of Indian Natural History</i>. Bombay: Bombay Natural History Society.</p> <p>Trivedi, R.K. & Goel, P.K. (2013). <i>Introduction to Air Pollution</i>. Mumbai: Techno-Science Publications.</p>	
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ appreciate the intellectual and practical complexities of environmental problems and solutions ➤ master in key concepts and methods of environmental analysis drawn from, and integrating, a broad range of disciplines ➤ fuse this background knowledge and analytical ability with leadership and communication skills to successfully devise and implement creative, academically grounded solutions to environmental problems.



Semester - II			
Course code: 9BV2G2	Advanced Communicative English@	Credits: 2	Hours:2
Objectives	<ul style="list-style-type: none"> ➤ To read and to evaluate different genres of Communicative English with an understanding of its purposes ➤ To study the different techniques used to exhibit the effective Communicative skills and presentation skills 		
Unit I	Basis of Communication: Meaning, Importance and process, Need and Objectives of communication, 7c's of Communication, Barriers of communication, How to overcome communication Barrier.		
Unit II	Means/Media of Communication: Verbal and non-verbal communication channel of communication formal & informal communication. Types of communication – Downward, upward, Horizontal or lateral, Diagonal or cross.		
Unit III	Listening as a Communication Tool: Importance types of listening, Barriers to effective listening – How to make listening effective. Speeches and Presentation - Speeches - Characteristics of a good speed, How to make speech effective - Presentation - Planning, preparation, organizing, rehearsing and delivery.		
Unit IV	Groups: Importance of features, Advantages and Disadvantages techniques of Group decision making - Brain storming sessions, Nominal Group Technique, solving problems in Groups.		
Unit V	Presentation Skills: Group discussion, mock group discussion using video recording- public speaking.		
Reference and Textbooks:-			
Bhatia, R.C. (2008). <i>Business Communication</i> . Mumbai: Ane Books private Limited.			
Madhukar, R.K. (2016). <i>Business Communication</i> . New Delhi: Vikas Publisher.			
Shraf Ravi, A. (2007). <i>Effective Technical Communication</i> . New York: McGraw Hill Education.			
Outcomes	This Course gave insights to: <ul style="list-style-type: none"> ➤ the skills needed for listening, speaking, reading and writing to be engaged in a range of communicative tasks and activities ➤ the students to participate in critical conversations and prepare, organize, deliver their work in an effective manner. 		



Semester - II			
Course code: 9BS2G3	Core- VI - Practical – GUI Programming Using Visual Basic - Lab	Credits:2	Hours:2
Objectives	<ul style="list-style-type: none"> ➤ To develop Computer programs with elementary graphic operations ➤ To design simple GUI tools. 		
<ol style="list-style-type: none"> 1. Interest Calculation 2. Fibonacci Series 3. Designing a Scientific Calculator using Control Array 4. String Operations 5. Matrix Operations 6. Free Hand Writing 7. Simple MDI Text Editor 8. Creating and Updating a Database 9. Designing a Digital Clock 10. Horizontal and Vertical Scrolling for Changing Colors. 11. Designing a Calendar 12. Student Mark Sheet 13. Database Applications using data control. 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand concept of graphic operations & GUI programming constructs. ➤ design complex problems using GUI tools. 		



Skill Subject

Theory

Semester - II			
Course code: 9BS2C1	Core- IV - Web Technology	Credits:5	Hours:5
Objectives	<ul style="list-style-type: none"> ➤ To impart the fundamentals of Inter-networking and its protocols ➤ To understand the various steps in designing a creative and dynamic website using HTML, JavaScript and Bootstrap. 		
Unit I	<p>Introduction and Overview: Growth of Computer Networking – Why Networking Seems Complex – The Five Key Aspects of Networking – Public And Private Parts of The Internet – Networks, Interoperability, And Standards – Protocol Suites And Layering Models – How Data Passes Through Layers – Headers And Layers – ISO and the OSI Seven Layer Reference Model – The Inside Scoop – Remainder of The Text</p> <p>Internet Trends: Introduction – Resource Sharing – Growth of The Internet – From Resource Sharing to Communication – From Text to Multimedia – Recent Trends</p>		
Unit II	<p>Traditional Internet Applications: Introduction – Application-Layer Protocols – Representation and Transfer – Web Protocols – Document Representation with HTML – Uniform Resource Locators and Hyperlinks – Web Document Transfer with HTTP – Caching In Browsers – Browser Architecture – File Transfer Protocol (FTP) – FTP Communication Paradigm – Electronic Mail – The Simple Mail Transfer Protocol (SMTP) – ISPs, Mail Servers, And Mail Access – Mail Access Protocols (POP, IMAP) – Email Representation Standards (RFC2822, MIME) – Domain Name System (DNS) – Domain Names That Begin with www – The DNS Hierarchy And Server Model – Name Resolution</p>		
Unit III	<p>Introduction to HTML/XHTML: Basic Syntax – Standard HTML Document Structure – Basic Text Markup – Images – Hypertext Links – Lists – Tables – Forms – The audio Element – The video Element – Organization Elements – The time Element</p>		
Unit IV	<p>The Basics of JavaScript: Overview of JavaScript – Object Orientation and JavaScript – General Syntactic Characteristics – Primitives, Operations, and Expressions – Screen Output and Keyboard Input – Control Statements – Object Creation and Modification – Arrays – Functions – Constructors</p> <p>JavaScript and HTML Documents: Events and Event Handling – Handling Events from Body Elements – Handling Events from Button Elements – Handling Events from Text Box and Password Elements</p>		
Unit V	<p>Getting Started with Bootstrap: Mobile-first design – Why Bootstrap</p> <p>Installing and Customizing Bootstrap: Including Bootstrap in your HTML file – The Bootstrap CDN – Overriding with custom CSS – Using the Bootstrap customizer – Deep customization of Bootstrap</p> <p>Using the Bootstrap Grid: Using the Bootstrap Grid classes – Using the Bootstrap variables and mixins – Creating a blog layout with the Bootstrap Grid mixins and variables</p> <p>Using the Base CSS: Implementing the Bootstrap Base CSS – Customizing the Base CSS using LESS variables</p>		



<p>Reference and Textbooks:-</p> <p>H.M.Deitel, P.J.Deital & T.R.Neito, - <i>Internet and World wide web - How to Program</i>. Pearson Education Asia-Addison Wesley Longman pvt Ltd.</p> <p>Matt Lambert. (2016). <i>Learning Bootstrap - Unearth The Potential Of Bootstrap To Create Responsive Web Pages Using Modern Technique</i>. (2nd Edn.). Mumbai: Packt Publishing.</p> <p>N.P. Gopalan, J. Akilandeswari. (2014). <i>Web Technology – A Developer’s Perspective</i>. (2nd Edn.). New Delhi: PHI Learning Private Limited.</p> <p>Sergey Akopkokhyants, Stephen Radford. (2016). <i>Web Development with Bootstrap 4 and Angular 2</i>. (2nd Edn). Packt Publishing Ltd.</p>	
<p>Outcomes</p>	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ get the knowledge to analyze given assignment to select sustainable web development and design methodology ➤ develop web based application using suitable client side and server side web technologies.



Semester - II			
Course code: 9BS2C2	Core – V- Introduction to Multimedia	Credits: 4	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To prepare students in the field of content designing or Desktop publishing ➤ To provide knowledge for preparing multimedia presentations 		
Unit I	Introduction to Multimedia - Basics of multimedia, Components of multimedia - Web and Internet multimedia applications - Transition from conventional media to digital media - Computer Fonts and Hypertext - Usage of text in Multimedia - Families and faces of fonts - outline fonts - bitmap fonts International character sets and hypertext - Digital fonts techniques.		
Unit II	Audio fundamentals and representations - Digitization of sound - frequency and bandwidth - decibel system - data rate - audio file format - Sound synthesis – MIDI – wavetable - Compression and transmission of audio on Internet - Adding sound to your multimedia project - Audio software and hardware.		
Unit III	Image fundamentals and representations - Colour Science – Colour - Colour Models - Colour palettes – Dithering - 2D Graphics - Image - Compression and File Formats :GIF, JPEG, JPEG 2000, PNG, TIFF, EXIF, PS, PDF - Basic - Image Processing - Use of image editing software - White balance – correction - Dynamic range correction - Gamma correction - Photo Retouching.		
Unit IV	Video and Animation - Video : Basics - How Video Works - Broadcast Video Standards - Analog video - Digital video - Video Recording and Tape formats - Shooting and Editing Video (Use Adobe Premier for editing) - Video Compression and File Formats - Video compression based on motion compensation: MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21, Animation : Cell Animation, Computer Animation, Morphing.		
Unit V	Multimedia Authoring : Multimedia Authoring Basics, Some Authoring Tools, Macromedia Director & Flash.		
Reference and Textbooks:- Anirban Mukhopadhyay, Arup Chattopadhyay. <i>Introduction to Computer Graphics and Multimedia</i> . (2 nd Edn.).Vikas Publishing House. Parekh Ranjan. (2007). <i>Principles of Multimedia</i> .Tata McGraw-Hill. Rajneesh Aggarwal, B. B Tiwari. (2007). <i>Multimedia Systems</i> . New Delhi: Excel Publication. Tay Vaughan. (2014). <i>Multimedia making it work</i> . Tata McGraw-Hill.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand basic knowledge in multimedia designing or publishing ➤ develop multimedia applications and to present the same 		



Semester - II			
Course code: 9BS2P1	Core- VI- Practical – Web Designing- Lab	Credits: 4	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To learn the languages for the WWW such as, HTML, JavaScript, CSS and Bootstrap ➤ To develop interactive website creation skills and make the students to analyse the usability of a website. 		
<p>JavaScript:</p> <ol style="list-style-type: none"> 1. Design a webpage to find the maximum of three given numbers using JavaScript 2. Design a webpage to perform all arithmetic operations using JavaScript 3. Design a webpage to illustrate built-in string functions using JavaScript 4. Design a webpage to validate the details of “Savings Bank Account form” using JavaScript. <p>CSS:</p> <ol style="list-style-type: none"> 5. Design a list with colors using CSS 6. Design a colored table using CSS 7. Design a vertical navigation bar and change the link color on hover using CSS 8. Design a responsive image gallery that will look good on desktops, tablets and smart phones using CSS <p>Bootstrap:</p> <ol style="list-style-type: none"> 9. Design a webpage header using jumbotron in bootstrap 10. Design a series of buttons together in a button group using bootstrap 11. Design a spinner/loader, use the .spinner-border class using bootstrap 			
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ have the ability to develop web based application using HTML, JavaScript, CSS and Bootstrap ➤ develop solution for problems using appropriate method, web technologies, frameworks, web services and content management. 		



Semester - II			
Course code: 9BS2J1	NSQF Level – 5 Job Role Web Developer (SSC/Q0503) @	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To expose the students to know the technologies for WWW and to introduce various tools and languages required for technical and creative design of state-of-the-art web sites ➤ To learn the foundational aspects of web designing and also focus on the web developing skills. 		
Unit I	Design basic programming structures - Requirements defined in BRS/URS, SRS and HLD - Understanding of the BRS/URS - Understanding of the SRS - Understanding of HLD - Review designs - Analyze inputs - Document the designs using standard templates and tools - Organization's policies, procedures and guidelines - Access reusable components, media and graphical packages and tools - Convert requirements into media content and graphic designs - Review media content and graphic designs - Record any defects and corrective actions - Rework media content and graphic designs - Submit media content and graphic designs for approval - Update organization's knowledge.		
Unit II	Establish work requirements - Work area clean and tidy - Utilize time effectively - Use resources - Treat confidential information correctly - Organization's policies and procedures - Limits of job role - Ensure work meets the agreed requirements - Analysis on the performed data - Data analysis outside their area of competence - Review the results - Undertake modifications based on inputs - Communicate with colleagues - Work with colleagues - Pass on essential information to colleagues - Respect for colleagues - Carry out commitments to colleagues - Explaining the reasons of cannot carry out commitments- Identify any problems and solve these problems - Organization's policies and procedures..		
Unit III	Organization's health, safety and security policies and procedures - Report any breaches in policies and procedures to the designated person - Identify and correct any hazards - Report any hazards that warn other people who may be affected - Follow their organization's emergency Procedures promptly, calmly, and efficiently - Identify and recommend opportunities - Complete any health and safety records legibly and accurately.		
Unit IV	Obtain the data/information from reliable sources - Check that the data/information - Advice or guidance from appropriate people where there are problems with the data/information - Carry out rule based analysis - Insert the data/information into the agreed Formats - Check the accuracy of work, involving colleagues where required - Report any unresolved anomalies in the data/information to appropriate people - Provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time.		



Unit V	Develop knowledge, skills and competence –Identify knowledge and skills - Identify current level of knowledge, skills and development needs - Plan of learning and development activities - Undertake learning and development activities - Apply new knowledge and skills in the workplace - Feedback from appropriate people - Review knowledge, skills and competence .
Reference and Textbooks:- SSC – NASSCOM – Qualification Pack : https://www.sscnasscom.com/qualification-pack/SSC/Q0503/	
Note – Occupational standards <ol style="list-style-type: none"> 1. SSC/N9001 (Manage your work to meet requirements) 2. SSC/N9002 (Work effectively with colleagues) 3. SSC/N9003 (Maintain a healthy, safe and secure working environment) 4. SSC/N9004 (Provide data/information in standard formats) 5. SSC/N9005 (Develop your knowledge, skills and competence) 6. SSC/N0501 (Contribute to the design of software products and) 7. SSC/N0503 (Develop media content and graphic designs for soft) 	
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ acquire knowledge about the job role ‘Web Developer’. ➤ choose the appropriate web tools/languages for creating interactive web sites. ➤ expose about current trends and styles in web design and applications

Note: The evaluation for this paper for 100 marks will be carried out in three stages. Basic Website Design Skills and tools (10 marks) and Developing websites and Deployment (15 Marks) will be evaluated by the faculty who are handling the subject. A Mock Interview (Viva-voce) (75 marks) will be conducted and evaluated by the Internal Examiner (faculty member of the Department) and an External Examiner. The cumulative 100 marks will be given by the Department.



Semester – III			
Course Code : 9BV3G1	Interview Techniques and Interpersonal Communications @	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To improve the skills of the students to prepare and face the interview process. ➤ To learn about Social skills, Conflict skills and interpersonal skills 		
Unit-I	Basic of Interview Important aspects of interview-Maintaining interview files-Important of background information about the job, the organization and the interviewer-Things to do before interview-preparing for the interview- Facing panel interview-Handling appropriate questions-Standard Interview formats-Sample Questions.		
Unit-II	Preparation for interview Information consideration before the interview-Entering into the interview room-Giving answers to the questions-Recapturing the interviewer's attention-questions to ask towards the end of the interview-Things to do after interview –Second interview.		
Unit-III	Interview Behaviours Grooming for interview-Checklist for interview-Three essential interview Skills-Ten sticky interview situations and handling them-Avoiding ten interview blunders-Job interviews do's and Don'ts- Informal interviews Do's and Don'ts- Ready for unexpected interview-Strengths and weakness-Interview body language-interview etiquette-Basics of group discussion.		
Unit-IV	Social Skills and Conflict Management Skills Component of Social Skills, effective ways of dealing with people - Types of conflict (intrapersonal, intra group and inter group conflicts) - Basic concepts, cues, signals, symbols and secrets of body language - Significance of body language in communication and assertiveness training. - Conflict stimulation and conflict resolution techniques for effective conflict management.		
Unit-V	Interpersonal Skills Concept of team in work situation, promotion of team spirit, characteristics of team player - Awareness of one's own leadership style and performance - Nurturing leadership qualities - Emotional intelligence and leadership effectiveness- self awareness, self management, self motivation, empathy and social skills - Negotiation skills- preparation and planning, definition of ground rules, clarification and justification, bargaining and problem solving, closure and implementation.		
Note:	<ul style="list-style-type: none"> • This paper aims at imparting Soft Skills to the students to become successful person in both interviews and work places. • The evaluation for this paper for 100 marks will be carried out in three stages. <ul style="list-style-type: none"> ○ Interpersonal Communication Skills (25 marks) and Interview Preparation Skills (25 marks) will be evaluated by the faculty who are handling the subject. ○ A Mock Interview (50 marks) will be conducted and evaluated by the faculty of the Department and an external examiner. 		



○ The cumulative 100 marks will be given by the Department.	
Reference and Text Books:- Abdulhashen, (2012). <i>Interview Manual</i> . New Delhi: Ramesh Publishing House. Anandamurugan, S. (2011). <i>Placement Interviews</i> . New Delhi: Tata McGraw Hill. Hurlock, E.B. (2006). <i>Personality Development</i> . New Delhi: Tata McGraw Hill.	
Outcomes	This course gave insights about: <ul style="list-style-type: none">➤ the process of interview and how to prepare for interview.➤ the importance of Social skills, Conflict skills and interpersonal skills.



Semester - III			
Course code: 9BV3G2	PC Assembling and Troubleshooting – Lab	Credit :4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To understand the process of Computer assembling ➤ To know about installation of Operating System, Software and Device Drivers ➤ To learn the techniques for identifying and troubleshooting issues with Software and Hardware 		
<ol style="list-style-type: none"> 1. Assemble a PC by fixing motherboard, processor and cooling fan. 2. Fix a Hard drive and DVD and connect the Data, power cables. 3. Connect the power cables with SMBS 4. Install windows Operating System with service pack 5. Install an Audio driver software and check the functionality 6. General scanner troubleshooting <ul style="list-style-type: none"> • Verify cables connected properly to the back of the scanner • Ensure that the scanner is getting power • Additional parallel port scanner troubleshooting • Verify the LPT port mode 7. General microphone troubleshooting <ul style="list-style-type: none"> • Sound drivers not setup properly • Not connected properly • Issues with microphone 8. General Speaker troubleshooting <ul style="list-style-type: none"> • Sound drivers not setup properly and not connected properly • Issues with Speakers • Aligning the sound mixers 9. Testing a computer CD-ROM / DVD drive for failures. 10. Testing the memory to determine bad sectors. 11. Testing the Keyboard 12. Troubleshooting different types of Monitors. 13. Troubleshooting the Mouse. 14. Preventing from power surges. 15. Testing of serial and parallel ports. 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ assemble a personal computer and to install Operating System, Application Software and Device Drivers in their own ➤ fix faults that are related to Software and Hardware in a Desktop Computer. 		



Semester – III			
Course Code : 9BV3G3	Extension Activities #	Credits: 1	Hours: -
Objectives	<ul style="list-style-type: none"> ➤ To enable the students to learn and understand the culture, living environment, values as well as the problems of rural people ➤ to bring desirable changes in knowledge, skill and attitude of rural people. 		
<p>Extension Activities will be organized for 2 days in the Third Semester. The programme may be organized in any Saturday and Sunday.</p> <p>A meeting of all the staff of the College (Teaching, Administrative and Technical Staff) be conducted before departing to the camp in which each and every aspect like Programmes to carried out, accommodation, food, medical aid, transport facilities, etc., should be thoroughly discussed.</p> <p>One credit will be allotted for this Extension Activities. The marks allotted for each camp will be 100. Each student participating in the camp will be evaluated internally for 100 marks. The criteria for evaluation of Extension Activities will be as follows:</p>			
	S. No.	Criteria	Maximum Marks
	1.	Interaction with villagers	10
	2.	Participation / Attitude towards work	10
	3.	Participation in interaction and discussion	10
	4.	Knowledge of problems / issues	10
	5.	Organizing & decision making ability	20
	6.	Expression: a) Cultural Programmes	10
		b) Report Writing	20
	7.	Ability to adjust and work in a team	10
	Total		100
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ get awareness about the culture and living environment of rural people. ➤ analyze the problems of rural people and find solutions. 		



Semester - III			
Course code: 9BS3C1	Core- VII - Fundamentals of Operating Systems	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To impart the basic principles of Operating System and its concepts ➤ To provide the fundamental aspects of Process management, Memory management, GUI and Security techniques of Operating System ➤ To learn about UNIX Operating System. 		
Unit I	Introduction to Operating System: Definition of Operating System- Booting – Kernel History of Operating system - Operating system functions – File system.		
Unit II	Process Management and Deadlock: Process Management - Inter-process communication - Dead Lock - Dead Lock prerequisites - Dead Lock Strategies		
Unit III	Memory Management: Memory Management - Single Contiguous – Fixed Partitioned – Variable-Partitions – Non-Contiguous allocations - Paging – Segmentation - Virtual Memory Management Systems.		
Unit IV	GUI and Security: GUI – Components of GUI – Requirements of Windows based GUI – Security Protection: Threats – Attacks – Worms – Virus - Design principles – Authentication – Protection mechanisms – Encryption.		
Unit V	UNIX: Unix-Architecture of Unix-File System of Unix- Basic commands in UNIX.		
Reference and Textbooks:- Abraham Silberschatz, Peter Baer Galvin. (2003). <i>Operating System Concepts</i> . (6 th Edn). New Delhi: John Wiley & Sons Inc. Achyut S. Godbole & Atul Kahate. (2011). <i>Operation Systems</i> , (3 rd Edn). Tata McGraw Hill. Andrew S. Tanenbaum. (2014). <i>Modern Operating Systems</i> . (4 th Edn). Pearson Pvt., Ltd. Harvey M. Deitel. (2007). <i>An Introduction to Operating System</i> . (3 rd Edn). Pearson Education India.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ know about the fundamental aspects of Process Management, memory management, GUI and Security. ➤ comprehend the Architecture, File System and basic commands in UNIX operating system. 		



Semester - III			
Course code: 9BS3C2	Core- VIII - Practical – Data Structure & Algorithms in C – Lab	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To give fundamental knowledge about Data Structures and Algorithms ➤ To solve problems using data structures such as Stack, Queue Lists and Arrays 		
Programs :			
<ol style="list-style-type: none"> 1. Sum of Array elements 2. Search an element in an Array 3. Operations on Stack 4. Operations on Queue 5. Operations on Circular Queue 6. Operations on Singly linked list 7. Operations on Doubly linked list 8. Binary Tree Creation and Traversals 9. Analyze Bubble Sort with number of passes, comparisons and data moves 10. Sequential search in an array 11. Binary Search in an array 12. Convert Infix to Postfix and evaluate Postfix using Stack 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ obtain knowledge on the various concepts of Data Structures and Algorithms. ➤ apply appropriate the methods of Data Structure, Algorithms and Search techniques for solving problems 		



Semester - III			
Course code: 9BS3P1	Core - IX - Practical – RDBMS – Lab	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To improve the programming skills of the students in Relational Database Management Systems (RDBMS) ➤ To impart the concepts and programming techniques related to query processing using SQL and PL/SQL 		
<p>SQL :</p> <ol style="list-style-type: none"> 1. DDL: Table Creation and description of tables 2. DML: Data Insertion, Deletion, Updating and Selection. 3. DML: Operators (Arithmetic, Relational, Logical), 4. DML: SQL Functions (Single Row Function, Group Functions). 5. DML: Set operations 6. DML: Join operations 7. Creation of Nested queries 8. Creation of Synonym, Sequence & Index 9. Creation and manipulation of View. <p>PL/SQL :</p> <ol style="list-style-type: none"> 1. Working with control structures using PL/SQL block 2. Creation and manipulation of Cursors 3. Simple programs using Functions & Procedure 4. Creation and manipulation of Packages 5. Creation and manipulation of Triggers 			
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ design and execute SQL queries for real-time applications. ➤ implement PL/SQL structures in relational database systems 		



Semester - III			
Course code: 9BS3P2	Core-X – Practical -Web Graphics - Lab	Credits: 3	Hours: 3
Objectives	<ul style="list-style-type: none"> ➤ To understand the components of web graphics tools such as Photoshop, Flash and Dreamweaver. ➤ To enable the students to create, import and manipulate text, image and graphics. 		
<p>PHOTOSHOP</p> <ol style="list-style-type: none"> 1. Design a Student ID card using Photoshop 2. Design an Invitation using Photoshop 3. Design a Webpage Header using Photoshop 4. Applying masks and filtering on images 5. Developing a commercial brochure with background tints <p>FLASH</p> <ol style="list-style-type: none"> 1. Design an animation to bounce a ball using Flash. 2. Create Text Animation using motion twining” in Flash. 3. Activate a New Window or Page using buttons” in Flash 4. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects in flash 5. Working with Strokes and Fills in flash <p>DREAMWEAVER</p> <ol style="list-style-type: none"> 1. Design a Web Page (Home Page) for a book store using Dreamweaver 2. Design a Web Page to display cars and its details using Dreamweaver 3. Design a Feedback form with spry validation using Dreamweaver 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ design simple graphics using Photoshop and Flash ➤ design and include graphics into web pages using Dreamweaver 		



General Subject

Theory

Semester - IV			
Course code: 9BV4G1	Professional Etiquettes	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To impart various etiquettes, dress code in business environment. ➤ To impart understanding about behavioural styles in business environment. 		
Unit I	Why Business Etiquette, Greeting and Introduction: who to introduce first, Guidelines for Determining Importance, A few tips, Shaking Hands, Use of Names, Business Card, Remembering Names.		
Unit II	The well Groomed Man: Hair, Face, Hands, Personal Hygiene, formal dress code, Shirts and Trousers, Business Suits, Ties, Shoes, Belt, Socks, Handkerchief, wallet, Jewellery, Eyeglasses, Fragrance, Business Casuals. The well Groomed Women: Hair, Personal Hygiene, Make up, Hand and Nails, Feet, Shoes, Jewellery, Formal Dress code, Indian Dressing, Western Dressing, Accessories, Business Casuals.		
Unit III	Workplace Etiquette: Behavior, Body Language, Everyday Courtesies, Use of office Machine Etiquette, Using Facilities, Washroom Etiquette, Holding Doors, Elevator Etiquette, Managing Conflict, Visiting Other Offices, Receiving Visitors in Your Offices, Telephone Etiquette, Cell Phone Etiquette, Meeting Etiquette		
Unit IV	Dining Etiquette: Rationale for a Dining Etiquette, Table Setting, Napkin Use, Cutlery Awareness, Eating Consideration, Eating Soup, Breaking Bread, Managing Difficult Food, Specific Dishes, Avoiding Elementary Dining Mistakes, Knowing Wines		
Unit V	Restaurant Etiquette: Reservation, Ordering, Problems, Paying Bills and Tipping, Buffet Dining Etiquette. Office Party Etiquette: some Consideration, when is a Person a Bad Guest. Travel Etiquette: Airplane Travel, Hotel Stay. Cross-Cultural Consideration: Awareness, Cultural Sensitivities of some Countries, Giving Gifts. Email Etiquettes.		
Reference and Textbooks:- Barbara Pachter, & Marjorie Brody, (1994). <i>Business Etiquette</i> . New York: Mcgraw-Hill Education. Ferguson, (2009). <i>Professional Ethics and Etiquette</i> . New York: Infobase Publishing. Sarvesh Gulati, (2012). <i>Corporate Grooming and Etiquette</i> . Kolkatta: Rupa Publications Pvt. Ltd. Shitkal Kakkar Mehra, (2012). <i>Business Etiquettes - A Guide for the Indian Professional</i> . New Delhi: Harper Collins India Publisher.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ well verse with business Etiquette, workplace Etiquette, dinning Etiquette, and restaurant Etiquette. ➤ improve Professional behaviour in business environment. 		



Semester - IV			
Course code: 9BS4G2	Introduction to BPO	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To learn about Business Process Outsourcing (BPO) technologies. ➤ To enable the students to choose BPO as their career choice either as a professional or an entrepreneur. 		
Unit I	Business Process Outsourcing - Basics - Benefits of BPO - Growth Drivers - BPO Models and Types of Vendors - Offshore BPO - Evolution Destinations - Challenges of Off shoring - BPO Companies in India.		
Unit II	BPO Industry - Employment Opportunities - Employee Structure - Skill Set Required Compensation Levels - Contact Centre BPO - Types of Call Centres – Technology Components and working of a Call center - Issues and Problems - Case Study - Intelenet Global.		
Unit III	Healthcare BPO - Structure of the American Healthcare Sector - Activity Profile - Future Trends and Threats - Case Study - Cbay Systems.		
Unit IV	Transaction Processing BPO - Elements of Back - Office Services - Financial Services - Insurance - Case Studies - Datamatics - Hinjuja TMT.		
Unit V	Human Resource BPO - Reasons for outsourcing HR - Activities involved in HR BPO - HR Outsourcing Trends - Career in HR BPO - Emerging BPO Domains - Media and Entertainment BPO - Publishing BPO.		
Reference and Textbooks:-			
Deepak., Shikapur. “ <i>BPO DIGEST</i> ”. Ameya (Inspiring Books).			
Sarika Kulkarni. (2004). <i>Business Process Outsourcing</i> . New Delhi: Jaico Publishing House.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the industry trends and technologies of BPO ➤ become a professional / an entrepreneur in BPO industry. 		



Semester - IV			
Course code:9BV4G3	Value Education @	Credits: 2	Hours: 2
Objectives	<ul style="list-style-type: none"> ➤ To help the students to get better understanding of human lives. ➤ To impart good manners and responsibility in society. 		
Unit I	The learning and practice of facts which have eternal value is what is contemplated by value education. It can also be the process by which a good citizen is moulded out of a human being. The evolution of a good human being is when he realises that his conscience shows to him the rightness of his action.		
Unit II	Vedic Period – Influence of Buddhism and Jainism – Hindu Dynasties – Islam Invasion – Moghul invasion – British Rule – culture clash – Bhakti cult – social Reformers – Gandhi – Swami Vivekananda – Tagore – their role in value education.		
Unit III	Value Crisis – After Independence-Independence – democracy – Equality – fundamental duties – Fall of standards in all fields – Social, Economic, Political, Religious and Environmental – corruption in society. Politics without principle – Commerce without ethics – Education without Character – Science without humanism – Wealth without work – Pleasure without conscience – Prayer without sacrifice – steps taken by the Governments – Central and State – to remove disparities on the basis of class, creed, gender.		
Unit IV	Value Crisis – After Independence Independence – democracy – Equality – fundamental duties – Fall of standards in all fields – Social, Economic, Political, Religious and Environmental – corruption in society. Politics without principle – Commerce without ethics – Education without Character – Science without humanism – Wealth without work – Pleasure without conscience – Prayer without sacrifice – steps taken by the Governments – Central and State – to remove disparities on the basis of class, creed, gender.		
Unit V	Project WorkCollecting details about value education from newspapers, journals and magazines.Writing poems, skits, stories centering around value-erosion in society.Presenting personal experience in teaching values. Suggesting solutions to value – based problems on the campus.		



Reference and Textbooks:-	
Eknath Ranade, (2009). <i>Swami Vivekananda's Rousing call to Hindu Nation</i> . Calcutta: Swastik Prakashan.	
Mohit Chakraborti, (1997). <i>Value Education - Changing Perspectives</i> . New Delhi: Kanishka Publications.	
Satchidananda, M.K. (1991). <i>Ethics, Education, Indian Unity and Culture</i> . New Delhi: Ajantha publications.	
Saraswathi, T.S. (1999). <i>Culture, Socialisation and Human Development - Theory, Research and Application in India</i> . New Delhi: SAGE India Publications.	
Venkataiah, N. (1998). <i>Value Education</i> . New Delhi: PAH Publishing Corporation.	
Vittal, N. (2001). <i>Value Education – Need of the hour</i> . Mumbai: Talk delivered in the HTED Seminar Govt. of Maharashtra.	
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ develop meaningful understanding about value education ➤ understand the value of culture and heritage of human lives.



Semester - IV			
Course code:9BV4G4	Manavalakalai Yoga @	Credits: 2	Hours: 2
Objectives	<ul style="list-style-type: none"> ➤ To understand the importance of yoga and its relationship with physical and mental health ➤ To enable the students to attain physical strengths, higher level of consciousness, strong emotional stability and moral values through various Asanas. 		
Unit I	Physical Structure – Three bodies – Five limitations Simplified Physical Exercises – Hand Exercises – Leg Exercises – Breathing Exercises – Eye Exercises – Kapalapathi Maharasanas 1-2 Massages – Acupuncture – Relaxation Yogasanas – Padmasana – Vajrasanas – Chakrasanas (Side) – Viruchasanas – Yoga muthra – Patchimothasanas – Ustrasanas – Vakkarasanas – Salabasanas		
Unit II	2.1 Maintaining the youthfulness – Postponing their 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	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	4.1 Eradication of worries 4.2 Benefits of Blessings 4.3 Greatness of Friendship 4.4 Individual Peace and World Peace		
Unit V	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		
Reference and Text Books:-			
James Hewitt, (2012). <i>The Complete Yoga Book - The Yoga of Breathing, Posture and Meditation</i> . New York: Random House Publisher.			
Stephen Sturgess, (2013). <i>The Yoga book; A practical Guide to Self Realization</i> . London: Watkins Media Limited.			
Swami Vishnu Devananda, (2011). <i>The complete Illustrated Book of Yoga</i> . USA, Pennsylvania: Potter/Ten Speed/Harmony/Rodale Publisher.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the yoga and its implication in health. ➤ get knowledge about the techniques involved to attain physical and mental strength. 		



Semester - IV			
Course code:9BV4G5	Introduction to Gender Studies @	Credits: 2	Hours: 2
Objectives	<ul style="list-style-type: none"> ➤ To gain knowledge about the importance of Gender identity, Gender roles and Gender Equality. ➤ To know about Strength of Women, Women Development Policies and Programmes. 		
Unit I	Gender Identity: Gender Ideology – Sex Vs Gender – Biological Determinism – Dualism – Reductionism – Objectification – Socialization and Internalization		
Unit II	Gender Roles: Division of Labour – Sex Role – Stereotypes – Gender Role – Work – Family and Gender – Motherhood – Production and Reproduction		
Unit III	Gender Equality / Equity: Equality Vs Equity, HDI, GDI and GEM – Gender Inequality in Certain Vital Measures of Development: Sex Ratio, Life Expectancy, Literacy Level – Work Participation – Decision Making and Political Participation		
Unit IV	Strength of Women: Hormones and Chromosomes – Physical Differences – Record of the Fastest Men and Women in the World – Athletes – Brain and Intelligence – Emotions.		
Unit V	Development Policies and Programmes: WID – WAD – GAD – Approaches: Welfare – Anti-Poverty – Efficiency – Equity – Empowerment – Central and State Government Women Development Schemes.		
Unit VI	Women Empowerment: Meaning and Concepts, Empowerment Levels – Framework – Empowerment Tools – Capability Approach		
Reference and Textbooks:			
Eleanor Leacock. & Leela Dube et al. (1986). <i>Women, Power and Authority in invisibility and power ed.</i> New Delhi: Oxford University Press India.			
Foucault, M. (1981). <i>The History of Sexuality – an Introduction</i> (Vol. 1). London: Penguin.			
Kapur Promilla, (2001). <i>Empowering the Indian Women.</i> New Delhi: Publication Division, Ministry of Information and Broadcasting, Government of India.			
Poornima Advani, (2000). <i>Course Curriculum on Gender Sensitization of Police Officers.</i> New Delhi: National Commission for Women.			
Sahay Sushama, (1998). <i>Women and Empowerment - Approaches as and Strategies.</i> New Delhi: Discovery Publishing House.			
Selvy Thiruchandran, (2006). <i>Ideology, Caste, Class and Gender.</i> Mumbai: Vikas Publishing House.			
Thilakavathi, G. & Regina Papa, B. (2003). <i>Gender Sensitization - Course Material.</i> Chennai: Tamil Police.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand and appreciate Gender identity, Gender roles and Gender Equality. ➤ work to improve the environment for Women, Women Development Policies and Programmes 		



Semester - IV			
Course code:9BS4C1	Core- XI -Object Oriented Programming and C++	Credits: 4	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To impart basic knowledge and principles of Object - Oriented Programming ➤ To understand the basic concepts of C++ such as objects, classes, inheritance and polymorphism. 		
Unit I	Principles of Object- Oriented Programming – Beginning with C++ - Tokens, Expressions and Control Structures – Functions in C++		
Unit II	Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading and Type Conversions		
Unit III	Inheritance: Extending Classes – Pointers- Virtual Functions and Polymorphism		
Unit IV	Managing Console I/O Operations – Working with Files – Templates – Exception Handling		
Unit V	Standard Template Library – Manipulating Strings – Object Oriented Systems Development		
Reference and Textbooks:-			
Ashok Kamthane. (2013). <i>Programming in C++</i> , Pearson Education.			
Balagursamy E. (2013). <i>Object Oriented Programming with C++</i> . (6 th Edn). Tata McGraw Hill Publications.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the concepts of Object Oriented Programming. ➤ apply the concepts of OOP such as objects, classes, inheritance and polymorphism using C++ for solving problems. 		



Semester – IV			
Course code: 9BS4C2	Core XII- Computer Networks and Administration	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To impart fundamental knowledge about Computer Networks and Data Communication ➤ To learn about Network protocols, reference models, security concepts and Network Management. 		
Unit I	Introduction To Computer Networks and Data Communications: Need For Computer Networks – Evolution of Computer Networks – Data Communication Fundamentals – Data Transmission – Transmission Media – Classification Of Computer Networks - Protocols And Standards		
Unit II	OSI Reference Model – The Physical Layer – Data Link Layer – Network Layer – Transport Layer – Session Layer – Presentation Layer – Application Layer. TCP/IP Protocol Suite: Network Layer – Transport Layer – Application Layer.		
Unit III	IEEE Standards – The Ethernet – Token Bus – Token Ring – Virtual Circuit Networks – Circuit Switched Networks. Local Area Network : LAN Architecture – LAN Advantages And Services – Characteristics Of A LAN – LAN Topologies. Wireless LANs – Components Of Wireless LANs – Working Of Wireless LANs		
Unit IV	Network Security: Security Services –Security Requirements and Attacks – Cryptography-Symmetric Key Cryptography- Asymmetric Key Cryptography Confidentiality with Symmetric Encryption – Message Authentication and Hash Functions – Public – key Encryption and Digital Signatures – Basics of IPv4 and IPv6 Security		
Unit V	Network Management: The need for network management – Different devices – Different administration — Network Management Stations – Network management protocol. Administrative model – Authentication – Authorization – originating, receiving and listening messages. Network Management Protocol. Configuration Management-Fault Management-Performance Management-Security Management-Accounting Management-Management Information Base		
Reference and Textbooks:-			
Behrouz A Fourouzan.(2017). <i>Data Communications and Networking</i> . (4 th Edn). Mcgraw Hill.			
Marshall T Rose. <i>An Introduction to Networking and Management</i> . (2 nd Edn). Prentice Hall Of India.			
Rajesh, Eswarakumar & Balasubramanian. (2002). <i>Computer Networks, Fundamentals And Applications</i> . Vikas Publishing House Pvt. Ltd.			
William Stallings. (2017). <i>Data and Computer Communications</i> . (10 th Edn). Pearson Education Pvt., Ltd.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the principles of computer networks and data communication. ➤ know the importance of network protocols, network security and network management. 		



Semester - IV			
Course code: 9BS4P1	Core- XIII - Practical – Programming in C++ - Lab	Credits: 3	Hours: 3
Objectives	<ul style="list-style-type: none"> ➤ To understand the fundamental concepts of object-oriented programming. ➤ To practice object-oriented programming concepts such as, classes, inheritance, polymorphism, over loading, over riding, templates and I/O streams using C++ language. 		
<ol style="list-style-type: none"> 1. Functions using <ol style="list-style-type: none"> i) Call by value ii) Call by reference iii) Recursive call iv) Returning different data types. 2. In-line function, Overloaded function and Default arguments. 3. Operator overloading (Unary and Binary). 4. Class and All types of Constructors. 5. Static function and Array of objects with static data. 6. Friend function and Friend class. 7. i) Simple and Multilevel inheritance ii) Implementing derived class constructors. 8. i) Function overriding ii) Creating objects using Pointers. 9. Virtual functions, pure virtual functions and Abstract class. 10. Dynamic polymorphism. 11. Function Template and Class Template. 12. I/O Streams with text file and data file. 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the features of object oriented programming. ➤ obtain practical knowledge and implement the concepts of object-oriented programming using C++ 		



Semester - IV			
Course code: 9BS4P2	Domain Study @	Credits:3	Hours:5
Objectives	<ul style="list-style-type: none"> ➤ To enable the students to apply their theoretical knowledge with specific domain and to analyse the domain to identify the problem ➤ To make the students to understand and analyse the problems find out in the respective domains 		
<p>Each student will be assigned to an Internal guide by the Director, Alagappa Institute of Skill Development at the starting of IV semester. The students have to choose a particular domain / application area which is practiced in their respective Industries in consultation with the Internal guide. The students have to study their domain extensively in consultation of the Internal guide at the outside of the class hours throughout the semester. This study would covers, characteristics and functionalities of the domain / area, analysis, problem identification, design of solution and etc. At the end of the semester, the student should prepare a domain study report (not less than 30 pages, A4 size) and submit the same to the Internal guide for evaluation. The Internal guide will evaluate the domain study report for 25 marks and this will be treated as Internal marks. The external evaluation for the domain study will be done by conducting viva-voce for 75 marks by the Department with two examiners and the cumulative 100 marks will be given by the Department.</p>			
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ identify the problems in a domain ➤ obtain knowledge for understanding and analysing the problems so as to create prototypes to solve the problems 		



Semester - IV			
Course code: 9BS4J1	NSQF Level – 6 Job Role Master Trainer For Junior Software Developer (SSC/Q0509) @	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To prepare students to undertake trainer profession for junior software developers as their career choice ➤ To learn the fundamental aspects of the software developing 		
Unit I	Establish customization requirements for software applications - Identify changes for software applications - Implement changes using standard templates and tools - Unit test cases (UTC) - Execute UTCs and document results –Designing of algorithms - Convert algorithms into code- Access reusable components and tools - Document changes using standard templates and tools – Update Organization’s knowledge base.		
Unit II	Design solutions to problems using Flow charts - Establish work requirements - Work area clean and tidy -Utilize time effectively - Identify resources - Process confidential information - Adhere to organization’s policies and procedures.		
Unit III	Formative and summative assessments - Frame mechanism to slow learners - Develop learning strategies - Apply basic computer skills - Schedule corrective sessions - Mentor trainees .		
Unit IV	Choose resources - Treat confidential information –Organization’s policies and procedures - Limits of job role - Obtain guidance from appropriate people - Pass on essential information to colleagues- Explaining the reasons cannot carry out commitments - Identify any problems working with colleagues - Follow the organization’s policies and procedures.		
Unit V	Emergency procedures – Any hazards Report to supervisor - Plan learning and development needs - Apply acquired new knowledge and skills		
Reference and Textbooks:-			
SSC – NASSCOM – Qualification Pack: https://www.sscnasscom.com/qualification-pack/SSC/Q0509/ .			



Note – Occupational Standards	
<ol style="list-style-type: none"> 1. SSC/N9001(Manage your work to meet requirements) 2. SSC/N9002 (Work effectively with colleagues) 3. SSC/N9003 (Maintain a healthy, safe and secure working enviro) 4. SSC/N9004 (Provide data/information in standard formats) 5. SSC/N9005 (Develop your knowledge, skills and competence) 6. SSC/N0506 (Assist in software Construction and Testing) 7. SSC/N0507 (Employ Programming Lab Oriented Pedagogical Skills) 8. SSC/N0508 (Engage Pedagogical Skills as a Master Trainer) 	
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ acquire knowledge about the job role “Master Trainer For Junior Software Developer”

Note: The evaluation for this paper for 100 marks will be carried out in three stages. Basic Program Designing (10 marks) and Software construction and testing skill (15 Marks) will be evaluated by the faculty who are handling the subject. A Mock Interview (Viva-voce) (75 marks) will be conducted and evaluated by the Internal Examiner (faculty member of the Department) and an External Examiner. The cumulative 100 marks will be given by the Department.



Semester - V			
Course code: 9BV5G1	Entrepreneurship / Start-Up Skills @	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To develop and strengthen entrepreneurial skills and to motivate the students to become an entrepreneur. ➤ To impart basic entrepreneurial skills and understanding to run a business efficiently and effectively. 		
Unit I	Dynamic Role of Small Business - Starting Small Business - Family Owned Businesses -Forms of Small Business.		
Unit II	Plan and Organize a Business - Becoming the Owner of a Small Business - Planning, Organizing and Managing a Small Business - Right Financing for Business - Market Goods and Services -Developing Marketing Strategies-Promoting and Distributing.		
Unit III	Organize and Manage the Business - Manage Human Resources and Diversity in Small Companies - Maintain Good Relationships with Employees and Their Representatives - Operate the Business - Obtaining and Laying Out Operating Facilities - Purchasing, Inventory and Quality Control		
Unit IV	Basic Financial Planning and Control - Profit Planning - Budgeting and Controlling Operations and Taxes - Using Computer Technology in Small Businesses		
Unit V	Providing Security for the Business - Risk Management, Insurance, and Crime Prevention - Maintaining Good Government Relations and Business Ethics		
Reference and Textbooks:-			
ISED, (2015). <i>India Start –ups, Skills and Entrepreneurship</i> . India: Institute of Small Enterprises and Development.			
Leon C. Megginson., & Mary Jane Byrd. (2013). <i>Small Business Management - An Entrepreneur's Guidebook</i> . New York: McGraw-Hill Education.			
Nieuwenhuizen (ed), (2010). <i>Basics of Entrepreneurship Series</i> . Cape Town: Juta Limited.			
Sangaram Keshari Mohanty, (2005). <i>Fundamentals of Entrepreneurship</i> . New Delhi: PHI Learning Pvt. Ltd.			
Outcomes	This course gave insights on Entrepreneurship / Startups in order to: <ul style="list-style-type: none"> ➤ gain knowledge and skills needed to run a business ➤ manage Cash Flow and delegate ➤ analyse Sales and Marketing Skills and Run Budgets 		



Semester - V			
Course code: 9BV5G2	Quantitative Aptitude @	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To demonstrate various principles in solving mathematical problems and thereby reduce the time taken for performing job functions and to enable the students to acquire skills for facing their job interviews ➤ To learn to critically evaluate and solve various real life problems using mathematical techniques. 		
Unit I	Numbers, HCF, LCM, Decimal Fractions, Simplification, Square Roots, cube roots, averages, Problems in numbers and ages.		
Unit II	Surds, Indices, Percentages, Profit and Loss, Ratio and Proportion, Partnership, Chain Rule, Time and Work, Pipes and Distances.		
Unit III	Time and distance, Problems on Trains, Boats and Streams, Allegation, Simple Interest, Compound Interest, Logarithms, Area.		
Unit IV	Volume and Surface Area, Races and Games of Skill, Calendar, Clocks, Stocks and Shares, Permutation and Combination, Probability.		
Unit V	True discount, Banker's Discount, Height and Distances, Odd man out and Series, Tabulation, Bar graphs, Pie charts, Line Graphs.		
Reference and Textbooks:-			
Aggarwal, R S. (2018). <i>Quantitative Aptitude for Competitive Examinations</i> . New Delhi: S Chand & Co. Ltd.			
Barron's, (2016). <i>Guide for GMAT</i> . New Delhi: Galgotia Publications.			
Note: This paper is having the objective of imparting required skills in order to face preliminary screening tests during the placement interviews. At the end of the semester, an evaluation will be done for 100 marks with 50 objective type questions each of two marks.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ validate and solve various mathematical problems. ➤ improve aptitude, problem solving skills and reasoning ability ➤ identify the critical issues and logically derived conclusions from the facts or data 		



Semester - V			
Course code: 9BV5G3	Accounting Skills @	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To introduce fundamentals of accounting principles and financial statements. ➤ To analyze the business problem of accounting techniques and to develop competent decision skills in the areas of accounting 		
Unit I	Introduction To Accounting – Accounting Principles – Accounting Equation – Double Entry System – Characteristics – Classification Of Accounting Principles.		
Unit II	Books Of Accounting – Journal – Accounting Process – Classification Of Accounts – Compound Journal Entries – Important Consideration For Recording Transaction Ledger: Difference Between Journal & Ledger – Cashbook And Subsidiary Books – Purchase Books – Invoice, Sales Book, Return Book, Debit And Credit Notes		
Unit III	Trial Balance: Meaning Of Trial Balance, Objective And Importance Of Trial Balance Errors: Meaning And Location Of Errors.		
Unit IV	Financial Accounts: Meaning And Typing Of Financial Statements, Procedure For Preparing Accounts – Profit And Loss Accounts – Balance Sheet – Manufacturing Account – Adjustment And Treatment Of Adjustment.		
Unit V	Introduction To Accounting Package – Introduction To Tally: Features, Advantages, Defining The Cells, Format The Data, Entering Data, Functional Keys And Simple Calculation – Excel: Features, Advantages, Defining The Cell Range, Functional Keys, Entering The Data, Defining The Functions And Simple Calculations.		
Reference And Textbooks: Douglas Garbutt, (1980). <i>Accounting Foundation - An Introductory</i> . London: Pitman Publishing Limited. Mukesh Mahajan, Gills, P.S., Sharma, V.P., & Punia, H.S. (2001). <i>Fundamentals of Accountancy</i> . Chandigarh: Unistar Books Pvt. Ltd. Shakla, M.C., Grawal, T.S. & Gupta, S.C. (1999). <i>Advanced Accounts</i> . New Delhi: S Chand & Co Ltd. Sundeep Sharma, (2004). <i>Principles of Accounting - A Complete Hand Book</i> . Jaipur: Shree Niwas Publication.			
Outcomes	This course gave insights about: <ul style="list-style-type: none"> ➤ analysis of accounting information to solve various business problems. ➤ the methods to interpret financial statements for evaluating. ➤ basic investment and financing decisions for a business. 		



Semester - V			
Course code: 9BS5C1	Core-XIV-Programming With Java	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To understand the fundamental concepts of Object-Oriented programming with Java language. ➤ To understand the facilities of Java language such as, Applets, Exception handling and I/O streams. 		
Unit I	Basic Concepts of OOPS - Benefits of OOPS- Java History-Java Features- Java Environment- Java Tokens- Constants- Variables- Data Types – Operators and Expressions- Decision Making and Branching- Decision Making and Looping.		
Unit II	Classes, Objects and Methods: Classes and Objects- Constructors- `Method Overloading- Static Members- Inheritance- Overriding Methods- Final Variables, Final Methods and Final Classes- Finalizer Method- Abstract Methods and Abstract Classes- Visibility Control- Arrays- Strings.		
Unit III	Applets: The Life Cycle of an Applet – The Applet Class – Development and Execution of a Simple Applet – Syntax of Applet Tag – Methods in the Graphics Class. Abstract Windowing Toolkit: Events – Listeners – Event Handling Methods.		
Unit IV	Exception Handling: Default Exception Handling – Exception and Error Classes – Catch Block Searching Pattern – ‘Throw’ Statement – ‘Throws’ Statement – Custom Exceptions. Threads: Life Cycle of a Thread – Creating and Running Threads – Methods in the Thread Class – Setting the priority of a thread – Synchronization – Dead Lock – Inter Thread Communication		
Unit V	I/O Streams: Input Stream and Output Stream classes – Reader and Writer classes – Data Output Stream and Data Input Stream Classes. Database Connectivity: JDBC- ODBC Connection.		
Reference and Textbooks:-			
(UNIT I, II)			
E.Balagurusamy. <i>Programming with JAVA</i> , (4 th Edn). New Delhi: Tata McGraw Hill.			
(UNIT III, IV, V)			
C.Muthu. (2011). <i>Programming with JAVA</i> . (2 nd Edn). Vijay Nicole .Imprints Private Limited, Chennai.			
Herbert Schildt. (2009). <i>Complete Reference Java 2</i> . (5 th Edn.) Tata McGraw-Hill. Publishing Company Limited.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ comprehend the efficiency and complexity of Java language in designing the Software components. ➤ acquire knowledge themselves in the area of Internet Programming. 		



Semester - V			
Course code: 9BS5E1	Elective I – Optimization Techniques	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To introduce the various Optimization techniques and their usages. ➤ To enable the students to effectively solve the Resource Management problems using Optimization techniques. 		
Unit I	Optimization Techniques: Introduction - Definition – Advantages – Limitations – Applications. Linear Programming: Definition - Central Problem of linear Programming various definitions included Statements of basic theorem and also their properties, simplex methods, primal and dual simplex method: Definition – rules involved in solving by simplex method - Algorithm – Problem solving.		
Unit II	Transport Problem: Definition – Algorithm – Problem solving, Tic-Tac Problem: Definition – Algorithm – Problem solving and its solution. Assignment Problem: Definition – Algorithm – Problem solving and its solution.		
Unit III	Graphical Method Formulation: Definition – steps involved in Graphical Method Formulation – problem solving. Linear Programming Problem - steps involved in solving Linear Programming Problem – Problem solving.		
Unit IV	PERT & CPM: Basic differences between PERT and CPM.-Arrow Networks, time estimates, Earliest expected time -Latest – allowable occurrences time - Forward Pass Computation Backward Pass Computation- Representation in Tabular Form - Critical Path - Probability of meeting scheduled date of completion, Calculation on CPM network- Various floats for activities		
Unit V	Job Sequencing: Introduction, solution of sequencing problem Johnson's algorithm for 'n' jobs through machines		
Reference and Textbooks:- J.K. Sharma. (2012). <i>Operations Research: Theory and Applications</i> , (5 th Edn). Mac Millan. P.K. Gupta and D.S. Hira. (2015). <i>Operations Research</i> . S.Chand & Co. S.D. Sharma. (2009). <i>Operations Research</i> . (4 th Edn). Laxmi Publications S.S. Rao . <i>Optimization Theory and Application</i> . Wesley Eastern.			
Outcomes	This course enables the students to: <ul style="list-style-type: none"> ➤ analyse logistics problems through mathematical modelling techniques. ➤ expertise with various Optimization techniques and apply them to some real-time problems. 		



Semester - V			
Course code: 9BS5E2	Elective I – Discrete Mathematics	Credits: 5	Hours: 5
Objectives	<ul style="list-style-type: none"> ➤ To understand the concepts of discrete mathematics such as Graph theory and Mathematical Logic ➤ To learn the applications of discrete structures related to 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 o f 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 compute memory - Trees – Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.		
Reference and Textbooks:-			
Dr M. K. Venketaramen, Dr N.Sridharan & N.Chandarasekaran <i>Discrete Mathematics</i> . Chennai: The National publishing Company.			
J.K. Sharma. (2015). <i>Discrete Mathematics</i> . (4 th Edn). – Laxmi Publications,			
J. P Tremblay, R Manohar. (2001). <i>Discrete Mathematics Structures with Applications to computer science</i> . (1 st Edn). Mc Graw Hill International.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the fundamental concepts of set and algebra and their role in modern mathematics and applied contexts. ➤ establish accurate and efficient use of advanced Mathematical logic techniques. 		



Semester – V			
Course code: 9BS5P1	Core-XV- Practical – Programming With Java – Lab	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To understand the fundamental concepts of Java Programming, and its different modules that includes Interfaces, Packages, Threads, I/O streams, Applets and JDBC. 		
Programs : <ol style="list-style-type: none"> 1. Creating simple Classes and Objects 2. Creating Constructor and Destructor 3. Working with Copy Constructor 4. Working with parameterized constructor 5. Working with Inheritance 6. Illustrating Method Overloading 7. Working with Method Overriding 8. Creation of Interfaces 9. Creation and implementation of Packages 10. Working with Threads 11. Illustrating Multithreading 12. Working with Input / Output streams 13. Drawing images using Applet 14. JDBC connectivity 			
Outcomes	This course gave insights to: <ul style="list-style-type: none"> ➤ understand and implement the Object Oriented Programming concepts using Java ➤ practice Exception Handling, Graphical User Interface and Event Handling using Java. 		



Semester - V			
Course code: 9BS5P2	Core-XVI- Practical – XML – Lab	Credits: 4	Hours: 4
Objectives	➤ To impart the knowledge about the XML features such as XML documents, DTD, Style sheets using CSS and XSL for real-time requirements.		
Programs :			
<ol style="list-style-type: none"> 1. Explanation of XML document Skeleton 2. Simple XML document creation 3. XML document for book sellers 4. XML document for an online E-Commerce portal 5. XML document for a pharmaceutical retailer 6. XML document to maintain the details of physicians in a Hospital. 7. Writing of DTD to minimum of three use cases 8. Validation using DTD 9. Writing of Style sheets using CSS for three XML documents 10. Writing of Style sheets using XSL for three XML documents 11. Creating XSL templates 12. Illustrating XML Namespaces 13. SAX and DOM 			
Outcomes	This course enables the students to: <ul style="list-style-type: none"> ➤ understand the XML application using structure, presentation technologies and Web application. ➤ Work with DTD and style sheets of XML 		



Semester - VI			
Course code: 9BV6G1	Corporate Grooming and Finishing Skills @	Credits:4	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To enhance and sharpen the required skills and proper business etiquettes among the students to build good corporate relationship with the customers and their colleagues ➤ To impart the knowledge about Skills in Business environment 		
Unit I	Professionalism: Professional approach & behaviour – rational vs. emotional decisions – analysis of self-competence and self confidence – qualities of an effective executive		
Unit II	Corporate Etiquette: Dressing occasions – formal – semi formal and informal – Eating habits– Table manners – Body language: Kinesics and proximity		
Unit III	House Keeping Skills: Cleanliness at work place – Organizing the Work Table and Shelves – Spatial Utility and Energy Saving habits – Office Files and Personal Computer / Laptop management		
Unit IV	Front Office Skills: Reception and Greeting – Telephone manners – effective visitor appointments management – Preparation to attend office meetings – preparation to hold office meetings		
Unit V	Documentation: Objectives, Report writing, How to write minutes, Preparation methods, and Report for media?		
Reference and Textbooks:-			
Barun Mithra, (2016). <i>Personality Development and Soft Skills</i> . New Delhi: Oxford University Press India.			
Lesikar & Flatley. (2005). <i>Basic Business Communication</i> . New Delhi: Tata McGraw Hill.			
Naveen Kumar, & Sudan, A.S. (2004). <i>Managerial Skill Development</i> . New Delhi: Anmol Publications.			
Sarvesh Gulati, (2012). <i>Corporate Grooming and Etiquette</i> . Kolkatta: Rupa Publications.			
www.executiveworld.com.			
www.selfconfidence.co.uk.			
www.senselang.com.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ build a consistent professional image with organization vision and mission. ➤ build a good corporate relationship with your customers. 		



Semester - VI			
Course code: 9BV6G2	Fundamentals of Digital Marketing	Credits: 4	Hours: 4
Objectives	<ul style="list-style-type: none"> ➤ To study the scope of digital marketing mainly for lead generation and retention activities in both business to business and business to consumer environments. ➤ To impart the Public relation and Reputation management in e-marketing. 		
Unit I	Digital evolution of marketing - The changing face of advertising- The Technology behind Digital Marketing - Strategic thinking- Digital Marketing Strategy- business and digital marketing - Understanding the digital consumer.		
Unit II	Digital World-website-the hub of digital marketing world- Building an effective website-Choosing domain name-Hosting website's home on the internet- How to choose a web designer/developer-Arranging information-writing effective web content -website intelligence - Way to digital marketing success - Information measured - Measuring what's important - Testing, investing , Tweaking, reinvesting - The power of online data and watch ROI take off.		
Unit III	E-Mail Marketing - The new direct mail- Planning campaign - Measuring success-vital component of e-mail marketing - Social media and online consumer engagement - social media - Different forms of social media - Social media dashboard - All update in one place- Rules of engagement - Adding social media to own site.		
Unit IV	Online PR and Reputation management - Fostering a positive online Image - Promoting business through online channels - Monitoring the conversation - Reputation management-Affiliate marketing and strategic partnerships - Recognizing opportunities for strategic partnerships - Affiliate marketing.		
Unit V	Marketing in prospect's pocket - Mobile market size and rate of growth-mobile marketing a game changing channel - Location, mobile gaming, mobile application - Measuring mobile, mobile privacy - Mobile data - Savvy consumer control - Collaborative consumption -co-creation- Evolving marketing power house-Tracking and measuring human behavior- Game advertising - video two screen wrappers - Holistic marketing - Blurring lines and integrating media.		
Reference and Textbooks:-			
Anmarie Hanlon, (2019). <i>Digital Marketing - Strategic planning and Integration</i> . New Delhi: SAGE India Publication.			
Damian_Ryan, & Calvin_Jones. (2012). <i>Understanding Digital Marketing - Marketing Strategies for Engaging the Digital Generation</i> (Vol. 1). New Delhi: Kogan Page India.			
Ian Dodson, (2016). <i>The Art of Digital Marketing - The Definitive Guide to Creating Strategies Targeted and Measurable Online Campaigns</i> . New Delhi: Wiley India Publications.			
Vandana Ahuja, (2015). <i>Digital Marketing</i> . New Delhi: Oxford University Press India Pvt. Ltd.			



Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none">➤ leverage new models in business and e-commerce to increase profitability➤ evaluate direct marketing efforts to know the ethical and legislation impacting direct marketing.
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Semester – VI			
Course code: 9BS6G3	Comprehensive Study #	Credits: 4	Hours:--
Objectives	➤ To refresh the knowledge of students in various fields of Computer Science / Software Development in order to prepare them to face their career interviews.		
Unit I	Applications of Operations Research		
Unit II	Programming concepts in C, C++, JAVA		
Unit III	Concepts of Database Systems		
Unit IV	Computer Networks and Operating system Concepts		
Unit V	Software Engineering: Analysis, Design, Implementation and Testing		
<p>Note: This paper aims at seamless preparation of the students for attending / facing placement technical interviews. This paper has no contact hours, however, the class mentor will give continuous instructions for preparation. At the end of the semester, an evaluation will be done for 100 marks with 100 objective type questions. The question paper will be prepared and evaluated by the Department/ Alagappa Institute of Skill Development itself</p>			
<p>Reference and Textbooks:-</p> <p>Andrew S. Tanenbaum. (2014). “<i>Modern Operating Systems</i>”. (4th ed.). Pearson Pvt., Ltd.</p> <p>Balagursamy E. (2013). <i>Object Oriented Programming with C++</i>. (6th ed.). Tata McGraw Hill Publications.</p> <p>Behrouz A Fourouzan. (2017). <i>Data Communications And Networking</i>. McGraw Hill.</p> <p>Byron S.Gottfried. (2017). <i>Programming with C</i>. (3rd ed.). Schaum’s Outline Series. McGraw Hill Education.</p> <p>Herbert Schildt. (2009). <i>Complete Reference Java 2</i>. (5th ed.). Tata McGraw-Hill Publishing Company Limited.</p> <p>Rajib Mall. (2010). <i>Fundamentals of Software Engineering</i>. (3rd ed.) New Delhi: PHI Learning Private Limited. Third Edition.</p> <p>Rathindra P. Sen. (2010). <i>Operations Research Algorithms and Applications</i>. New Delhi: PHI, EEE.</p> <p>S.K. Singh. (2008). <i>Database Systems – Concepts, Design and Applications</i>. (2nd ed.) Dorling Kindersley India Pvt. Ltd.</p>			
Outcomes	<p>After completing this course, the students are able to:</p> <p>➤ comprehend the concepts in C, C++, Java, Computer Networks, Operating System and Software Engineering to prepare themselves for their career interviews.</p>		



Semester - VI			
Course code: 9BS6E1	Elective II – Software Engineering	Credits: 4	Hours: 4
Objectives	➤ To learn the basic concepts of Software Engineering and the various phases in Software Development in order to make the students to become a Software developer with conventional SDLC methodologies.		
Unit I	Introduction: The Software Engineering Discipline - Software Development Projects - Emergence of Software Engineering - Software Life Cycle Models: Classical Waterfall Model - Iterative Waterfall Model - Prototyping Model - Spiral Model.		
Unit II	Software Project Management: Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project Estimation Techniques - Empirical Estimation Techniques - COCOMO - Risk Management - Requirements Analysis and Specifications: Requirements Gathering and Analysis - SRS.		
Unit III	Software Design: Cohesion and Coupling - Function-Oriented Software Design: Structured Analysis - DFDs - Structured Design - Object Modeling: Overview of Basic Object-Oriented Concepts - UML Diagrams - Activity Diagram - State Chart Diagram - User Interface Design: Characteristics of a Good User Interface - Basic Concepts.		
Unit IV	Coding and Testing: Coding - Software Documentation - Testing - Unit Testing - Black-Box Testing - White-Box Testing - Debugging - Integration Testing - System Testing - Software Reliability and Quality Management: Software Reliability - Software Quality and Management System.		
Unit V	Computer Aided Software Engineering: Case Environment - Characteristics of CASE Tools - Maintenance: Characteristics of a Software Maintenance - Software Reverse Engineering - Estimation of Maintenance Cost - Software Reuse: A Reuse Approach.		
Reference and Textbooks:- K.K.Aggarwal and Yogesh Singh. (2008). Software Engineering. (3 rd ed.) New Age International Publishers. Roger S. Pressman. (2017). <i>Software Engineering – A Practitioner’s Approach</i> . (7 th ed.). McGraw.Hill International.			
Outcomes	After completing this course, the students are able to: ➤ differentiate the perspective of various software process models. ➤ elicit the requirements for real-time problems. ➤ compile a SRS pertaining to industry standards. ➤ create a behavioural model from the set of requirements.		



Semester - VI			
Course code: 9BS6E2	Elective II – Software Project Management	Credits: 4	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To impart knowledge about Software characteristics and activities covered by Software Project management. ➤ To develop the skills related to Project Planning, Project Execution approach and Risk Management strategies in order to enrich the students to become an efficient Software Project managers 		
Unit I	Software Characteristics, Software process, Software Engineering, Characteristics of Software Project, Activities covered by Software Project Management, Problems involved, Management function related to Project Management, Feasibility Analysis		
Unit II	Project Planning: Overview, Finalising Project Scope, Infrastructure, Analysing Project Characteristics, Identifying Project goals and activities, Estimating time & effort, allocating resources, Review plan		
Unit III	Project Execution Approach: Choosing Technologies, Structure Vs Speed of Delivery Waterfall Model, V- Process Model, Evolutionary model, Spiral Model, Software Prototyping, Incremental Delivery., Controlling changes during project execution		
Unit IV	Software requirement study and Analysis, Software Requirement Specifications, Software Estimation : Need for Software Estimation, Problems with Over and Under Estimation, Software Estimation techniques, Expert Judgement, Estimating by Analogy, Function Point Analysis, Object points, LOC based COCOMO model.		
Unit V	Risk Management: Risk and its implication, types of risk, Identifying risks, analyzing risks, prioritizing risks, Risk avoidance, Risk containment, Resource identification, Resource planning Resource allocation, monitoring critical resources.		
Reference and Textbooks:-			
Ince, Dorrel. Helen Sharp & Mark Woodma. <i>Introduction to Software Project Management & Quality Assurance</i> . Tata McGraw Hill.			
Roger S Pressman. (2017). <i>Software Engineering a Practitioner's approach</i> . (7 th ed.) Tata McGraw Hill.			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ comprehend the roles of the project manager. ➤ identify the threats and opportunities in project management. ➤ gain knowledge about size, effort and cost estimation techniques. 		



Semester - VI			
Course code: 9BS6E3	Elective III – Practical – PHP Programming – Lab	Credits: 3	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To impart the programming principles and language structures of PHP ➤ To enable the students to create a complete Website using PHP and MySQL 		
Programs :			
<ol style="list-style-type: none"> 1. Simple programs using PHP 2. Simple programs using Controls and Functions 3. Working with functions 4. Programs for working with String Functions 5. Illustrating the working with Arrays. 6. HTML forms and PHP 7. Passing Variables to PHP from HTML forms. 8. Creating simple Database in MySQL and connectivity with PHP 9. Display Student Information using PHP and MySQL. 10. Develop a College Application Form using PHP and MySQL 11. File System Functions, Network Functions, Date and Time Functions. 12. File Upload and Converting Image File Types 13. Maintenance of Session. 14. Managing Cookies. 15. Message Passing Mechanism between Pages 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ use the features of programming language PHP ➤ create, translate and process HTML information using the Common Gateway Information (CGI) protocol. ➤ retrieve, insert, update, and delete data from the relational database MySQL 		



Skill Subject

Practical / Viva- Voce

Semester - VI			
Course code: 9BS6E4	Elective III – Practical-Distributed Programming – Lab	Credits: 3	Hours:4
Objectives	<ul style="list-style-type: none"> ➤ To understand the underlying concepts of distributed programming techniques in developing a Software product using distributed environment. ➤ To learn distributed environment and use the concepts of ADO.NET and AJAX 		
<p>Programs :</p> <ol style="list-style-type: none"> 1. Form Design using Various Web Controls 2. Ad Rotator and Calendar Control, Login Control (Page Should Expire after 3 wrong attempts) 3. Working with Validation Controls 4. Illustrating Cookie Manipulation 5. State Management (using Session and Application) 6. Data Retrieval, Updating using ADO.NET (using Stored Procedure) 7. Template Creation using Data List and DataGrid 8. Sorting and Paging using DataGrid 9. Day Planner Preparation using XML and ADO.NET 10. Illustrating Data Caching 11. Partial Page Refresh using AJAX 12. Creating and Testing a Simple Web Service 			
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ understand the underlying principles of Distributed technologies. ➤ understand the working with XML and AJAX ➤ understand to access databases through ADO.NET 		



Semester - VI			
Course code: 9BS6I1	Core –XVI – Industrial Internship with Project	Credits:6	Hours:9
Objectives	<p>The objective of B.Voc Software Development Programme is to produce Software Professionals and they are able:</p> <ul style="list-style-type: none"> ➤ to get employment in industry, government, or take up entrepreneurial endeavours to demonstrate professional advancements through significant theoretical and practical knowledge and expanded leadership responsibilities. 		
<p>The student has to attach himself / herself with an organization related to his / her specialization approved by the (Alagappa Institute of Skill Development) Department for a period of 2 weeks for Industrial Internship Training with Project. One personnel of that industry and a faculty of the Department will be external and internal guides of the project respectively. The project theme, work flow and other related guidelines can be had from the Industry. The development of the project may be done in the Department by utilizing 7 lab hours per week and the monitoring of the progress and project evaluation for 50 marks can be collectively done by both internal and external guides. At the end of the internship, the student should prepare a project documentation report (not less than 50 pages, A4 size). Student should also produce a certificate of internship from the organization. The final project viva-voce for 50 marks should be conducted by the Department with two examiners and the cumulative 100 marks will be given by the Department.</p>			
Outcomes	<p>This course gave insights to:</p> <ul style="list-style-type: none"> ➤ identify the relevant objects of an application domain. ➤ specify and design the application. 		



Semester - VI			
Course code: 9BS6J1	NSQF Level – 7 Job Role Software Developer (SSC/Q6702) @	Credits: 5	Hours:5
Objectives	<ul style="list-style-type: none"> ➤ To prepare students to undertake careers involving skills and problem solving using programming techniques and technologies ➤ To learn the foundational aspects of IT Sector and also focus on the software developing skills. 		
Unit I	Access reusable components, code generation tools and unit testing tools - Convert technical specifications into code - Understanding of the BRS,SRS,HLD,LLD - Convert technical specifications into code- Unit test cases - Review codes and UTCs - Execute UTCs and document results - Fix identified defects in code and UTCs - Analyse future design inputs - Record corrective actions - Submit tested code - Update organizations knowledge - Organization policies, procedures and guidelines		
Unit II	Establish work requirements - Work area clean and tidy - Utilize time effectively - Use resources correctly and efficiently - Treat confidential information correctly - Organization's policies and procedures - Limits of job role - Ensure work meets the agreed requirements - Analysis on the performed data - Data analysis outside their area of competence - Review the results - Undertake modifications based on inputs - Communicate with colleagues - Work with colleagues - Pass on essential information to colleagues - Respect for colleagues - Carry out commitments to colleagues - Explaining the reasons of cannot carry out commitments- Identify any problems and solve these problems - Organization's policies and procedures..		
Unit III	Organization's health, safety and security policies and procedures - Report any breaches in policies and procedures to the designated person - Identify and correct any hazards - Report any hazards that warn other people who may be affected - Follow organization's emergency Procedures - Identify and recommend opportunities - Complete any health and safety records.		
Unit IV	Obtain the data/information from reliable sources - Check that the data/information - Advice or guidance from appropriate people where there are problems with the data/information - Carry out rule based analysis - Insert the data/information into the agreed Formats - Check the accuracy of work, involving colleagues where required - Report any unresolved anomalies in the data/information to appropriate people - Provide complete, accurate and up-to-date data/information to the appropriate people in the required formats on time.		
Unit V	Develop knowledge, skills and competence –Identify knowledge and skills - Identify current level of knowledge, skills and development needs - Plan of learning and development activities - Undertake learning and development activities - Apply new knowledge and skills in the workplace - Feedback from appropriate people - Review knowledge, skills and competence .		
Reference and Textbooks:-			
SSC – NASSCOM – Qualification Pack : https://www.sscnasscom.com/qualification-pack/SSC/Q6702/			



<p>Note – Occupational Standards SSC/N9001 (Manage your work to meet requirements) SSC/N9002 (Work effectively with colleagues) SSC/N9003 (Maintain a healthy, safe and secure working enviro) SSC/N9004 (Provide data/information in standard formats) SSC/N9005 (Develop your knowledge, skills and competence) SSC/N0502 (Develop software code and to specification)</p>	
Outcomes	<p>After completing this course, the students are able to:</p> <ul style="list-style-type: none"> ➤ understand the key concepts in software development ➤ know the basics of an object-oriented approach to software development ➤ understand the workflow of software development.

Note: The evaluation for this paper for 100 marks will be carried out in three stages. Basic Computer and Internet Knowledge (10 marks) and Software Development and Installation (15 Marks) will be evaluated by the faculty who are handling the subject. A Mock Interview (Viva-voce) (75 marks) will be conducted and evaluated by the Internal Examiner (faculty member of the Department) and an External Examiner. The cumulative 100 marks will be given by the Department.

Semester - III			
Course code: 9BS3N1	Non-Major Elective – I : Office Automation	Credits: 2	Hours: 3
Objectives	<ul style="list-style-type: none"> ➤ To introduce the different forms and types of Computers that emerged throughout the history. ➤ To impart the skills related to create, edit and manipulate the documents using MS-Word ➤ To impart basic knowledge 		
Unit I	Evolution of Computer - Generations, Types of Computer, Computer System Characteristics, Basic Components of a Digital Computer - Control Unit, ALU, Input/Output Function and Memory, Memory Addressing Capability of a CPU, Word Length of a Computer, Processing Speed of a Computer, Computer Classification. MS-Windows: Operating System - Definition & Functions, Basics of Windows. Basic Components of Windows, Icons, Types of Icons, Taskbar, Activating Windows, Using Desktop, Title Bar, Running Applications, Exploring Computer, Managing Files and Folders, Copying & Moving Files and Folders.		
Unit II	Documentation using MS-Word - Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Table, File Management, Printing, Styles, Linking and Embedding Objects, Template.		
Unit III	Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance Features of MS-Excel- Pivot Table & Pivot Chart, Linking and Consolidation.		
Unit IV	Database Management using Excel - Sorting, Filtering, Table, Validation, Goal Seek, Scenario. What- if Analysis.		
Unit V	Presentation using MS-PowerPoint: Presentations, Creating Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering Art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing Through Objects, Inserting Recorded Sound Effect, In Built Sound Effect.		
Reference and Textbooks:-			
<i>Microsoft office complete reference.</i> BPB Publication.			
<ul style="list-style-type: none"> • Rajaraman V. (Feb. 2010). <i>Fundamentals of computers</i>. PHI. • Sinha P.K.. (2004). <i>Computer fundamentals</i>. BPB Publication. • Stultz, Russell A. <i>Learn microsoft office</i>. BPB Publication. 			
Outcomes	After completing this course, the students are able to: <ul style="list-style-type: none"> ➤ understand the key practices and tools for Office Automation ➤ understand the usage of Office Automation tools in real-time 		



Semester - IV			
Course code: 9BS4N2	Non-Major Elective – II Web Designing	Credits: 2	Hours: 3
Objectives	<ul style="list-style-type: none"> ➤ To impart the fundamentals of Internet and its protocols ➤ To understand the various steps in designing a creative and dynamic website using HTML, JavaScript and Bootstrap. 		
Unit I	<p>Introduction and Overview: Growth of Computer Networking – Why Networking Seems Complex – The Five Key Aspects of Networking – Public And Private Parts of The Internet – Networks, Interoperability, And Standards – Protocol Suites And Layering Models – How Data Passes Through Layers – Headers And Layers – ISO and the OSI Seven Layer Reference Model – The Inside Scoop – Remainder of The Text</p> <p>Internet Trends: Introduction – Resource Sharing – Growth of The Internet – From Resource Sharing to Communication – From Text to Multimedia – Recent Trends</p>		
Unit II	<p>Traditional Internet Applications: Introduction – Application-Layer Protocols – Representation and Transfer – Web Protocols – Document Representation with HTML – Uniform Resource Locators and Hyperlinks – Web Document Transfer with HTTP – Caching In Browsers – Browser Architecture – File Transfer Protocol (FTP) – FTP Communication Paradigm – Electronic Mail – The Simple Mail Transfer Protocol (SMTP) – ISPs, Mail Servers, And Mail Access – Mail Access Protocols (POP, IMAP) – Email Representation Standards (RFC2822, MIME) – Domain Name System (DNS) – Domain Names That Begin with www – The DNS Hierarchy And Server Model – Name Resolution</p>		
Unit III	<p>Introduction to HTML/XHTML: Basic Syntax – Standard HTML Document Structure – Basic Text Markup – Images – Hypertext Links – Lists – Tables – Forms – The audio Element – The video Element – Organization Elements – The time Element</p>		
Unit IV	<p>The Basics of JavaScript: Overview of JavaScript – Object Orientation and JavaScript – General Syntactic Characteristics – Primitives, Operations, and Expressions – Screen Output and Keyboard Input – Control Statements – Object Creation and Modification – Arrays – Functions – Constructors</p> <p>JavaScript and HTML Documents: Events and Event Handling – Handling Events from Body Elements – Handling Events from Button Elements – Handling Events from Text Box and Password Elements</p>		
Unit V	<p>Getting Started with Bootstrap: Mobile-first design – Why Bootstrap</p> <p>Installing and Customizing Bootstrap: Including Bootstrap in your HTML file – The Bootstrap CDN – Overriding with custom CSS – Using the Bootstrap customizer – Deep customization of Bootstrap</p> <p>Using the Bootstrap Grid: Using the Bootstrap Grid classes – Using the Bootstrap variables and mixins – Creating a blog layout with the Bootstrap Grid mixins and variables</p> <p>Using the Base CSS: Implementing the Bootstrap Base CSS – Customizing the Base CSS using LESS variables</p>		



Reference and Textbooks:

Aravind Shenoy, Ulrich Sossou. (2014). *Learning Bootstrap - Unearth the potential of Bootstrap to create responsive web pages using modern techniques*. Packt Publishing Ltd.

Douglas E. Comer. *Computer Networks and Internets*. (5th ed.). Pearson Education.

Robert W. Sebesta. *Programming the World Wide Web*. 8th ed.). Pearson Education.

Outcomes

After completing this course, the students are able to:

- employ basic programming techniques for WWW
- understand the fundamental skills to maintain the services of web server required to host a website.
- Create, manipulate and publish web media.



BROAD BASED BOARD OF STUDIES

Broad Based Board of Studies for Alagappa Institute of Skill Development held on 7th June, 2019 in the Alagappa Institute of Skill Development, Alagappa Univeristy, Karaikudi with the following subject Experts.

1	Dr.B. Dharmalingam Professor & Director Alagappa Institute of Skill Development Alagappa University, Karaikudi	Chairperson / Convener
2	Dr.G.Mahesh Assistant Professor(Fashion Technology) Alagappa Institute of Skill Development Alagappa University, Karaikudi	Member
3	Dr.C.Balakrishnan Assistant Professor(Software Development) Alagappa Institute of Skill Development Alagappa University, Karaikudi	Member
4	Dr.J.Hayavadana Professor & Head, Department of Textile Technology Osmania University Amberpet, Hyderabad, Telangana-500007	Subject Expert (Fashion Technology)
5	Dr.S.Nickolas Professor in Computer Application National Institute of Technology, Tiruchirappalli	Subject Expert (Software Development)
6	Dr.AnandBhojan Senior Faculty Department of Computer Science National University of Singapore, Singapore	Foreign Subject Expert
7	Dr.K.J.Sivagnanam Head-Skill Development Initiatives NIFT TEA, Mudalipalayam,Tirupur-641 606	Co-opted Member from the Industry (Fashion Technology)
8	Mr. A. ArockiaArulnathan Senior Automation Developer K7 Computing Pvt.Ltd, Chennai	Co-opted Member from the Industry (Software Development)
9	Dr. KM. Pachiyappan Head, Department of Costume Design & Fashion PSG College of Arts & Science, Coimbatore-14	Special Invitee (Fashion Technology)
10	Dr. A. Senthilrajan Professor & Director Department of Computational Logistics Alagappa University, Karaikudi.	Special Invitee (Software Development)



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| 11 | Dr. S. Rajaram,
Professor Dept. of Tamil
Head <i>i/c</i> , Dept. of Fine Arts
Alagappa University, Karaikudi | Special Invitee
(Tamil) |
| 12 | Dr. P. Madhan
Associate Professor and Head <i>i/c</i>
Dept of English and Foreign Languages,
AlagappaUniversity,Karaikudi. | Special Invitee
(English) |
| 13 | Ms. J. Jenita Mary
No.3/436,Vairavapuram 3 rd Street,
Karaikudi. | Student Alumni
Special Invitee |
| 14 | Dr. E. Kannapiran
Director, Curriculum Design and Development Cell
Alagappa University, Karaikudi | Ex-Officio Memeber |



CURRICULUM VITAE

Name: Dr. B. Dharmalingam
 Designation: Professor & Director
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 Phone: 9443850902
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**Educational qualification:**

- M.A.,
- M.Phil.,
- Ph.D

Professional experience:

- 25 Years

Honours and Awards:

- Created four Vocational / Skill training units under Alagappa Institute of Skill Development, namely,
- UG-B.Voc. programmes
- Garment Training Unit
- Alagappa University-IL&FS Institute of Skills (AU-IIS)
- Small Industries Services Unit (SISU) to offer Vocational / Skill training programmes.
- Participated UK Seminar and Study tour on 'Improving Employer and Learner Engagement in Vocational Education' during 15th – 17th November 2016 at Birmingham, United Kingdom in response to the invitation of British Council - India, New Delhi
- Got approval and financial assistance of Rs. 1.85 Cr from UGC, New Delhi to start UG-B.Voc. Degree programmes in 1). Fashion Technology and 2). Software Development from the academic year 2014-'15.
- Signed eight MoUs. (Six with Industry partners, one MoU with IL&FS Institute of Skills, New Delhi to establish AU-IIS and another with Entrepreneurship Development Institute, Chennai to offer various Skill training programmes).
- Applied for DDU-KAUSHAL Kendra scheme to UGC, New Delhi for the tune of Rs. 5 Cr to offer PG and Research programmes beyond B.Voc. Degrees.
- Got approval by SSC-NASSCOM as Training partner to offer 'Web Developer' and 'Software Developer' certificate programmes.
- Produced 100% result in the skill assessment carried out by SSCs 1). Apparel Made ups & Home furnishing Sector Skill Council and 2). NASSCOM to the B.Voc. students.
- In B.Voc. programmes, 16,30,32 and 24,43,50 students were admitted during the academic years 2014-'15, 2015-'16 and 2016-'17 into the respective B.Voc. programmes in Fashion Technology and Software Development. Among them, 7 – B.Voc. Fashion Technology and 5 – B.Voc. Software Development second year students have got placement in the first year of their studies itself.
- Through, Garment Training Unit under AISD, during the period of April-2013 to January-2017 totally 300 trainees were trained in the short-term certificate courses in 'Industrial Sewing Machine Operation' and 'Embroidery' with University certificate and very minimal course fee. Rs. 2 lakhs of fund is generated from the course fee of the trainees.
- Prior to this 30 trainees were trained in Fashion Designing with the financial assistance of Rs. 1 lakh by the Entrepreneurship Development Institute (EDI), Tamil Nadu and 218 trainees were given training in Repairing of Refrigeration & AC machines, Welding Technology and other Entrepreneurship Development programmes through the 'Entrepreneurship cum Skill Development Centre'.
- Established Alagappa University-IL&FS Institute of Skills (AU-IIS), Karaikudi in October 2013 under the aegis of Alagappa University, by signing MoU with IL&FS Institute of Skills, New Delhi as India's first skills institute offering university recognized and NOS compliant placement linked short term High-end employable Technical training programmes and handhold support to start Income Generating Activities on various trades. The courses offered at AU-IIS are mapped to the NOS designed by the industry-led SSCs. During the period of The AISD/AU-IIS is offering various Certificate / Diploma programmes in Welding / CNC Machine Operator / Electrician / Patient Care Assistant / Mechatronics (both Diploma & PG



Diploma) / Solar P.V. Technician / Assistant Mason / Application Development in Android / Front-End Design and Development / Banking Executive for the duration of two / three months. Within a short span of three years (2013 – 2016), AISD/AU-IIS acclaimed 81% of placement record among the 1101 candidates trained. The AU-IIS is augmented with CNC turning machine, CNC Milling machine, Welding simulator, TIG/MIG Welding machines, AG-4, AG-7 grinding machines, Electrical Working board and healthcare equipments for providing training in the above said programmes.

- In particular, we have a specialized Mechatronics Training Centre with latest equipments such as, PLC kit, Scada PLC kit, HMI & Sensor training kit, Pneumatic with PLC and Hydraulic with PLC. We have trained 24 final year students of Alagappa Chettiar College of Engineering Technology, Karaikudi in Mechatronics. We also give training to the newly recruited faculty of ACCET in Welding, CNC and Mechatronics. As a result of our quality of training and latest amenities, the Alagappa Chettiar College of Engineering Technology, Karaikudi expresses its interest to sign MoU for extending the training to all its Students and Faculty.
- Mobilized the machineries worth of 2.25 Cr to the AISD for offering various skill / vocational training.

Recent publications:

National

- Dharmalingam. B; Empowering Rural Women And Youth Through Skill Development: The experiments of Alagappa University, in Best Practices in Rural Development, Shanlax Publications, Madurai, (ISBN 978-9385977-85-5, Nov, 2016 P.No: 267-286.
- Dharmalingam. B; Skill Development Curriculum - Possible role of Universities: A case study of Practices in Alagappa University, in Health Indicators for Physical and Cognitive Fitness Education, Universal Publishers, Chennai, (ISBN: 978-81-836868-84) 2016 P.No: 12-20.
- Dharmalingam. B; Critical Analysis of Health and Cognitive issues of Information Technology Professionals, in Health Indicators for Physical and Cognitive Fitness Education, Universal Publishers, Chennai, (ISBN: 978-81-836868-8-4) 2016 P.No: 2126.
- Dharmalingam. B; Inculcation of Soft skills during Academic persuasion towards Professional Sustainability of Information Technocrats, in Health Indicators for Physical and Cognitive Fitness Education, Universal Publishers, Chennai, (ISBN: 97881-836868-8-4) 2016 P.No: 243-247.
- Dharmalingam. B; பழ்தமிழ் தொழிற்சா வாவய, in Health Indicators for Physical and Cognitive Fitness Education, Universal Publishers, Chennai, (ISBN: 978-81836868-8-4) 2016 P.No: 652-655
- Dharmalingam. B; Empowering Women through Skill Development: Challenges and Opportunities, Women and Social Transformation, Department of Women's Studies, Alagappa University, (ISBN 978-81-928690-4-9), 2016, p-42-52.
- Dharmalingam. B; Nutritional Status Assessment of Ramanathapuram Adolescent College Girls, Feminism Today, (ISBN 978-81-928113-8-3), 2014, p-427-430
- Dharmalingam. B; Feminist Research Methodology, Enhancing the Quality of Social Science Research, Department of Women's Studies, Alagappa University (ISBN 978-81928690-3-2), 2014, P.No: 53-82
- Dharmalingam. B; The Idea and Practice of Mainstreaming Gender in Development and Governance, Gender Mainstreaming and Sustainable Development, Department of Women's Studies, Alagappa University, (ISBN 978-81-927063-2-0), 2013

International

- Dharmalingam. B; Continuum of Nehruvian Discourse in contemporary rural development in India, International Research Journal of Business and Management – IRJBM, Vol. IX, Issue-7 (ISSN 2322-083X), July- 2016
- Dharmalingam. B; Pandit Jawaharlal Nehru: The Founding Father of Panchayati Raj Institutions in India, International Journal of Management and Social Science Research Review, Vol.1, Issue.5. (ISSN 2349-6738), May - 2016, p-127-132.
- Dharmalingam. B; A Study on Sustainable Development of Small & Medium Enterprises in Ashar Nagar, 60 Feet Road, Tirupur, Management Research (Athenaeum 09), BIM, Thiruchirapalli, 2009.
- Dharmalingam. B; Human Rights Education: Lessons for Life, Third Concept – An International Journal of Ideas - Vol.14, No.168, Feb, 2001, p.23-24

Cumulative Impact factor:

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Educational qualification:

- M.Sc.,
- Ph.D

Professional experience:

- 9 Years

Honours and Awards:

- UGC NET qualified in 2008 and 2010
- Academic Proficiency Award

Recent publications:

National conference

- **G. Mahesh**, “Computational Textiles Bioengineering”, Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- J. Jenita Mary and **G. Mahesh**, “Smart Textiles for wearable Technology”, Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- S.Karpagam and **G. Mahesh**, “Smart Textiles for wearable Technology”, Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018.
- B.Subbulakshmi and **G. Mahesh**, “Study the Anti diabetic effect of Millet foods in diabetic induced rats , Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018.
- **G. Mahesh** and B.Dharmalingam, “Nanotechnology Applications in Textiles. One day national conference on Recent Developments in Textile and Fashion, PSG College of Arts and Science, Coimbatore., 19th March. 2018.
- **G. Mahesh** and B.Dharmalingam, “Eco Friendly Approaches in Textile water treatment. One day national conference on Emerging Trends in the Apparel Sector, Bishop Appasamy College of Arts and science, Coimbatore., 7 th February 2018.
- **G. Mahesh** and A. Sharada Devi “Effect on Enzyme treatment on bamboo fabric dyed with natural dyes”, Two day national conference on Emerging strategies in Green Textiles and Sustainable Fashion, Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 10th - 11th January 2017
- **G. Mahesh** and D.Anitha “Bioremediation of textile waste water treatment. Two day national conference on Emerging strategies in Green Textiles and Sustainable Fashion, Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 10th - 11th January 2017
- **G. Mahesh** “ Research on replacing synthetic fibre with coir fibre for mulches in agricultural fields, Two day national conference on Emerging strategies in Green Textiles and Sustainable Fashion, Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 10th - 11th January 2017



International conference

- **G. Mahesh** “Musculoskeletal disorders for apparel Industry workers. International Conference on Health Indicators for Physical and Cognitive Fitness Education Faculty of Education, Alagappa University, Karaikudi, 26th - 27th February 2016.
- **G.Mahesh** and Sirisha Deepthi Sornapudi, “Techniques And Application of Smart Textiles, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- Sirisha Deepthi Sornapudi and **G.Mahesh**, “Fashion on Smart Phone –APPS that Connect with Customer. Techniques And Application of Smart Textiles, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.

National Publications

- Ashwini Joshi, D.Anitha and G.Mahesh and Physical properties of organic and non organic cotton: comparative study, Manmade Textiles in India, Vol. XLVI No. 7 July 2018.
- G.Mahesh and Anitha Eco friendly fabrics from bamboo. The Indian textile Journal.Vol124 No.7 April 2014
- Anitha and G.Mahesh Utility of herbal products in Antimicrobial finishing of cotton Fabrics. The Journal of Research of ANGRAU. Vol.XLI No.3 July-September 2013.
- Handle properties of enzyme treated bamboo and bamboo blended fabrics. The Journal of Research of ANGRAU. Vol.XL No.2 April-June 2012.
- Natural dye on bamboo and bamboo blended fabrics. International workshop on Natural Dyes 2014, March NAIP-VCND, ICAR, ANGRAU, Hyderabad.

International

- G.Mahesh and Sirisha Deepthi Sornapudi, Techniques and application of Smart Textiles, International Journal of Computer Science Volume 5, Issue 2, No 05, 2017
- Sirisha Deepthi Sornapudi and G.Mahesh Fashion on Smartphone - Apps that Connect with Consumer, International Journal of Computer Science Volume 5, Issue 2, No 04, 2017
- G.Mahesh, Anitha and Sharada Devi, Study of bamboo charcoal polyester nonwoven fabric for effluent filtration. International Journal of Advanced Research in Management and social sciences. Vol.3.No.7 July 2014.

Cumulative Impact factor:

Total Citation: 01

h- index: 01

i10- index: 0



CURRICULUM VITAE

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Educational qualification:

- M.Sc.,
- M.Phil.,
- Ph.D

Professional experience:

- 14 Years

Honours and Awards:

- UGC NET qualified in 2012
- SET qualified in 2012
- Appreciation letter from the Vice-Chancellor, Alagappa University for contributions for preparation towards NAAC Accreditation, NIRF Ranking and IoE proposal in 2018
- College Appreciation Award in 2010

Recent publications:**National Conference**

- P. Subhasri and **C. Balakrishnan**, "Survey on Data Mining Techniques for Plant Leaf Classification", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- S. Santhosh Kumar and **C. Balakrishnan**, "Issues and Challenges for Digital Forensic Investigation", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- **C. Balakrishnan**, S. Santhosh Kumar and A. Sumathi "An Analysis of Mitigation Policies of Information Security", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- **C. Balakrishnan**, and B. Dharmalingam "A Study on Internet Penetration in Rural India", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- K. Nithya Kalyani and **C. Balakrishnan**, "Emerging Trends in Educational Informatics", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- K. Seethalakshmi and **C. Balakrishnan**, "Content Based Image Retrieval using R+ Tree Algorithm", Two-Day National Conference on Recent Trends in Informatics (NCRTI 2018), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 19th - 20th March 2018
- **C. Balakrishnan**, B. Dharmalingam, "A Study on Gender Discrimination and Information Technology Skills Acquisition", UGC Sponsored Two-Day National Conference on Contemporary Issues in Justice and Human Rights (CIJHR 07), Department of History & Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 25th - 26th September 2017
- **C. Balakrishnan**, S. Ganesan, "An Investigation on Inclusiveness of Mobile Apps for Justice and Rights", UGC Sponsored Two-Day National Conference on Contemporary Issues in Justice and Human Rights (CIJHR 07), Department of History & Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 25th - 26th September 2017
- **C. Balakrishnan**, Albert Levay, "An Empirical Analysis of Awareness on Rights by the IT Technocrats", UGC Sponsored Two-Day National Conference on Contemporary Issues in Justice and Human Rights (CIJHR 07), Department of History & Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 25th - 26th September 2017
- **C. Balakrishnan**, S. Santhoshkumar, "A Study on the Role of Digital Age and ICT in Protecting and Promoting Uniform Justice and Rights", UGC Sponsored Two-Day National Conference on Contemporary



Issues in Justice and Human Rights (CIJHR 07), Department of History & Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 25th - 26th September 2017

- S. Santhoshkumar, **C. Balakrishnan**, "Study on detection of Hacking in Wireless using Access Point", National Conference on Emerging trends in Computing (NCETC 2017), Department of Computer Science, Alagappa University, Karaikudi, 13th - 14th March, 2017
- **C. Balakrishnan**, "An Analysis on Nano-Fabrics as Emerging Smart Textile", National Conference on Emerging Strategies in Green Textiles and Sustainable Fashion (NCESGTSF - 2017), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 10th - 11th January 2017
- **C. Balakrishnan**, "CAD/CAM - Past, Present and Future in Textile Curriculum and Industry", National Conference on Emerging Strategies in Green Textiles and Sustainable Fashion (NCESGTSF - 2017), Alagappa Institute of Skill Development, Alagappa University, Karaikudi, 10th - 11th January 2017
- **C. Balakrishnan**, "A Recital on Biological Computers", National seminar on Advances in Computer Science (NSACS 2016), Department of Computer Science, Alagappa University, Karaikudi, 21st - 22nd October, 2016
- **C. Balakrishnan**, "A Critic review on Biodiversity Informatics", National seminar on Advances in Computer Science (NSACS 2016), Department of Computer Science, Alagappa University, Karaikudi, 21st - 22nd October, 2016
- **C. Balakrishnan**, "Swami Vivekananda: A True Igniter of Young Minds", National Conference on Swami Vivekanandar: A Youth Icon (SVYI-2016), Swami Vivekananda Centre for Higher Research and Education, Alagappa University, Karaikudi, 24th October, 2016
- D.I. George Amalarethnam and **C. Balakrishnan**, "ElasticPeerDB- An Optimized Approach for Efficient Fragmentation and Re-Allocation in Peer-to-Peer Distributed Databases", National Conference on Emerging Trends in Software Development, Alagappa University, March 2016.
- M. Priya and **C. Balakrishnan**, "A Critical Study on Agile Software Development Methodologies", National Conference on Emerging Trends in Software Development, Alagappa University, March 2016.
- M. Rekha and **C. Balakrishnan**, "An Analytical Study of Multimedia User Interfaces in Education", National Conference on Emerging Trends in Software Development, Alagappa University, March 2016.
- M. Priya and **C. Balakrishnan**, "Analysis of Green Computing Impacts on Environment", National Conference on Emerging Trends in Software Development, Alagappa University, March 2016.
- Karamchand Gandhi and **C. Balakrishnan**, "The Internet of Things (IOT)- Architecture, Applications, Security and Privacy", National Conference on Recent Advancements in Software Development, Alagappa University, March 2015.

International Journals

- S. Santhoshkumar, **C. Balakrishnan**, R. Muthulakshmi, "A Study of Stress Caused by Social Interactions in Social Networks", International Journal of Computer Engineering and Applications (ISSN 2321-3469), Vol. 12, Issue 5, pp. 142-147, May 2018.
- **C. Balakrishnan**, "An enhanced methodology for efficient Fragmentation and Re-Allocation in P2PDDBS", International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) (ISSN 2394-3777), Vol. 3, Special Issue 20, pp. 590-595, April 2016.
- D.I. George Amalarethnam and **C. Balakrishnan**, "HAADAS- An enhanced approach for Re-allocation of Fragments in Peer-to-Peer Distributed Databases", International Journal of Applied Engineering Research (ISSN 0973-4562) - Scopus Indexed, Annexure II Journal, Vol. 10 No.82, pp. 315-320, 2015.
- D.I. George Amalarethnam and **C. Balakrishnan**, "An improved mechanism of clustering the sites for Peer-to-Peer Distributed Databases", International Journal of Fuzzy Mathematical Archive (ISSN- 2320-3242), Vol. 5, No. 2, pp. 57-69, December 2014.
- D.I. George Amalarethnam and **C. Balakrishnan**, "*oDASuANCO* - Ant Colony Optimization based Data Allocation Strategy in Peer-to-Peer Distributed Databases", International Journal on Science, Engineering and Technology, International Journal of Enhanced Research Publications (ISSN NO- 2319-7463), Vol. 2, No. 3, pp. 1-8, March 2013.
- D.I. George Amalarethnam and **C. Balakrishnan**, "A Study on Performance Evaluation of Peer-to-Peer Distributed Databases", IOSR Journal of Engineering (ISSN- 2250-3021), Vol. 2(5) pp- 1168-1176, May 2012.
- D.I. George Amalarethnam and **C. Balakrishnan**, "A Survey on Peer-To-Peer Real Time Object D



atabases”, Published in International Journal on Research and Reviews in Computer Science (IJRRCS) (ISSN-2079-2557), Vol. 1, No. 4, pp. 8-10, December 2010.

International Conferences

- K. Nithya Kalyani, **C. Balakrishnan**, “Photo Sharing Safe Mode Services to Make Privacy Reliability”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February, 2017.
- M. Rekha, **C. Balakrishnan**, “Study on New Architecture for Enhancing the Security and Performance of E-Mail Security Protocols”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- M. Priya, **C. Balakrishnan**, “Big data- Issues, Challenges and Tools”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- M. Priya, **C. Balakrishnan**, “A Brief Introduction to Process and Analyze Healthcare Big Data on Cloud Environment”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- B. Dharmalingam, **C. Balakrishnan**, M. Priya, “Role of ICT in Vocational Education and Training”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- B. Dharmalingam, **C. Balakrishnan**, M. Priya, “Blended Learning- A Pathway to Enhance Learning Experiences in Vocational Education”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- **C. Balakrishnan**, “A Recital on Extreme Programming and SDLC”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- **C. Balakrishnan**, “An Empirical Study on Agile based Development and Testing Methodologies”, IT Skills Show & International Conference on Advancements in Computing Resources (SSICACR 2017), Alagappa Institute of Skill Development & Computer Centre, Alagappa University, Karaikudi, 15th - 16th February 2017.
- B. Dharmalingam and **C. Balakrishnan**, "Skill Development Curriculum - Possible role of Universities- A case study of Practices in Alagappa University", International Conference on 'Health Indicators for Physical and Cognitive Fitness Education' Alagappa University, Karaikudi, 26th & 27th February, 2016.
- B. Dharmalingam, **C. Balakrishnan** and M. Priya, "Critical Analysis of Health and Cognitive issues of Information Technology Professionals in India", International Conference on 'Health Indicators for Physical and Cognitive Fitness Education' Alagappa University, Karaikudi, 26th & 27th February, 2016.
- B. Dharmalingam, M. Priya and **C. Balakrishnan**, "Inculcation of Soft skills during Academic persuasion towards Professional Sustainability of Information Technocrats", International Conference on 'Health Indicators for Physical and Cognitive Fitness Education' Alagappa University, Karaikudi, 26th & 27th February, 2016.
- D.I. George Amalarethinam and **C. Balakrishnan**, "HAADAS - An enhanced approach for Re-allocation of Fragments in Peer-to- Peer Distributed Databases", International Conference on Advanced Computing (ICAC 2015), Jamal Mohamed College, Tiruchirappalli, December 3-4, 2015.
- B. Dharmalingam and **C. Balakrishnan**, "Empowering Women through Skill Development- Challenges and Opportunities", International Conference on 'Women and Social Transformation- New Era of Just and Gender- Fair Society (ICWS - 2015)' Alagappa University, Karaikudi, 21st & 22nd August 2015.
- D.I. George Amalarethinam and **C. Balakrishnan**, "An Optimized Strategy for Data Allocation in Peer-to-Peer Distributed Databases", International Conference on Mathematical methods and Computation (ICOMAC 2015), Jamal Mohamed College, Tiruchirappalli, 22-23, January 2015.

Cumulative Impact factor:

Total Citation: 14, h- index: 03, i10- index: 0



CURRICULUM VITAE

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**Educational qualification:**

- B.Tech.,
- M.Tech.,
- Ph.D

Professional experience:

- 30 Years

Honours and Awards:-----**Recent publications:****National**

- Design and Development of Drape Tester , Journal of Apparel Technology and Management , June 2018

International

- Arjun. D L, RenukaTejaswini, J Hayavadana and Susheel “ Effcet of Potassium PermanganateFinish on the Properties of Denim Fabric” European Journal of Advances in Engineering andTechnology, 3(9), December 2016, 28-32
- Arjun. D L. RenukaTejaswini, Vinay Kumar Midha and J Hayavadana“ Potential of NonwovenFabrics as Surgical Gowns” International Research Journal of Medical Sciences, 5(1), February2017,1-4.
- Novel Approach To Apparel Drape measurement- A New Horizon, Prof. Dr.J. Hayavadana, Ayodya Kavitha,Kodamagundla Sreenu, International Journal of Advance Research in Science and Engineering, Vo.No:6, Issue No:3, March 2017
- ‘When textiles meet computers’, Ayodya Kavitha, Prof. J.Hayavadana and Bathini Deepthi, May 2017, Link: <http://www.fibre2fashion.com/industry-article/7930/when-computers-meet-textiles>
- ‘Novel methods of Assessment Asthetic properties of Dress material’International Journal of Current Advanced Research, July 2017
- Arjun. D L. RenukaTejaswini, Vinay Kumar Midha and J Hayavadana“ Potential of NonwovenFabrics as Surgical Gowns” International Research Journal of Medical Sciences, 5(1), February2017,1-4.
- Novel Approach To Apparel Drape measurement- A New Horizon, Prof. Dr.J. Hayavadana, Ayodya Kavitha, Kodamagundla Sreenu, International Journal of Advance Research in Science and Engineering, Vo.No:6, Issue No:3, March 2017
- ‘When textiles meet computers’, Ayodya Kavitha, Prof. J.Hayavadana and Bathini Deepthi, May 2017, Link: <http://www.fibre2fashion.com/industry-article/7930/when-computers-meet-textiles>
- ‘Novel methods of Assessment Asthetic properties of Dress material’ International Journal of Current Advanced Research, July 2017
- “NEW METHODS OF ASSESSING AND GRADING APPAREL FABRICS”, S.Viswanaath., J. Hayavadana., Ayodya Kavitha ., J.Lakshminarayana and Pradeepkumar, International Journal of Current Advanced Research., Sept 2018
- Application of a Multivariate Analysis (Biplot) Method to a Comparative Study of Fabric Characteristics-J. Hayavadana+, Srinivasulu .K*,International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS),Volume VII, Issue XII, December 2018 , ISSN 2278-2540
- Study of degradation of polyester partially oriented yarns through alkaline hydrolysis process Hayavadana J,1 Srinivasulu K, Volume 5 Issue 1 – 2019,MEDCRAVE, Journal of Textile Engineering & Fashion Technology

Cumulative Impact factor:

Total Citation: 199

h- index: 02

i10- index: 01



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Educational qualification:

- M.C.A.,
- M.E.,
- Ph.D

Professional experience:

- 30 Years

Honours and Awards:---

Recent publications:

National Conference

- P.Asokan, S.Nickolas, "CAD/CAM solutions for CNC machining/turning center", Eighth ISME conference on mechanical engineering New Delhi, 1993.
- P.Ramaraj, S.Nickolas, "A descriptive study on data mining and Algorithm for multi-dimensional association", All India seminar on IT for 21st century, IE(India), 1997.
- N.Gayatri, S.Nickolas, A.V.Reddy, "Comparative Study of Software Quality Metrics Feature Set Using Data mining Techniques", National Conference on Advanced Pattern Mining and Multimedia Computing(APMMC 10) , NIT, Tiruchirappalli, February 2010.

International Conference

- K. Shobha, S. Nickolas, "Imputation of multivariate attribute values in big data", International Conference on Smart Intelligent Computing and Applications, Springer, Singapore, 2019, pp. 53-60.
- K. Shobha, S. Nickolas, "Integration and Rule-based Pre-Processing of Scientific Publication Records from Multiple Data Sources", International Conference on Smart Intelligent Computing and Applications(SCI 2018), Springer, Bhubaneswar.
- Silambarasan E, Nickolas S, Mary Saira Bhanu S, "Attribute based Convergent Encryption Key Management for Secure Deduplication in Cloud", 3rd International Conference on Advanced Computing and Intelligent Engineering (ICACIE 2018), Springer, Bhubaneswar.
- Sareena Rose, Nickolas, S., Sangeetha, S., "Machine Learning and Statistical Approaches used in Estimating parameters that affect the soil fertility status : A Survey", Second International Conference on Green Computing and Internet of Things (ICGCIoT 2018), IEEE, Bangalore.
- Pitchai, A. V. Reddy, N. Savarimuthu, "Quantum walk based genetic algorithm for 01 quadratic knapsack problem", 2015 International Conference on Computing and Network Communications (CoCoNet) (2015) 283-287.
- T. Subramanian, N. Savarimuthu, "Effective tariff selection on cloud services: A consumer perspective", 2014 International Conference on Contemporary Computing and Informatics (IC3I) (2014) 326-330

International Journals

- M.Chandrasekaran,P.Asokan,S.Kumanan,T.Balamurugan,S.Nickolas,"Solving job shop scheduling problems using Artificial Immune System", International Journal of Advanced Manufacturing Technology, UK,(2006) 31:580-593
- S.Nickolas , C.S.P.Rao , A.V.Reddy and P Asokan," Performance Enhancement of Flow Shop Scheduling using Data Mining", Journal of Advanced Manufacturing Technology, CMTI, Vol.6,No.8, pp.17-23, August 2007
- Ilango Paramasivam, Hemalatha Thiagarajan, Nickolas Savarimuthu , "Imputation of Missing Data Using Weight Based Clustering in type II diabetes Databases", Journal of Advanced Research in Computer Engineering, Vol 3, No. 1, pp99-104 January-June 2009.ISSN:0974-4320
- Sarojini BalaKrishnan, Ramaraj NarayanaSwamy, Nickolas Savarimuthu, "Feature Selection Using F-Score on Classification of TYPE II Diabetes Databases", Journal of Advanced Research in Computer Engineering, Vol 3, No. 1, pp.1-6, January-June 2009.ISSN:0974-4320



- Ilango Paramasivam, Hemalatha Thiagarajan, Nickolas Savarimuthu, "A Semi Supervised Clustering by λ _cut for Imputation of missing Data in TYPE II Diabetes Databases", Indian Journal of Medical Informatics, Vol 4, No. 1, 2009
- Ilango Paramasivam, Hemalatha Thiagarajan, Poonkuntran Shanmugam, Nickolas Savarimuthu, "Imputation of Missing Data :A Semi Supervised Clustering Methodology", Journal of information Science and Technology, 6(3) pp 38-55, Washington, DC, USA 2009.
- Sarojini BalaKrishnan, Ramaraj NarayanaSwamy, Nickolas Savarimuthu, " Feature Subset Selection using Nomogram in TYPE II Diabetes Databases", Indian Journal Of Medical Informatics, 4(1):5, 2009.
- N.Gayatri, S.Nickolas, A.V.Reddy, "Performance Analysis and Enhancement of Software Quality Metrics using Decision Tree based Feature Extraction", International journal of Recent Trends in Engineering, Vol 2, No. 4, pp.54-56, November 2009.
- R.Chithra, S.Nickolas, "A Novel Algorithm for Mining Hybrid-Dimensional Association Rules", International journal of Computer Applications(0975-8887), Vol1-No.16, pp.62-69, 2010.
- R.Chithra, S.Nickolas, "Partition Based High Utility Itemset Mining", Intl. J. of Decision Making in Supply Chain and Logistics, Vol.1, No.2, pp.153-165, July-Dec. 2010.
- R.Eswari, S.Nickolas, "A Level-wise Priority Based Task Scheduling for Heterogeneous Systems", Intl. J. of Information and Education Technology, Vol.1, No.5, pp.371-376, Dec.2011.
- R.Chithra, S.Nickolas, " HUPT-Mine : An efficient algorithm for high utility pattern mining", Intl. J. of Business and Systems Research, Vol.6, No.3, pp.279-275, 2012.
- R.Eswari, S.Nickolas, "Efficient Task Scheduling for Heterogeneous Distributed Systems using Firefly Algorithm", Intl. J. of Computer Science and Engineering (Accepted).
- S.Karthikeyan, P.Asokan, S.Nickolas, T.Page, "Solving Flexible Job Shop Scheduling Problems with a hybrid PSO Algorithm and Data Mining-An Attribute oriented approach", Intl. J.of Manufacturing Technology and Management.(Accepted).
- R.Chithra, S.Nickolas, "VB-HU-Mine : An Efficient High Utility Itemset Mining Algorithm using Vertical Data Representation", Intl. J. of Information Technology and Management.
- Anandkumar P,S.Nickolas, "Significance of One-Class Classification in Outlier Detection", IJCIIS, June 2013, Vol 4, No. 6.
- S.Karthikeyan, P.Asokan, S.Nickolas, "A hybrid discrete firefly algorithm for multi-objective flexible job shop scheduling problem with limited resource constraints", Int J Adv Manuf Technol, 2014.
- N.Gayatri, S.Nickolas, A.V.Reddy, "A Frame Work for Business Defect Predictions in Mobiles", IJCA, Vol 81, No.1, November 2013.
- R.Eswari, S.Nickolas, Michael Arock "A path priority-based task scheduling algorithm for herterogenous distributed systems", Int.J.Communication Networks and Distributed Systems, Vol 12, No.2, 2014
- R.Eswari and S.Nickolas "Effective task scheduling for herterogenous distributed systems using firefly algorithm", Int.J.Computational Science and Engineering, Vol 11, No. 2, 2015
- T. Subramanian, N. Savarimuthu, "Application based brokering algorithm for optimal resource provisioning in multiple heterogeneous clouds", Vietnam Journal of Computer Science 3 (2015) 57-70.
- A. Prakasam, N. Savarimuthu, "Metaheuristic algorithms and probabilistic behaviour: a comprehensive analysis of ant colony optimization and its variants", Artificial Intelligence Review 45 (2015) 97-130.
- T. Subramanian, N. Savarimuthu, "Cloud service evaluation and selection using fuzzy hybrid MCDM approach in marketplace", IJFSA 5 (2016) 118-153.
- A. Pitchai, A. V. Reddy, N. Savarimuthu, "Fuzzy based quantum genetic algorithm for project team formation", IJIT 12 (2016) 31-46.
- A. Prakasam, N. Savarimuthu, "Novel local restart strategies with hyper populated ant colonies for dynamic optimization problems", Neural Computing and Applications (2018) 1-14.
- K. Shobha, S. Nickolas, "Analysis of importance of pre-processing in prediction of hypertension", CSI Transactions on ICT 6 (2) (2018) 209-214.

Cumulative Impact factor:

Total Citation: 347

h- index: 09

i10- index: 07



CURRICULUM VITAE

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Educational qualification:

- M.C.A.,
- **PGC in Teaching Higher Education**
- Ph.D

Professional experience:

-

Honours and Awards:

- 2012 Nominated for Best PhD Thesis Award (Wang Gungwu Medal & Prize), National University of Singapore.
- 2011 Dean's Graduate Research Achievement Award (PhD), SoC, National University of Singapore.
- 2006 Best R&D Project award, TOTE Board, Singapore model R&D project, 'Mobile Industrial Network Integrating 3G for Mobile Experiments'
- 2003 Best Presenter Award, Industrial-Info Comm. Technology (M2M), Singapore Industrial Automation Association, Mobile/Wireless Enabling Technologies for M2M
- 2000 Best Presentation Award, Association Of Principals Of Colleges Of Bharathiar University., 'Need Based Curriculum Development'
- 1995 Gold medal for first Rank (out of 4000) in Computing, Bharathiar University, Awarded by the honourable Governor of the State
- 1989 State Government's Higher Education Scholarship for Outstanding Academic Performance, State 39th Rank among 300,000 candidates.

Recent publications:

International

- Bhojan Anand and Pan Wenren, "CloudHide: Towards Latency Hiding Techniques for Thin-client Cloud Gaming," ACM Multimedia 2017. ACM, New York, NY, USA, 144-152.
- Anand Bhojan, Hong Wei Wong, "TITAl - Asynchronous multiplayer shooter with procedurally generated maps," In Entertainment Computing, Volume 16, 2016, Pages 81-93, ISSN 1875-9521.
- Bhojan Anand, Li Kecen, Akkihebbal L. Anand , "PARVAI - HVS Aware Adaptive Display Power Management for Mobile Games," IPS/IEEE Proceedings of the 7th International Conference on Mobile Computing and Ubiquitous Networking - ICMU 2014.
- Bhojan Anand, "Energy Efficient Multi-player Smartphone Gaming using 3D Spatial Subdivisioning and PVS Techniques," Proceedings of the 21th ACM International Conference on Multimedia - IMMPD 2013, Barcelona, Spain.
- Bhojan Anand , Lee Kee Chong, Ee-Chien Chang, Mun Choon Chan, Akkihebbal L. Ananda and Wei Tsang Ooi, "El-pincel: a painter cloud service for greener Web Pages," Proceedings of the 20th ACM international conference on Multimedia Nov 2012, Nara, Japan.
- K Thirugnanam, Bhojan Anand, J Sebastian, PG Kannan, AL Ananda, RK Balan, and MC Chan, "Dynamic Lookahead Mechanism for Conserving Power in Multi-Player Mobile Games," IEEE INFOCOM 2012, Orlando, Florida, Mar 2012.



- Bhojan Anand, Akhihebbal L. Ananda, Mun Choon Chan and Rajesh Krishna Balan, " ARIVU: Making Networked Mobile Games Green - A Scalable Power-Aware Middleware ", MOBILE NETWORKS AND APPLICATIONS, Springer Netherlands, Feb 2012.
- Bhojan Anand, Karthik Thirugnanam, Jeena Sebastian, Pravein G. Kannan, Akhihebbal L. Ananda, Mun Choon Chan, and Rajesh Krishna Balan. 2011. "Adaptive display power management for mobile games," In Proceedings of ACM MobiSys '11. ACM, New York, NY, USA, 57-70.

Cumulative Impact factor:

Total Citation: 234

h- index: 7

i10- index: 6



CURRICULUM VITAE**Name: Dr.K.J.Sivagnanam**

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Email: kjsivam@gmail.com

**Educational qualification:**

- Diploma in Textile Designing & Weaving
- B.Tech.,
- M.Tech.,
- Ph.D.

Professional experience:

- 22 Years

Honours and Awards:

- As Project Head, Implemented Placement Linked Skill Development Training Programs for about 25000 + candidates with the support of various state and government schemes and industry with about 75 % of placements.
- As Program Officer of Industrial Training Programs, coordinated about 250 batches of Technology and Skill Up gradation programs and about 3000 working employees / executives of Tiruppur cluster have completed up skill training successfully.

Recent publications:**National**

- Sivagnanam, et al, "Blended yarns for fashion garment", Apparel Today, 2005.
- Sivagnanam, et al, "A New 3D concept for weaving medical textiles" Textile Asia, Oct 2009
- Sivagnanam et. al, "Novel Properties of splittable fibres" fibre2fashion online publications.
- Sivagnanam et. al, "Micro fibres" fibre2fashion online publications.
- Sivagnanam, et al, "New 3D weaving concept for manufacturing of medical textiles", P69, Indian Textile Journal, Feb 2010.
- Sivagnanam, et al, "Eri silk knits for suitability in fashionable garment", Indian Textile Journal; Apr 2011, Vol. 121 Issue 7, p44

International

- Sivagnanam et al, "Vanya silk for Non Traditional Textile and Fashion Market" Silk for Green World and Sustainable Development, ISC, Thailand
- Sivagnanam, et al, "Study on Moisture Behaviour of Weft knitted Interlock Spacer Fabrics", International journal of ChemTech Research, Vol.8 / 2015
- Sivagnanam, et al, "Detailed Investigation of Weft Knitted Interlock Fabrics for Comfort Properties to Suit for Active and Sportswear Application", International Journal of Engineering and Advanced Technology, (IJEAT), ISSN: 2249-8958, Vol.8 / Issue 5, June 2019

Cumulative Impact factor:

Total Citation:

h- index:

i10- index:



CURRICULUM VITAE

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Educational qualification:

- B.Sc.,
- M.C.A.

Professional experience:

- 07 Years

Honours and Awards:

-

Recent publications:

National

-

International

-

Cumulative Impact factor:

Total Citation:

h- index:

i10- index:

CURRICULUM VITAE

Name: **Dr. KM. Pachiyappan**

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Educational qualification:

- M.Tech.,
- Ph.D

Professional experience:

- 30 Years

Honours and Awards:

-

Recent publications:

National

- 09

International

- 10

Cumulative Impact factor: -----

Total Citation:

h- index:

i10- index:



CURRICULUM VITAE

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 Alagappa University, Karaikudi.
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 Fax: -----
 Email: agni_senthil@yahoo.com

Educational qualification:

- BE.,
- MBA.,
- M.sc(IT).,
- M.Phil.,
- Ph.D.

Professional experience:

- 19 Years

Honours and Awards:

- Nominee for world who is who book for year 2008 and 2009
- National Conference Organised.
 1. Convenor and organised National level Conference on Artificial Intelligence and Parallel computing – September 8th and 9th,2006.
 2. Convenor and organised National conference on Information Technology and- Business management October 30th and 31st,2009.
 3. Convenor and organised National conference on Information computing and Management challenges in contemporary business - 21st and 22nd,2011.
- International Conference Organised:
 1. Convenor and organized international Conference on Computing and Information Technology - September 23rd and 24th, 2013. Alagappa University – Karaikudi.
 2. Convenor and organized two days IT Skill Show International Conference on Advancements in Computing Resources (SSICACR – 2017) – 15th & 16th February 2017. Alagappa University – Karaikudi.
- Other Training Programs
 1. Hardware maintenance
 2. S/W Installation
 3. Troubleshooting
 4. Network administration.
 5. Team building
 6. (i). Social development program at Sheshaiya homes, Austinpatti, Madurai.
(ii). Social development (Outreach program), Sumanahalli, Bangalore.
 7. Village Extension Programme at Thiruvelangudi, 11-13 October 2018.

Recent publications:

- “Segmentation Chick’s Image Using Artificial Neural Network”, in International Conference on Computing, Communication and Information Technology (CCIT 2018), ISBN: 978-1-63248-162-7, DOI: 10.15224/ 978-1-63248-162-7-06, Page: 11-14. 2. “Multimedia Cloud Computing for Agriculture”, in International Multi - Conference on Computing, Communication, Electrical & Nanotechnology (I2CN-2K18) at Kottayam, Kerala on April 26-27, 2018, presented and published.
- “Removal of Weeds in Agriculture field using Wavelet Transformation in Image Processing” International Journal on Recent and Innovation Trends in Computing and Communication (IJRITCC), Vol – 6, Issue – 2, ISSN: 2321-8169, Impact Factor: 5.837 Page: 19-26, February 2018.
- Bavithra Matharasi, Dr.A.Senthilrajan , “Sentiment Analysis using a Novel approach to classify sentiments in social networking data”, International Journal of Advanced Research in Computer Science - 2018, Vol – 9, ISSN: 0976-5697, Page: 297-301.



- J.Tamilselvan, Dr.A.Senthilrajan, “Adding Text Document to cluster based on the similarity measures”, International Journal of Pure and Applied Mathematics - 2018, Vol – 118, ISSN: 1314-3395, Page: 3069-3074.
- “Segmentation in Manganethi Plant using Mathematical Morphology”, International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE), Vol – 6, Issue – 10, ISSN 2278-1021, Impact Factor: 5.947, Page: 291-293, October 2017.
- N.Vijayalakshmi, “A hybrid approach for sarcasm detection of social media data”, International Journal of Scientific and Research Publications - 2017, Vol – 7, Issue – 5, ISSN: 2250-3153, Page: 327-336.
- Bavithra Matharasi, Dr.A.Senthilrajan, “Sentiment Analysis of Twitter Data using Naive bayes with Unigran Approach”, International Journal of Scientific and Research Publications - 2017, Vol – 7, Issue – 5, ISSN: 2250-3153, Page: 337-341.
- “Image Reduction Using Edge Based Region of Interest”, IOP conf.series: Materials Science and Engineering - 2017, doi: 10.1088/1757-899X/225/1/012248.
- M.Sangeetha, Dr.A.Senthilrajan, “Super Resolution – A Review”, International Journal of Engineering Research & Technology (IJERT) – 2016, Vol – 4, Issue – 21, ISSN: 2278-0181, Page: 36-40.
- Gopala Krishna Nagasarapu, Dr.A.Senthilrajan, “Robust Image Desoising using Infantile Fixation of Non Local Euclidean Median in Patch Space”, International Refereed Journal of Engineering and Science(IRJES) – 2016, Vol – 5, Issue – 8, ISSN: 2319-1821, Page: 24-28.
- M.Sangeetha, Dr.A.Senthilrajan, “Analysis of methods in wavelet domain for image resolution”, International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) - 2016, Vol – 3, ISSN: 2394-3785, Page: 628-631.
- J.Tamilselvan, Dr.A.Senthilrajan, “Constructing and maintaining large web repositories through continuous web crawling”, International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) - 2016, Vol – 3, ISSN: 2394-3785, Page: 605-608.
- Gopala Krishna Nagasarapu, Dr.A.Senthilrajan, “Implementation of speech steganography using spread spectrum with wavelet domain”, International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) - 2016, Vol – 3, ISSN: 2394-3785, Page: 588-594.
- Bavithra Matharasi, N. Vijayalakshmi, Dr.A.Senthilrajan, “A study on Various Techniques and Challenges in Sentiment Analysis”, International Journal of Advanced Research Trends in Engineering and Technology (IJARTET) - 2016, Vol – 3, Special issue – 20, ISSN: 2394-3777, Page: 474-478.
- Bavithra Matharasi, N. Vijayalakshmi, Dr.A.Senthilrajan, “Object Oriented Graph Structure to Represent the Dataset in online Social Network”, 2015, doi: 10.3850/978-981-09-4426-1-086, ISBN: 978-981-09-4426-1, Page: 314-321.
- “Pest Control in Paddy using Segmentation in Image Processing”, Engineering Sciences International Research Journal, Vol – 3, Issue – 2 (2015), ISSN: 2320-4338, ISBN: 978-931-84124-55-7, Page: 82-85.
- Gopala Krishna Nagasarapu, Dr.A.Senthilrajan, “Generalized non-local mean algorithm for De-Speckling of Digital images”, International Journal of Emerging Trends in Science and Technology (IJETST) - 2015, Vol – 2, Issue – 8, ISSN: 23489480, Page: 3077-3082.
- “Efficient Image Retrieval In Real Time Database Using Grey Model Technique”, Mathematical Sciences International Research Journal – 2015, Vol - 4, Issue - 1, ISSN: 2278 – 8697, ISBN: 978-93-84124-36-6, Page: 216-219.

National Conference:

- Attended the Indian Cyber Congress (INCYCON) on 28 & 29 September 2018 at Sree Vidyanikethan Engineering College(SVCE), Tirupati, Andhra Pradesh.
- Attended the one day orientation workshop on the roles and responsibilities of the university and its Swayam coordinators on 2nd February 2018 at AICTE office, Nelson Mandela Marg, Vasant Kunj, New Delhi.
- A.Fathima Mubeen, Dr.A.Senthilrajan, “ Optimal Features Selection and Classification of Healthcare Big data in Medical Internet of Things”, National conference on Cyber Security (NCCS – 2018) organized Computer Science, Alagappa University, Karaikudi held on 25th January 2018. Paper was presented
- K.Sheela, Dr.A.Senthilrajan, “Rice quality analysing using Image Processing Technique”, National conference on Cyber Security (NCCS – 2018) organized Computer Science, Alagappa University,



Karaikudi held on 25th January 2018. Paper was presented.

- Attended the DIDAC INDIA 2016 on September 28th to 30th at Bangalore International Exhibition Centre.
- Attended the RUSA – One Day Training on 23rd August 2016 at Anna University.
- Attended ICTACT Bridge 2016 Chennai edition on 24th February 2016.
- National conference on “Engineering Applications for Developing Smart Cities” held during March 30, 2015 organized by Dhirajlal Gandhi college of technology, Salem.

International Conference:

- “Segmentation Chick’s Image Using Artificial Neural Network”, in International Conference on Computing, Communication and Information Technology (CCIT 2018) at Rome, Italy on October 27-28, 2018
- “Multimedia Cloud Computing for Agriculture”, in International Multi - Conference on Computing, Communication, Electrical & Nanotechnology (I2CN-2K18) at Kottayam, Kerala on April 26-27, 2018.
- J.Tamilselvan, Dr.A.Senthilrajan, “Adding text document to cluster based on the similarity measures”, in International conference on Advances in Computer Science and Technology (ICACSET’18) held during January 19-20, 2018 at Kalasalingam Academy of Research and Education, Krishnankoil.
- “Design on Benefit Mechanism of the Information and Communication Technology Based on Boolean Law”, in International Conference on Advances in Mathematics and Computer Science held during December 14-16, 2017 at V.V. Vanniaperumal College for Women, Virudhunagar.
- “Defective Chicks Deduction Based on Texture Feature Analysis Using Random Transform”, in International Conference on Applied Science and Engineering held during December 05-07, 2017 at Seoul, South Korea.
- Bavithra Matharasi, N. Vijayalakshmi, Dr.A.Senthilrajan , “A study on Various Techniques and Challenges in Sentiment Analysis”, in International conference on Innovations in Computer Science & Technology – 2016 at Alagappa University, Karaikudi. 16. Gopala Krishna Nagasarapu, Dr.A.Senthilrajan , “ Implementation of speech steganography using spread spectrum with wavelet domain ”, in International conference on Innovations in Computer Science & Technology – 2016 at Alagappa University, Karaikudi.
- J.Tamilselvan, Dr.A.Senthilrajan , “Constructing and maintaining large web repositories through continuous web crawling”, in International conference on Innovations in Computer Science & Technology – 2016 at Alagappa University, Karaikudi.
- M.Sangeetha, Dr.A.Senthilrajan , “Analysis of methods in wavelet domain for image resolution”, in International conference on Innovations in Computer Science & Technology – 2016 at Alagappa University, Karaikudi.
- “Diagnosing Infective Diseases in Paddy Using Mobile Device”, in International Conference on Symposium on Electrical, Electronic Engineering and Digital Technology”(SEDT 2016) at Tokyo, Japan on December 6-8, 2016. 20. “Image Reduction Using Edge Based Region of Interest”, in International Conference on Advanced Material Technologies”(ICAMT 2016) at Visakhapatnam, Andhra Pradesh on December 27-28, 2016.

Cumulative Impact factor:

Total Citation:

h- index:

i10- index:



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Educational qualification:

- M.A (Tamil),
- M.A (Linguistics),
- M.Phil.,
- B.Ed.,
- Ph.D.

Professional experience:

- 20 Years

Honours and Awards:

- Best Research Paper Award for “Va Supa Manickanarin Ilakkiya Parvai” Presented by All India Universities Tamil Teachers Association during May 2002 behalf of V.SP.Manickanar Endowment.
- Best Research Paper Award for “Sanga Ilakkiyathil Manai Marutchi” Presented by All India Universities Tamil Teachers Association during May 2005 behalf of V.SP.Manickanar Endowment.
- Best Research Paper Award for “Kadal Seetram Thadukkum Kandal” Presented by ‘ARR’ All India Research Forum December 2005.
- Best NSS Programme Officer Award presented by Alagappa University, Karaikudi,2009.
- Best Research Paper Award for “Peedandru-Meel Vaasippu” Presented by ‘ARR’ All India Research Forum December 2011.

Recent publications:

- Thirumuruhatrupadaiyil Arupadai veedu – Sanskritisation, International Seminar on Place names, Tamil Sakthi Research Forum & National College,Trichirapalli, 25.09.2011
- Kalitriyanai Niraiyil Sanskritisation, International Conference on Agananooru,Sangam Literature Research Forum& Ethiraj Women’s College,Chennai, 09.12.2011
- Peedandru – Meel Vasippu, 7th International Seminar,AAR All India Research Forum &Sengunthar College of Arts and Science, Thiruchengodu, 17&18.12.2011
- Tholkappiyamum Irayanar Agapporulam- Karpu Marabukal & Tholkappiyamum Maranahapporulam-Illakkana Valarchi, Workshop on Aspects of Tholkappiam and Later grammatical works on Agam concept, Alagappa University, Karaikudi & CICT, Chennai, 04.01.2012to13.01.2012
- Inai Vizhaichu, 43rd All India University Tamil Teachers Association Seminar, Tamil Sangam, Bangalore, 19&20.05.2012
- Silappathikaram Suttum Inthezhuthu Manthiram, VIII th Internatioinal Seminar on AAR International Research Forum, Karpagam University, Coimbatore, 22.12.2012
- Artrupadai Ilakkia Seiyul Kattamaippil Uyarthinai Suttu, International Research Seminar On Pathupattu, Kongunadu Arts and Science College, Coimbatore, 23.12.2012
- Karkala Padalathil Tamizhar Panpattu Nilaviyal,International Seminar on Kalanthorum Kampan,Kampan Tamil Research Centre, Karaikudi, 23 &24.03.2013
- Tholkappiyamum Kootru muraikalum, Seminar on Tholkappiya Ilakkiyak kotpadukal, CICT, Chennai & Tamil Research Centre, Ganeshar Arts and Science College, Melaisivapuri, 08.01.2014
- Sanga Ilakkiyathil Manitha Urimaikal, Seminar on Palthurai Thotruvaaiaku Sanga Ilakkiyathin Pangalippu, CICT ,Chennai & Dep’t of Tamil, Alagappa Gov’t Arts College, Karaikudi, 09.01.2014
- Vazhipadugalum Thinaikkotpadugalum, Workshop on Chevviyal Ilakkiyangalil Tamizhar Vazhipaattu Marabugal, CICT, Chennai& Alagappa University, Karaikudi, 22.01.2014



- Ra. Ragavaiyanganin Urainadai Thiran, Workshop on Pazhanthamizh Uraiyasiriyarkalin Nadaikkotpadu, CICT, Chennai & Alagappa University, Karaikudi, 03.03.2014
- Tamil Haigoo Kavithaikalil Puthiya Pokkuhal, National seminar on New Trends on 20 th Century Tamil Puthu kavithaikal, Urumu Danalakhshmi College, Trichirapalli, 30.09.2015 & 01.10.2015
- Tholkapiathil Neethi, Seminar Collection on Tamil Ilakkiathil Neethi, Ulaga Tamil Sangam, Madurai, 23.01.2016.
- Thiruvagasathil Madurai, International Seminar on Ilakkiya Pathivuhail Madurai, Meenakshi Govt Womens College, Madurai, 25.02.16 & 26.02.16
- Chitrakooda malai Punaivu – Kambarum Valmikiyum, World Tamil Research Seminar On Kambanil Iyarkai, Karaikudi Kamban Kazhaham & Andaman Tamil Ilaikkiya Mandram, Andaman, 10.04.2016
- Tholkappiyathil Pillai – Collinaiyu Porunmai, International Seminar on Tamil Culture, Center for Tamil Culture , Alagappa University – 22.10.2016 & 23.10.2016
- Vayinum Kaiyinum Vaguththa Kalaihal, National Seminar on the role of Arts in Tamil Culture, Centre for Tamil Culture & Department of Fine Arts, Alagappa University, Karaikudi , 16.12.2016 .
- Barathidasanin Samaththuva kolhai, National Seminar on Contemporary Tamilian and Barathidasan's work, Department of Tamil, Alagappa University, Karaikudi, 20.12.2016 & 21.12.2016 .

Cumulative Impact factor:

Total Citation:

h- index:

i10- index:



CURRICULUM VITAE

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Educational qualification:

- M.A.,
- M.Phil.,
- Ph.D

Professional experience:

- 14 Years

Honours and Awards:

-

Recent publications:

National

- Madhan, P. "TO END VIOLENCE AGAINST WOMEN" GEM NATIONAL JOURNAL OF WOMEN'S STUDIES, vol: VI, ISSN: 2320-6403, Page No: 100

International

- Madhan, P. "WOMEN CHAMPIONS OF JUSTICE: A COMPARISON OF KANNAKI AND PORTIA" LITERARY INNOVATIONS –A Bi-Annual International Literary Journal. Vol: II No: 1,ISSN: 2279-0128,Page No:68
- Mathan, P. "A THEMATIC EXPLORATION OF BERNAD SHAW'S PYGMALION" LITERARY INNOVATIONS –A Bi-Annual International Literary Journal. ISSN: 2279-0128Vol: III, ISSUE: 1,Page No: 56
- Mathan, P. "CULTURAL CONFLICTS AND ETHNIC ANXIETY IN SIDHWA'S AN AMERICAN BRAT" LITERARY INNOVATIONS –A Bi-Annual International Literary Journal. ISSN: 2279-0128, Vol: III, ISSUE: 2, Page No: 38
- Mathan, P. "THE TRANSCULTRUAL PHASE IN AMITAV GHOSH'S THE HUNGRY TIDE: A STUDY" LITERARY INNOVATIONS –A Bi-Annual International Literary Journal. ISSN: 2279- 0128, Vol: III, ISSUE: 2,Page No: 62
- Mathan, P. "AN ANALYSIS OF T.S. ELIOT'S POETIC TECHNIQUES" LITERARY INNOVATIONS –A Bi-Annual International Literary Journal. ISSN: 2279-0128, Vol: IV, ISSUE: 1,Page No: 20
- Madhan, P. "AN ANALYSIS OF CHALLENGES OF WOMEN IN INDIA AND SUGGESTIVEREMEDIES FOR THEIR EMPOWERMENT" Social Sciences International Research Journal, ISSN: 2395-0544.
- Madhan, P. "IMPACT OF MONEY ON INDIAN HOUSEHOLDER IN RUTH PRAWER JHABVALA'S THE HOUSEHOLDER" International Journal of Law and Social Sciences, ISSN: 2394-4277.

Cumulative Impact factor:

Total Citation:

h- index:

i10- index:



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Educational qualification:

- M.Sc.,
- M.Phil.,
- Ph.D

Professional experience:

- 18 Years

Honours and Awards:

-

Recent publications:

National

- Ravindran J, G. Geetha Priya and E. Kannapiran, 2011. Effect of Concentrating and Exposing the Bioluminescent Bacteria to the Non Luminescent allo – Bacterial Extracellular Products on their Luminescence. *Journal of Luminescence*, 26: 23–28.
- Kannapiran, E and J. Ravindran, 2011. Phosphate mineralizing bacteria in the coral reefs of Gulf of Mannar. *Journal of Basic Microbiology*, (Wiley Blackwell, London) 51: 1–8.
- Kalaigandhi V, E. Kannapiran, Hari Muraleedharan and A. Michael, 2011. nifH gene of reference being the source to study the marine Azotobacter sp. *J. Sci. Trans. Environ. Technov.*, 5(1) : 37 - 42.
- Kalaigandhi V and E. Kannapiran, 2011. Qualitative and Quantitative Examination of Plant Growth Hormone Production using Azotobacter Isolated from Seagrass Ecosystem of Thondi. *Asian Journal of Microbiol. Biotech. Env. Sc.* Vol. 13(4):1-6.
- Sri Ramkumar, V and E. Kannapiran., 2011. Isolation of total heterotrophic bacteria and phosphate solubilizing bacteria and in vitro study of phosphatase activity and production of phytohormones by PSB. *Archives of Applied Science Research*, 3 (5):581-586 (ISSN 0975-508X).
- Sri Ramkumar V, E. Kannapiran and M. Palanisamy, 2011. Prevalence and distribution of total heterotrophic bacteria from Kottaipattinam coast, Palk Strait, Southeast coast of India, *Archives of Applied Science Research*, 3 (5):593-598 (ISSN 0975-508X).
- E. Kannapiran and V. Sri Ramkumar, 2011. Isolation of phosphate solubilizing bacteria from the sediments of Thondi coast, Palk Strait, Southeast coast of India *Annals of Biological Research*, 2 (5) : 157-163 (ISSN 0976-1233).
- Sri Ramkumar V, E. Kannapiran and M. Magesh, 2011. Variations in heterotrophic bacteria and phosphate solubilizing bacteria from Karangadu and Devipattinam coast, Palk Strait, Southeast coast of India. *Annals of Biological Research*, 2 (5): 602-609 (ISSN 0976-1233).
- E. Kannapiran and V. Sri Ramkumar, 2011. Inoculation effect of nitrogen-fixing and phosphate-solubilizing bacteria to promote growth of black gram (*Phaseolus mungo* Roxb; Eng) *Annals of Biological Research*, 2 (5) :615-621 (ISSN 09761233).
- Ravindran J, E. Kannapiran, B., Manikandan, R Mani Murali and K. Anthony Joseph, 2012. Bleaching and secondary threats on the corals of Palk Bay: A survey and proactive conservation needs. *Indian Journal of Geo-Marine Sciences*, Vol. 41 (1): 883-890. ISSN 0379-5136, Impact factor 0.183.
- Kannapiran E and N.K. Ahila, 2012. Coral Diseases: An Overview, Proceedings of the National Conference on Aquatic Animal Health and Management held at Faculty of Marine Sciences, CAS in Marine Biology, Annamalai University, Parangipettai, from 14 to 15.09.2012, 32-36.
- Prakash S, S. Ravikumar, K. V. R. Reddy and E. Kannapiran, 2013. Spermicidal activity of Indian seaweeds: an in vitro study, *Journal of Andrologia*, *Andrologia* 2013, 1–9. (Wiley Blackwell Publishers). (ISSN: 1439-0272) Impact factor: 1.546.



- Prakash S, NK. Ahila, S. Ravikumar and Kannapiran E, 2013. Phenotypic and Genotypic Probing of Biofertilizing Halotolerant Azospirillum Spp. and Bacillus Spp. Middle-East Journal of Scientific Research 15 (1): 128-133, 2013. ISSN 19909233.
- Ravindran J, E. Kannapiran, B. Manikandan, K. Francis, Shruti Arora, E. Karunya, Amit Kumar, S. K. Singh and Jiya Jose, 2013. UV-absorbing bacteria in coral mucus and their response to simulated temperature elevations, Accepted in Coral Reefs. ISSN 0722-4028, Impact factor 3.662.
- Ahila NK, E. Kannapiran, J. Ravindran and V. Sri Ramkumar, 2013. Studies on methanogenic consortia associated with mangrove sediments of Ennore. Accepted in the Journal of Environmental Biology. ISSN 0254-8704, Impact factor 0.682.
- S. Prakash, R. Ramasubburayan, P. Iyapparaj, N. K. Ahila, V. Sri Ramkumar, A. Palavesam & G. Immanuel, E. Kannapiran, 2015. Influence of physicochemical and nutritional factors on bacterial diversity in mangrove sediments along the southwest coast of Tamilnadu, India, Environ Monit Assess, 187:562
- Sri Ramkumar V, S. Prakash, R. Ramasubburaya, R. Baburajendran and E. Kannapiran, 2016. Seaweeds: A Resource for Marine Bionanotechnology. Enzyme and Microbial Technology, Accepted.
- Prakash S, and E. Kannapiran, 2016. In vitro - Scientific evaluation on antimicrobial, antioxidant, cytotoxic properties and phytochemical constituents of traditional coastal medicinal plants. Biomedicine & Pharmacotherapy 83:648– 657.
- Ahilaa N.K, V. Sri Ramkumar, S. Prakash, B. Manikandan, J. Ravindran, P.K. Dhanalakshmi, E. Kannapiran. Synthesis of stable nanosilver particles (AgNPs) by the proteins of seagrass Syringodium isoetifolium and its biomedical properties Journal: Biomedicine & Pharmacotherapy 84:60–70.

International

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