

	pursue with confidence for higher studies in the form of MCA, MBA, etc, and
PEO1.	excel in computer oriented skills to make successful career as professionals thereby
	acquiring greater competency.
PEO2.	possess professional skills to solve real time applications with excellent computing
1202.	ability.
PEO3.	adapt to a rapidly upgrading technical environment with entrepreneurial pursuit.
PEO4.	exhibit the skills and abilities effectively as a team member and/or leader by
I DO4.	adhering to ethical standards in the profession

 THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123. (Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH) DEPARTMENT OF COMPUTER APPLICATIONS 					
UG DEGREE PROGRAMME IN COMPUTER APPLICATIONS					
	PROGRAMME EDUCATIONAL OBJECTIVES				
The Gradua	ites will				
PEO1.	pursue with confidence for higher studies in the form of MCA, MBA, etc, and excel in computer oriented skills to make successful career as professionals thereby acquiring greater competency.				
PEO2.	possess professional skills to solve real time applications with excellent computing ability.				
PEO3.	adapt to a rapidly upgrading technical environment with entrepreneurial pursuit.				
PEO4.	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession				
	exhibit the skills and abilities effectively as a team member and/or leader by				
	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES				
By the Con	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES upletion of B.C.A programme, the learners will be able to explore technical knowledge in diverse areas of Computer Applications and				
By the Con PSO1.	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES upletion of B.C.A programme, the learners will be able to explore technical knowledge in diverse areas of Computer Applications and cultivate skills for successful career, entrepreneurship and higher studies.				
By the Con PSO1. PSO2.	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES apletion of B.C.A programme, the learners will be able to explore technical knowledge in diverse areas of Computer Applications and cultivate skills for successful career, entrepreneurship and higher studies. design and develop reliable software applications for social and industry needs. apply standard software engineering practices and strategies in software project development to deliver a product with quality for business success. identify the business and corporate issues through proper plan and decision making, thereby promoting oral and written communication efficiently using				
By the Con PSO1. PSO2. PSO3.	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES mpletion of B.C.A programme, the learners will be able to explore technical knowledge in diverse areas of Computer Applications and cultivate skills for successful career, entrepreneurship and higher studies. design and develop reliable software applications for social and industry needs. apply standard software engineering practices and strategies in software project development to deliver a product with quality for business success. identify the business and corporate issues through proper plan and decision				
By the Con PSO1. PSO2. PSO3. PSO4.	exhibit the skills and abilities effectively as a team member and/or leader by adhering to ethical standards in the profession PROGRAMME SPECIFIC OUTCOMES apletion of B.C.A programme, the learners will be able to explore technical knowledge in diverse areas of Computer Applications and cultivate skills for successful career, entrepreneurship and higher studies. design and develop reliable software applications for social and industry needs. apply standard software engineering practices and strategies in software project development to deliver a product with quality for business success. identify the business and corporate issues through proper plan and decision making, thereby promoting oral and written communication efficiently using supportive technologies. manage project work effectively as an individual member or as a leader in				

	Major Course		
Course Code	Course Code: GLCA11 Course Title: Programming with C		
On successful completion of the course, the learners should be able to			
CO1.	explain the tokens, I/O operations,	statements, files and unions in C.	
CO2.	discuss character array, string, use	r defined functions and pointers.	
CO3.	create simple programs using bran	ching and looping statements.	
CO4.	apply the concept of looping stater	nents and structure.	
CO5.	develop simple programs using arr	ays and functions.	

COURSE OUTCOME			
	Majo	or Course	
Course Co	de: GLCA11	Course Title: Programming with C	
On success	ful completion of the course, the lea	rrners should be able to	
CO1.	explain the tokens, I/O operations, statements, files and unions in C.		
CO2.	discuss character array, string, user defined functions and pointers.		
CO3.	create simple programs using bra	anching and looping statements.	
	apply the concept of looping statements and structure.		
CO4.	apply the concept of looping stat	ements and structure.	
CO4. CO5.	develop simple programs using a	arrays and functions.	
CO5.	develop simple programs using a	arrays and functions.	
CO5.	develop simple programs using a	arrays and functions.	
CO5.	develop simple programs using a	d Course Course Title: Digital Circuits	
CO5.	develop simple programs using a Alliee de: GLCA1A	d Course Course Title: Digital Circuits urners should be able to	
CO5. Course Co On success	develop simple programs using a Allie Allie de: GLCA1A ful completion of the course, the lea explain number system, logic gat	arrays and functions. d Course Course Title: Digital Circuits arners should be able to tes, flip flops and registers. tem and simplify Boolean algebraic expression	
CO5. Course Co On success CO1.	develop simple programs using a Allied de: GLCA1A ful completion of the course, the lead explain number system, logic gat solve problems in number system	d Course Course Title: Digital Circuits urners should be able to tes, flip flops and registers. tem and simplify Boolean algebraic expression in laws.	
CO5. COurse Co On success CO1. CO2.	develop simple programs using a Allied de: GLCA1A ful completion of the course, the lead explain number system, logic gat solve problems in number system using Karnaugh map and Boolead	d Course Course Title: Digital Circuits reners should be able to tes, flip flops and registers. tem and simplify Boolean algebraic expression in laws. ic and combinational circuits.	

	Major	Course	
Course Co	de: GLCA1L	Course Title: C Programming Lab	
On success	ful completion of the course, the learn	ners should be able to	
CO1.	apply the basic concepts of C-Prog	gramming.	
CO2.	build programs using conditional	build programs using conditional and iterative statements.	
CO3.	develop programs using arrays and strings.		
CO4.	construct program using functions.		
CO5.	create programs using files, pointe	ers, structures and unions.	
Course Co	Major de: GLCA21	Course Course Title: Object Oriented Programming with C++	
		Course Title: Object Oriented Programming with C++	
	ode: GLCA21 ful completion of the course, the lear	Course Title: Object Oriented Programming with C++ ners should be able to , expressions, control structures, classes, objects,	
On success	de: GLCA21 ful completion of the course, the lear express the OOP concepts, tokens constructors, destructors and cons	Course Title: Object Oriented Programming with C++ ners should be able to , expressions, control structures, classes, objects, ole I/O operations.	
On success CO1.	de: GLCA21 ful completion of the course, the lear express the OOP concepts, tokens constructors, destructors and cons explain the functions, operator	Course Title: Object Oriented Programming with C++ ners should be able to , expressions, control structures, classes, objects, ole I/O operations. overloading, inheritance, type conversion and	
On success CO1. CO2.	ode: GLCA21 ful completion of the course, the learn express the OOP concepts, tokens constructors, destructors and cons explain the functions, operator templates.	Course Title: Object Oriented Programming with C++ ners should be able to , expressions, control structures, classes, objects, ole I/O operations. overloading, inheritance, type conversion and nction overloading.	

	Al	lied Course	
Course Co	de: GLCA2A	Course Title: Computer Oriented Numerical Methods	
On success	ful completion of the course, the	learners should be able to	
CO1.	illustrate various numerical m	ethods for solving mathematical problems.	
CO2.	solve the algebraic, transcen numerical methods.	ndental and simultaneous equations using various	
CO3.	estimate approximate solution to problems using numerical differentiation and integration.		
CO4.	use relevant numerical techniques for Interpolation of data.		
CO5.	formulate approximate solution	on to ordinary differential equations.	
CO1.	create program using simple c	lasses and access modifier	
CO2.	design programs using function overloading and friend function.		
CO2. CO3.		implement the various levels of inheritance and sorting methods.	
	implement the various levels of	of inheritance and sorting methods. e function and virtual base class.	
CO3.	implement the various levels of construct programs with inline	-	
CO3. CO4.	implement the various levels of construct programs with inline	e function and virtual base class.	

	Major	Course	
Course Co	de: GLCA31	Course Title: Data Structures and Algorithms	
On success	ful completion of the course, the lear	ners should be able to	
CO1.	explain the features of various dat	a structures and algorithmic techniques.	
CO2.	discuss the ADTs and applications	s of different data structures.	
CO3.	examine different sorting, searching and traversal techniques.		
CO4.	illustrate the general methods and problems of various algorithms.		
CO5.	solve problems on linear and nonl	solve problems on linear and nonlinear data structures and greedy methods.	
	Major	Course	
Course Co		Course	
	Major ode: GLCA32 ful completion of the course, the lear	Course Course Title: Programming in Java	
	de: GLCA32	Course Course Title: Programming in Java	
On success	bde: GLCA32 ful completion of the course, the lear describe the Java features, structu Applet.	Course Course Title: Programming in Java ners should be able to	
On success CO1.	bde: GLCA32 ful completion of the course, the lear describe the Java features, structu Applet.	Course Course Title: Programming in Java ners should be able to are, tokens, arrays, strings, class, inheritance an operators, branching and looping statements.	
On success CO1. CO2.	ode: GLCA32 ful completion of the course, the lear describe the Java features, structu Applet. construct simple programs using of implement the concepts of arrays,	Course Course Title: Programming in Java ners should be able to are, tokens, arrays, strings, class, inheritance an operators, branching and looping statements.	

Major Course				
Course Code	Course Code: GLCA32 Course Title: Programming in Java			
On successful completion of the course, the learners should be able to				
CO1.	describe the Java features, structure, tokens, arrays, strings, class, inheritance and Applet.			
CO2.	construct simple programs using o	perators, branching and looping statements.		
CO3.	implement the concepts of arrays,	strings, classes and inheritance.		
CO4.	explain the concepts of interfaces,	packages, threads, exceptions and files.		
CO5.	create simple applications using in	terfaces, packages, Applet and Graphics.		

		Allied Course
Course Co	ode: GLCA3A	Course Title: Visual Programming
On success	sful completion of the course,	the learners should be able to
CO1.	describe the fundamental basic.	s, working environment, statements and arrays in v
CO2.	explicate the working of various controls, menus, procedures and SQL database.	
CO3.	make use of various controls.	
CO4.	construct programs using	decision making statements and arrays.
CO5.	implement procedures, me	nus, dialog boxes and built in data controls.
		Major Course
Course Co		
	ode: GLCA3L	Course Title: Java Programming Lab
	ode: GLCA3L	Course Title: Java Programming Lab
	sful completion of the course,	Course Title: Java Programming Lab
On success	sful completion of the course,	Course Title: Java Programming Lab the learners should be able to
On success CO1.	sful completion of the course,	Course Title: Java Programming Lab the learners should be able to ns using arrays and different types of statements. eritance and polymorphism.
On success CO1. CO2.	sful completion of the course, create simple Java program design programs using inh	Course Title: Java Programming Lab the learners should be able to ns using arrays and different types of statements. eritance and polymorphism. Exception programs.

	Major Course		
Course Code	e: GLCA3L	Course Title: Java Programming Lab	
On successful completion of the course, the learners should be able to			
CO1.	create simple Java programs using	arrays and different types of statements.	
CO2.	design programs using inheritance	and polymorphism.	
CO3.	construct Multithread and Exception	on programs.	
CO4.	build Packages and Interfaces.		
CO5.	construct programs using files, Ap	plet and Graphics.	

	Allied	Course
Course Co	de: GLCA3AL	Course Title: Visual Programming Lab
On success	ful completion of the course, the learn	ners should be able to
CO1.	develop simple window application	ons.
CO2.	design animation using Timer.	
CO3.	construct dialogs and menus.	
CO4.	create SDI and MDI applications.	
CO5.	integrate database and window ap	plications.
	Major	Course
Course Co	Major de: GLCA41	Course Title: Database Management
		Course Title: Database Management Systems
	de: GLCA41 ful completion of the course, the learn	Course Title: Database Management Systems ners should be able to of Database Management Systems, databas
On success	de: GLCA41 ful completion of the course, the learn describe the basic concepts of	Course Title: Database Management Systems ners should be able to of Database Management Systems, databas
On success CO1.	de: GLCA41 ful completion of the course, the learn describe the basic concepts of architecture, E-R model and SQL.	Course Title: Database Management Systems ners should be able to of Database Management Systems, databas and E-R Model techniques.
On success CO1. CO2.	de: GLCA41 ful completion of the course, the learn describe the basic concepts of architecture, E-R model and SQL. outline the various Normal forms	Course Title: Database Management Systems ners should be able to of Database Management Systems, databas and E-R Model techniques. using SQL.

		Course
On successf	ode: GLCA4A	Course Title: Operating Systems
	ul completion of the course, the lean	mers should be able to
CO1.	discuss the system structures, properating system.	ocess management and memory management in
CO2.	analyze the scheduling algorithms	s and page replacement algorithms.
CO3.	outline the synchronization problems and deadlock prevention, avoidance,detection and recovery techniques.	
CO4.	describe the memory management	t strategies.
CO5.	illustrate the virtual memory man	agement and disk scheduling.
Course Cod	le: GLCA4L	Course Title: DBMS LAB
On successf	ul completion of the course, the lear	mers should be able to
CO1.	create tables and enforce integrity	v constraints.
	build queries based on aggregate	and built-in functions.
CO2.	build queries based on aggregate and built-in functions. develop PL/SQL programs using iteration controls and cursors.	
CO2.	develop PL/SQL programs using	iteration controls and cursors.
	develop PL/SQL programs using construct PL/SQL programs using	

	Allied Course		
Course Code: GLCA4AL Course Title: DTP LAB		Course Title: DTP LAB	
On successfu	On successful completion of the course, the learners should be able to		
CO1.	implement various tools in photoshop.		
CO2.	develop business cards, pamphlets using photoshop.		
CO3.	CO3. create theme oriented animated story with effects using photoshop.		
CO4.	design articles, advertisements, vouchers using pagemaker.		
CO5.	manipulate objects and figures in c	coreldraw.	

	Allied	Course
Course Co	de: GLCA4AL	Course Title: DTP LAB
On success	ful completion of the course, the lear	mers should be able to
CO1.	implement various tools in photos	shop.
CO2.	develop business cards, pamphlets using photoshop.	
CO3.	create theme oriented animated st	ory with effects using photoshop.
CO4.	design articles, advertisements, vouchers using pagemaker.	
	manipulate objects and figures in coreldraw	
CO5.	manipulate objects and figures in	coreldraw.
		• Course
Course Co	Major	Course Title: Software Engineering
Course Co	Major de: GLCA51 ful completion of the course, the lear	Course Title: Software Engineering
Course Co On success	Major de: GLCA51 ful completion of the course, the lear describe the basic concepts, factor	Course Course Title: Software Engineering rners should be able to rs and phases of software development.
Course Co On success CO1.	Major ode: GLCA51 ful completion of the course, the lear describe the basic concepts, factor explicate the planning models, red	Course Course Title: Software Engineering mers should be able to rs and phases of software development. quirement, cost estimation and design concepts o
Course Co On success CO1. CO2.	Major ode: GLCA51 ful completion of the course, the lear describe the basic concepts, factor explicate the planning models, registrate software. analyze software design, validation	Course Course Title: Software Engineering mers should be able to rs and phases of software development. quirement, cost estimation and design concepts o

	Major Ele	ective Course
Course Co	de: GLCA5E1	Course Title: Web Technology
On success	ful completion of the course, the lear	rners should be able to
CO1.	describe the basics of web programming using basic HTML5 and PHP.	
CO2.	implement CSS3, Forms, JavaScript and JQuery in web pages.	
CO3.	develop programs using PHP flow-controls, built-in library, arrays & string functions in PHP.	
CO4.	design web pages using various elements of HTML5 and PHP.	
	illustrate PHP security issues, session and communication with the database.	
CO5.		
CO5.		sion and communication with the database.
Course Co	Major Ele	ective Course Course Title: Computer Security
Course Co	Major Ele de: GLCA5E2 ful completion of the course, the lear	ective Course Course Title: Computer Security
Course Co On success	Major Ele de: GLCA5E2 ful completion of the course, the lear discuss various security attacks, c	ective Course Course Title: Computer Security rners should be able to classical encryption techniques and public key
Course Co On success CO1.	Major Ele de: GLCA5E2 ful completion of the course, the lear discuss various security attacks, c cryptographic System. outline the various encryption state	ective Course Course Title: Computer Security rners should be able to classical encryption techniques and public key
Course Co On success CO1. CO2.	Major Ele de: GLCA5E2 ful completion of the course, the lear discuss various security attacks, c cryptographic System. outline the various encryption state	ective Course Course Title: Computer Security rners should be able to classical encryption techniques and public key ndards to ensure security.

	Major Elec	ctive Course
Course Code	e: GLCA5E2	Course Title: Computer Security
On successfu	l completion of the course, the learn	ers should be able to
CO1.	discuss various security attacks, cl cryptographic System.	assical encryption techniques and public key
CO2.	outline the various encryption stan	dards to ensure security.
CO3.	summarize different message authors	entication codes and cryptosystems.
CO4.	explain the key management and d	istribution of keys.
CO5.	describe the user authentication me security.	echanism and network access control and cloud

	Major Elec	ctive Course
Course Co	de: GLCA5E3	Course Title: Computer Graphics
On success	ful completion of the course, the learn	ners should be able to
CO1.	classify the various Graphics Systems.	
CO2.	discuss the different output primitive algorithms.	
CO3.	summarize the attributes of Outpu	t primitives.
CO4.	describe the two dimensional Geo	metric Transformations and viewing.
CO5.	outline the basic 3D concepts and	interactive input methods.
Course Co	Major Elec de: GLCA5E4	ctive Course Course Title: Cloud Computing
		Course Title: Cloud Computing
	de: GLCA5E4 ful completion of the course, the learn	Course Title: Cloud Computing
On success	de: GLCA5E4 ful completion of the course, the learn describe the fundamental concepts	Course Title: Cloud Computing
On success CO1.	de: GLCA5E4 ful completion of the course, the learn describe the fundamental concepts discuss the architecture, services,	Course Title: Cloud Computing ners should be able to s, technology and mechanisms of Cloud. models and the technologies of cloud. e, Management mechanisms and identify the
On success CO1. CO2.	de: GLCA5E4 ful completion of the course, the learn describe the fundamental concepts discuss the architecture, services, a outline the Cloud infrastructure security threats in cloud computin	Course Title: Cloud Computing ners should be able to s, technology and mechanisms of Cloud. models and the technologies of cloud. e, Management mechanisms and identify the

	Major Elec	tive Course
Course Code	e: GLCA5E4	Course Title: Cloud Computing
On successful completion of the course, the learners should be able to		
CO1.	describe the fundamental concepts	, technology and mechanisms of Cloud.
CO2.	discuss the architecture, services, r	nodels and the technologies of cloud.
CO3.	outline the Cloud infrastructure security threats in cloud computing	, Management mechanisms and identify the g.
CO4.	compare the different Cloud Architectures, services, technology and models.	
CO5.	explicate the services rendered by in business and media.	the cloud providers and the use of applications

	Major Ele	ective Course
Course Co	de: GLCA5E5	Course Title: Introduction to Data Mining
On success	ful completion of the course, the lear	rners should be able to
CO1.	explain the various types of data,	patterns and attributes.
CO2.	outline the frequent itemset mining, Classification and Clustering techniques.	
CO3.	describe the processing concepts and analysis techniques of big data.	
	construct programs using commands of R programming language.	
CO4.	construct programs using comma	nds of R programming language.
CO4. CO5.	manipulate Data Objects in R.	ective Course
CO5.	manipulate Data Objects in R.	ective Course
CO5.	manipulate Data Objects in R. Major Ele	ective Course Course Title: Embedded Systems
CO5.	manipulate Data Objects in R. Major Ele de: GLCA5E6 ful completion of the course, the lear	ective Course Course Title: Embedded Systems
CO5. Course Co On success	manipulate Data Objects in R. Major Ele de: GLCA5E6 ful completion of the course, the lear	ective Course Course Title: Embedded Systems rners should be able to ramming concepts of embedded-systems.
CO5. Course Co On success CO1.	manipulate Data Objects in R. Major Ele de: GLCA5E6 ful completion of the course, the lear explain the architecture and program	ective Course Course Title: Embedded Systems rners should be able to ramming concepts of embedded-systems. es and Network protocols.
CO5. Course Co On success CO1. CO2.	Major Ele de: GLCA5E6 ful completion of the course, the lear explain the architecture and progr outline the communication device	ective Course Course Title: Embedded Systems rners should be able to ramming concepts of embedded-systems. es and Network protocols. Service Routine mechanism.

	Major Elective Course		
Course Code	Course Code: GLCA5E6 Course Title: Embedded Systems		
On successful completion of the course, the learners should be able to			
CO1.	explain the architecture and programming concepts of embedded-systems.		
CO2.	outline the communication devices and Network protocols.		
CO3.	CO3. recall the concepts of Interrupts Service Routine mechanism.		
CO4.	compare the real-time operating system process.		
CO5.	illustrate the various embedded sys	stems in RTOS.	

	Major	Course	
Course Co	de: GLCA5L1	Course Title: Web Technology Lab	
On success	ful completion of the course, the learn	ners should be able to	
CO1.	design and implement dynamic websites with good aesthetic sense of designing.		
CO2.	create web pages using cascading style sheets.		
CO3.	develop a responsive web site usir	ng JavaScript.	
CO4.	rewrite string handling operations using PHP.		
CO5.	construct database programs using	construct database programs using PHP script.	
	Major	Course	
Course Co	Major de: GLCA5L2	Course	
		Course Course Title: Animation Technology La	
	de: GLCA5L2	Course Course Title: Animation Technology Laborers should be able to	
On success	de: GLCA5L2	Course Course Title: Animation Technology Lab ners should be able to and masking in Flash.	
On success CO1.	de: GLCA5L2 ful completion of the course, the learn develop animation using tweening	Course Course Title: Animation Technology Lab ners should be able to and masking in Flash. creating advertisements.	
On success CO1. CO2.	de: GLCA5L2 ful completion of the course, the learn develop animation using tweening apply 2D techniques of Flash for c	Course Course Title: Animation Technology Lal ners should be able to and masking in Flash. creating advertisements. Adobe Premier Pro.	
On success CO1. CO2. CO3.	de: GLCA5L2 ful completion of the course, the learn develop animation using tweening apply 2D techniques of Flash for containing make use of various effects using	Course Course Title: Animation Technology Lal ners should be able to and masking in Flash. creating advertisements. Adobe Premier Pro. k using 3D Max.	

	Major Course		
Course Code	e: GLCA5L2	Course Title: Animation Technology Lab	
On successful completion of the course, the learners should be able to			
C01.	develop animation using tweening and masking in Flash.		
CO2.	apply 2D techniques of Flash for c	reating advertisements.	
CO3.	CO3. make use of various effects using Adobe Premier Pro.		
CO4.	CO4. construct artistic and creative work using 3D Max.		
CO5.	build 3D models and designs using	g Maya.	

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		r Course
	de: GLCA61	Course Title: Computer Networks
On success	ful completion of the course, the lea	rners should be able to
CO1.	describe the uses, hardware, software and the reference models of network.	
CO2.	examine the transmission media, switching and design issues of data link and transport layer.	
CO3.	explicate the Ethernet cabling mechanism, domain name system and electronic mail architecture.	
	outline the protocols of data link, network, transport and application layers.	
CO4.	outline the protocols of data link,	, network, transport and application layers.
CO4. CO5.	-	
	solve the network oriented proble routing and congestion controls.	, network, transport and application layers. ems in data rate, error detection, error correctior r Course
CO5.	solve the network oriented proble routing and congestion controls.	ems in data rate, error detection, error correction
CO5.	solve the network oriented proble routing and congestion controls. Major	r Course Course Title: Dot NET Programming
CO5.	solve the network oriented proble routing and congestion controls. Major de: GLCA62 ful completion of the course, the lear	r Course Course Course Title: Dot NET Programming rners should be able to nework, OOPs concepts and the various standar
CO5. Course Co On success	solve the network oriented proble routing and congestion controls. Major de: GLCA62 ful completion of the course, the lea explain the benefits of .NET fran navigation and validation control	r Course Course Course Title: Dot NET Programming rners should be able to nework, OOPs concepts and the various standar
CO5. Course Co On success CO1.	solve the network oriented proble routing and congestion controls. Major de: GLCA62 ful completion of the course, the lead explain the benefits of .NET fram navigation and validation control describe pointers, delegates, exceed	r Course Course Course Title: Dot NET Programming rners should be able to nework, OOPs concepts and the various standards.
CO5. Course Co On success CO1. CO2.	solve the network oriented proble routing and congestion controls. Major de: GLCA62 ful completion of the course, the lea explain the benefits of .NET fran navigation and validation control describe pointers, delegates, exce develop console applications usin pointers.	r Course Course Course Title: Dot NET Programming rners should be able to nework, OOPs concepts and the various standard ls. eption handling and the working of database.

	Major Course		
Course Code	e: GLCA62	Course Title: Dot NET Programming	
On successful completion of the course, the learners should be able to			
CO1.	CO1. explain the benefits of .NET framework, OOPs concepts and the various standard, navigation and validation controls.		
CO2.	describe pointers, delegates, excep	tion handling and the working of database.	
CO3.	CO3. develop console applications using namespace, class and objects, delegates and pointers.		
CO4.	CO4. construct web based applications using Standard and Validation controls.		
CO5.	make use of master pages, Navigat	ion controls and implement database.	

		Major Elect	tive Course
Course Co	ode: GLCA6E1		Course Title: Operations Research
On succes	sful completion of the cou	rse, the learn	ers should be able to
CO1.	formulate the decision	making prob	plems into mathematical models.
CO2.	describe the various m problems.	ethods and te	erminologies in solving decision making
CO3.	solve linear programm	ing problems	s using optimization techniques.
CO4.	determine optimal allo problems.	cation of res	ources in Transportation and Assignment
CO5.	test for optimal outcor	ne in Game T	Theory for strategic decision making.
		Major Elect	tive Course
		-	
Course Co	ode: GLCA6E2	-	tive Course le: Statistical Methods
		Course Tit	le: Statistical Methods
	ode: GLCA6E2	Course Tit	le: Statistical Methods ers should be able to
On succes	ode: GLCA6E2 sful completion of the cou explain the basic term	Course Tit rse, the learners s and concep	le: Statistical Methods ers should be able to ts in Statistics.
On succes CO1.	ode: GLCA6E2 sful completion of the cou explain the basic term describe the types of applied.	Course Tit rse, the learners s and concep statistical si	le: Statistical Methods ers should be able to ts in Statistics. tuation to which different distributions can be
On succes CO1. CO2.	ode: GLCA6E2 sful completion of the cou explain the basic term describe the types of applied. analyze statistical data	Course Titl rse, the learners and concept statistical situation in the statistical situation is the s	le: Statistical Methods ers should be able to

		Major Elective Course
Course Code	e: GLCA6E2	Course Title: Statistical Methods
On successfu	l completion of the cou	rse, the learners should be able to
CO1.	explain the basic term	s and concepts in Statistics.
CO2.	describe the types of applied.	statistical situation to which different distributions can be
CO3.	analyze statistical data	a using measures of central tendency, dispersion and location.
CO4.	calculate and interpret	the correlation and regression between two variables.
CO5.	compute probability for	or uncertain problems.

Course Code: GLCA6E3 Course Title: Graph Theory On successful completion of the course, the learners should be able to explain the basic concepts and algorithms in Graph Theory. CO1. explain the basic concepts and algorithms in Graph Theory. CO2. understand some applications of graph theory to practical problems and othe branches of Mathematics CO3. identify the minimal spanning tree of a graph. CO4. determine the matrix representation of graphs. CO5. design real world problems using Graph Theory. Major Course Course Course Course Code: GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to CO1. develop C# 5.0 programs using OPs concept and various controls. CO2. implement pointers and delegates concepts. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications. CO3. design web based ASP.NET applications.			Major Elec	tive Course
CO1. explain the basic concepts and algorithms in Graph Theory. CO2. understand some applications of graph theory to practical problems and othe branches of Mathematics CO3. identify the minimal spanning tree of a graph. CO4. determine the matrix representation of graphs. CO5. design real world problems using Graph Theory. Major Course Course Code: GLCA6L CO1. develop C# 5.0 programs using OOPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	Course Co	de: GLCA6E3	Course Tit	le: Graph Theory
CO1. understand some applications of graph theory to practical problems and othe branches of Mathematics CO3. identify the minimal spanning tree of a graph. CO4. determine the matrix representation of graphs. CO5. design real world problems using Graph Theory. Major Course Course Code: GLCA6L Consected: Glasser Course, the learners should be able to CO1. develop C# 5.0 programs using OOPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	On success	ful completion of the cou	rse, the learn	ners should be able to
CO2. branches of Mathematics branches of Mathematics identify the minimal spanning tree of a graph. CO3. identify the minimal spanning tree of a graph. CO4. determine the matrix representation of graphs. CO5. design real world problems using Graph Theory. Major Course Course Course Course Course Course GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to CO1. develop C# 5.0 programs using OUPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	CO1.	explain the basic cond	cepts and algo	orithms in Graph Theory.
CO4. determine the matrix representation of graphs. CO5. design real world problems using Graph Theory. Major Course Course Course Course Course Course Course Course Course Course Course Course GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to CO1. develop C# 5.0 programs using OPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	CO2.			graph theory to practical problems and other
CO5. design real world problems using Graph Theory. Major Course Course Code: GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to CO1. develop C# 5.0 programs using OUPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	CO3.	identify the minimal s	panning tree	of a graph.
Major Course Major Course Course Code: GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to Course Title: Dot NET Programming Lab C01. develop C# 5.0 programs using OOPs concept and various controls. C02. implement pointers and delegates concepts. C03. design web based ASP.NET applications.	CO4.	determine the matrix	representatio	n of graphs.
Major Course Major Course Course Code: GLCA6L Course Title: Dot NET Programming Lab On successful completion of the course, the learners should be able to Course Title: Dot NET Programming Lab CO1. develop C# 5.0 programs using OOPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	CO5.	design real world prol	olems using (Graph Theory.
CO1. develop C# 5.0 programs using OOPs concept and various controls. CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	Course Co	de: GLCA6L		Course Title: Dot NET Programming Lab
CO2. implement pointers and delegates concepts. CO3. design web based ASP.NET applications.	On success	ful completion of the cou	rse, the learn	ners should be able to
CO3. design web based ASP.NET applications.	~ ~~	develop C# 5.0 progra	ams using OO	DPs concept and various controls.
	CO1.			concents
CO4. construct programs using data base and validation controls.		implement pointers ar	d delegates o	
	CO2.			-
CO5. create and configure Master Pages.	CO2. CO3.	design web based AS	P.NET applic	cations.

	Major	Course
Course Code	e: GLCA6L	Course Title: Dot NET Programming Lab
On successfu	l completion of the course, the learn	ers should be able to
CO1.	develop C# 5.0 programs using OC	DPs concept and various controls.
CO2.	implement pointers and delegates of	concepts.
CO3.	design web based ASP.NET applic	cations.
CO4.	construct programs using data base	e and validation controls.
CO5.	create and configure Master Pages	

	Мајо	r Course
Course Co	ode: GLCA6P	Course Title: Project Work
On success	ful completion of the course, the lea	rners should be able to
CO1.	design computerized solutions to	real life problems using appropriate methods.
CO2.	integrate the algorithms with the	problems to find the solutions.
CO3.	construct structured programmi demand.	ing techniques for business to meet the globa
CO4.	develop computer based object-o	priented programming paradigms.
CO4. CO5.	apply the knowledge, skills, ex learners.	
CO5.	apply the knowledge, skills, ex learners. Non Ma	ajor Course
CO5.	apply the knowledge, skills, ex learners.	xperience and ethical values to become lifelong
CO5.	apply the knowledge, skills, ex learners. Non Ma	ajor Course Course Title: Animation Software
CO5.	apply the knowledge, skills, ex learners. Non Ma ode: GLCA3N	ajor Course Course Title: Animation Software arners should be able to
CO5. Course Co On success	apply the knowledge, skills, ex learners. Non Ma ode: GLCA3N ful completion of the course, the lea	Ajor Course Course Course Title: Animation Software urners should be able to nt and different tools of flash.
CO5. Course Co On success CO1.	apply the knowledge, skills, ex learners. Non Ma ode: GLCA3N ful completion of the course, the lea describe the working environmen	Ajor Course Course Course Title: Animation Software Int and different tools of flash.
CO5. Course Co On success CO1. CO2.	apply the knowledge, skills, ex learners. Non Ma Ode: GLCA3N ful completion of the course, the lea describe the working environmen implement various tools in flash.	Ajor Course Ajor Course Course Title: Animation Software urners should be able to nt and different tools of flash. panel.

	Non Majo	or Course
Course Code	e: GLCA3N	Course Title: Animation Software
On successfu	l completion of the course, the learn	ters should be able to
CO1.	describe the working environment	and different tools of flash.
CO2.	implement various tools in flash.	
CO3.	explain color panel and timeline pa	anel.
CO4.	build new symbols and explore the	types of Symbols in Flash.
CO5.	make use of tweening, 3D rotation	, 3D translation in animations.

	Discipline Sp	pecific Course
Course Co	de: GLCA4DSL	Course Title: Command Line Interface La
On success	ful completion of the course, the learn	ners should be able to
CO1.	make use of dos commands.	
CO2.	implement file and directory comr	nands.
CO3.	build batch programs using decision	on making statements.
CO4.	construct shell programs to create,	, list the contents and sort the files.
CO4. CO5.	create shell programs using basic s	, list the contents and sort the files. statements, commands and operators.
CO5.	create shell programs using basic s	statements, commands and operators.
CO5.	create shell programs using basic s	statements, commands and operators. for Course Course Title: Web Designing
CO5.	create shell programs using basic s Non Maj	statements, commands and operators. or Course Course Title: Web Designing ners should be able to
CO5. Course Co On success	create shell programs using basic s Non Maj de: GLCA4N ful completion of the course, the learn	statements, commands and operators. For Course Course Course Title: Web Designing ners should be able to S and character formatting.
CO5. Course Co On success CO1.	create shell programs using basic s Non Major ode: GLCA4N ful completion of the course, the learn describe tables, links, frames, CSS	statements, commands and operators. or Course Course Course Title: Web Designing ners should be able to S and character formatting. nd formatting in web pages.
CO5. Course Co On success CO1. CO2.	create shell programs using basic s Non Maj ode: GLCA4N ful completion of the course, the learn describe tables, links, frames, CSS illustrate the use of markup tags and	statements, commands and operators.

	Non Majo	or Course
Course Code	e: GLCA4N	Course Title: Web Designing
On successfu	l completion of the course, the learn	ters should be able to
CO1.	describe tables, links, frames, CSS	and character formatting.
CO2.	illustrate the use of markup tags ar	nd formatting in web pages.
CO3.	create tables using various attribut	es.
CO4.	design web pages using frames and	d links.
CO5.	develop and make use of cascading	g style sheets in web pages.

	Job Orier	ted Course	
Course Co	de: GLJO62		ndroid Application Development
On success	ful completion of the course, the lear		
CO1.	describe Android features, archite	cture, activities, me	nus and UI design.
CO2.	create activity and layouts for And	droid App.	
CO3.	design menus in the UI layout.		
CO4.	make use of files and databases.		
CO5.	express the advanced concepts of	android.	
		ted Course	ndroid Application
Course Co	Job Orier de: GLJO62L	Course Title: A	ndroid Application evelopment Lab
		Course Title: An	evelopment Lab
	de: GLJO62L	Course Title: An Do ners should be able	evelopment Lab
On success	de: GLJO62L ful completion of the course, the lear	Course Title: An Do ners should be able s in Android App.	evelopment Lab
On success CO1.	de: GLJO62L ful completion of the course, the lear design user Interfaces and Layout	Course Title: An Do ners should be able s in Android App.	evelopment Lab
On success CO1. CO2.	de: GLJO62L ful completion of the course, the lear design user Interfaces and Layout develop simple Android applicatio	Course Title: An Do ners should be able s in Android App.	evelopment Lab

CO2.	develop simple Android applications.
CO3.	build app using menus.
CO4.	implement database concepts in Android.
CO5.	create web pages using web view control.

Course Title: Office Automation Lab he course, the learners should be able to at the word document. document to perform mail merge operation. charts and perform sort and filter using MS-Excel. ng MS-Word and MS-Access. tion using MS-PowerPoint and MS-Word. Add on Course Course Title: Image Design using Photoshop Lab he course, the learners should be able to ous tools in Photoshop designs. d animating effects. ions using Photoshop. : types of cards.	Add	l on	Course
at the word document. document to perform mail merge operation. charts and perform sort and filter using MS-Excel. ng MS-Word and MS-Access. tion using MS-PowerPoint and MS-Word.	,		Course Title: Office Automation Lab
document to perform mail merge operation. charts and perform sort and filter using MS-Excel. ng MS-Word and MS-Access. tion using MS-PowerPoint and MS-Word.	the course, the l	earn	ers should be able to
charts and perform sort and filter using MS-Excel. ng MS-Word and MS-Access. tion using MS-PowerPoint and MS-Word.	at the word doc	cume	ent.
ng MS-Word and MS-Access. tion using MS-PowerPoint and MS-Word.	document to pe	erfor	m mail merge operation.
tion using MS-PowerPoint and MS-Word.	charts and perf	form	sort and filter using MS-Excel.
Add on Course	ng MS-Word ar	nd M	IS-Access.
Add on Course Course Title: Image Design using Photoshop Lab Photoshop Lab he course, the learners should be able to ous tools in Photoshop ous tools in Photoshop out colspan="2">out colspan="2">out cols in Photoshop ous tools in Photoshop out colspan="2">out colspan="2" out	tion using MS-l	Pow	erPoint and MS-Word.
bus tools in Photoshop designs. d animating effects. ions using Photoshop.	Add	l on	Course Course Title: Image Design using
Photoshop Lab he course, the learners should be able to ous tools in Photoshop designs. d animating effects. ions using Photoshop. types of cards.			
bus tools in Photoshop designs. d animating effects. ions using Photoshop.	Add	l on	Course Course Title: Image Design using Photoshop Lab
designs. I animating effects. ions using Photoshop. types of cards.	Add he course, the le	l on learn	Course Course Title: Image Design using Photoshop Lab ers should be able to
d animating effects. ions using Photoshop.	Add he course, the le ous tools in Pho	l on learn	Course Course Title: Image Design using Photoshop Lab ers should be able to nop
ions using Photoshop.	Add the course, the le ous tools in Pho	1 on learn	Course Course Title: Image Design using Photoshop Lab ers should be able to nop
types of cards.	Add the course, the le ous tools in Pho r designs. d animating effe	1 on learn otosh	Course Course Title: Image Design using Photoshop Lab ers should be able to hop
	Add the course, the la ous tools in Pho r designs. d animating effo tions using Phot	l on learn otosh	Course Course Title: Image Design using Photoshop Lab ers should be able to nop op.
	Add he course, the le ous tools in Pho designs. d animating effe ions using Phot types of cards.	l on learn otosh cects.	Course Course Title: Image Design using Photoshop Lab ers should be able to op.
	Add he course, the le ous tools in Pho designs. d animating effe ions using Phot types of cards.	l on learn otosh čects.	Course Course Title: Image Design using Photoshop Lab ers should be able to nop op.

	Add on	Cou
Course Co	de: GLCAEC1L	Cou
On success	ful completion of the course, the learn	ners s
CO1.	create and format the word docum	ent.
CO2.	construct word document to perfor	rm ma
CO3.	generate series, charts and perform	n sort
CO4.	build tables using MS-Word and M	/IS-A
CO5.	design presentation using MS-Pov	verPo
Course Co	Add on de: GLCAEC2L	Сои
Course Co	Add on de: GLCAEC2L	Cou
Course Co On success	Add on de: GLCAEC2L ful completion of the course, the learn	Cou Cou
Course Co On success CO1.	Add on de: GLCAEC2L ful completion of the course, the learn implement various tools in Photos	Cou Cou ners sl
Course Co On success CO1. CO2.	Add on de: GLCAEC2L ful completion of the course, the learn implement various tools in Photos apply layers for designs.	Cou Cou ners sl
Course Co On success CO1. CO2. CO3.	Add on de: GLCAEC2L ful completion of the course, the learn implement various tools in Photos apply layers for designs. develop still and animating effects	Cou Cou hers sl hop
Course Co On success CO1. CO2. CO3. CO4.	Add on de: GLCAEC2L ful completion of the course, the learn implement various tools in Photos apply layers for designs. develop still and animating effects create presentations using Photosh design different types of cards.	Cou Cou hers s hop

Add on Course			
Course Co	ourse Code: GLCAEC3 Course Title: Introduction to Python Programming		
On success	ful completion of the course, the learn	ners should be able to	
CO1.	express the basic and object-oriented concepts of Python.		
CO2.	define statements, functions, files, exceptions, class and objects.		
CO3.	implement the decision making sta	atements and simple file concepts in scripts.	
CO4.	develop scripts using built-in and	user-defined functions.	
CO5.	construct scripts using exceptions,	, strings and lists.	
Course Co		1 Course Course Title: Python Programming Lab	
	de: GLCAEC3L	Course Title: Python Programming Lab	
		Course Title: Python Programming Lab	
	de: GLCAEC3L	Course Title: Python Programming Lab	
On success	de: GLCAEC3L ful completion of the course, the learn	Course Title: Python Programming Lab ners should be able to nd looping statements.	
On success CO1.	de: GLCAEC3L ful completion of the course, the learn design scripts using conditional and develop python programs using and	Course Title: Python Programming Lab ners should be able to nd looping statements.	
On success CO1. CO2.	de: GLCAEC3L ful completion of the course, the learn design scripts using conditional and develop python programs using and	Course Title: Python Programming Lab ners should be able to nd looping statements. rays and lists. rsive functions and lambda functions.	
On success CO1. CO2. CO3.	de: GLCAEC3L ful completion of the course, the learn design scripts using conditional and develop python programs using ar build scripts using functions, recur	Course Title: Python Programming Lab ners should be able to nd looping statements. rrays and lists. rsive functions and lambda functions. dictionaries.	
On success CO1. CO2. CO3. CO4.	de: GLCAEC3L ful completion of the course, the learn design scripts using conditional and develop python programs using ar build scripts using functions, recurs construct scripts using tuples and of	Course Title: Python Programming Lab ners should be able to nd looping statements. rrays and lists. rsive functions and lambda functions. dictionaries.	
On success CO1. CO2. CO3. CO4.	de: GLCAEC3L ful completion of the course, the learn design scripts using conditional and develop python programs using ar build scripts using functions, recurs construct scripts using tuples and of	Course Title: Python Programming Lab ners should be able to nd looping statements. rrays and lists. rsive functions and lambda functions. dictionaries.	

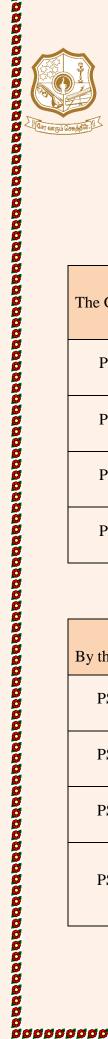
Add On Course				
Course Code	e: GLCAEC3L	Course Title: Python Programming Lab		
On successful completion of the course, the learners should be able to				
CO1.	design scripts using conditional and looping statements.			
CO2.	develop python programs using arrays and lists.			
CO3.	build scripts using functions, recursive functions and lambda functions.			
CO4.	construct scripts using tuples and dictionaries.			
CO5.	create simple file-oriented scripts.			

	Add o	n Course	
Course Co	de: GLCAEC4L	Course Title: Mobile Application Development Lab	
On success	ful completion of the course, the least		
CO1.	make use of mobile application f	ramework.	
CO2.	design applications using GUI components, font and colors.		
CO3.	build mobile applications using graphical primitives.		
CO4.	create mobile apps to implement	multithreading concept.	
	implement database in mobile apps.		
	de: GLCAEC5L	n Course Course Title: Open Source Programming Lab	
Course Co	Add o	n Course Course Title: Open Source Programming Lab	
Course Co	Add o de: GLCAEC5L	n Course Course Title: Open Source Programming Lab rners should be able to	
Course Co On success	Add o de: GLCAEC5L ful completion of the course, the lear	n Course Course Title: Open Source Programming Lab rners should be able to g python, perl and ruby.	
Course Co On success CO1.	Add o de: GLCAEC5L ful completion of the course, the lead design undemanding scripts using	n Course Course Title: Open Source Programming Lab rners should be able to g python, perl and ruby. urrays, strings and lists.	
Course Co On success CO1. CO2.	Add or de: GLCAEC5L ful completion of the course, the lead design undemanding scripts using develop python programs using a create simple file programs using	n Course Course Title: Open Source Programming Lab rners should be able to g python, perl and ruby. urrays, strings and lists.	

CO3.	create simple file programs using python.
CO4.	implement functions and decision making statements using python, perl and rulanguages.
CO5.	build ruby scripts using decision making statements and arrays.

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Add on Course			
Course Code: GLCAEC6L Course Title: Statistical Analysis Mat Lab		Course Title: Statistical Analysis using Mat Lab	
On success	ful completion of the course, the lear	ners should be able to	
CO1.	create simple Matlab files.		
CO2.	design Matlab files to perform ma	atrix and vector operations.	
CO3.	construct Matlab files using struct	tures and functions.	
CO4.	develop Matlab files to solve linea	ar differential equations.	
CO5.	build programs using simulink.		



THE STANDARD FIREWORKS RAJARATNAM COLLEGE FOR WOMEN (AUTONOMOUS), SIVAKASI – 626 123.

(Affiliated to Madurai Kamaraj University, Re-accredited with A Grade by NAAC, College with Potential for Excellence by UGC and Mentor Institution under UGC PARAMARSH)

DEPARTMENT OF COMPUTER APPLICATIONS

PG DEGREE PROGRAMME IN COMPUTER APPLICATIONS

PROGRAMME EDUCATIONAL OBJECTIVES

The Graduates will

PEO1.	emerge as successful professionals ready for Industry, Government sectors and
TLOI.	Consultancy firms.
PEO2.	comprehend, analyze, design and construct computing solutions for the real-time
FEO2.	problems and relate them with research.
PEO3.	act with creative, innovative and entrepreneurial potentials using latest technology
T EO5.	and trends.
PEO4.	develop as socially responsible and value driven citizens committed to sustainable
r 1:04.	development through Computing skills and lifelong learning.

PROGRAMME SPECIFIC OUTCOMES

By the Completion of M.C.A programme, the learners will be able to

PSO1.	apply knowledge and promote technological advances and crack competitive
	examinations.
PSO2.	implement and evaluate a computer-based system, process or component to
1502.	meet the stakeholder needs and become globally competent.
PSO3.	use current technologies, skills and models in the computing discipline to
1505.	enhance research.
	excel in leadership and managerial skills by adopting professional ethics
PSO4.	through communicative technical information in both verbal and written format.

	professional.
PSO6.	build cross cultural, societal, professional, legal and ethical issues prevailing in
1500.	industry.
PSO7.	obtain the confidence for self and continuous life-long learning as a computing
P307.	professional to have a successful career.

		ability of leadership, analytical reasoning for	
PSO5.	solving real time critical problem professional.	ns and strong human values for responsible	
PSO6.	build cross cultural, societal, profe	essional, legal and ethical issues prevailing in	
PSO7.	obtain the confidence for self and continuous life-long learning as a computing professional to have a successful career.		
	COURSE O	UTCOME	
	Core	Course	
Course Co	de: HLCA11	Course Title: Computer Organization	
On success	ful completion of the course, the learn	ners should be able to	
CO1.	describe fundamental components	of a digital computer and its operations.	
CO2.	solve the problems in various num	ber systems and Boolean algebra.	
CO3.	outline the working of logic circui	ts and ALU.	
CO4.	exemplify the purpose of Memory	, Input Output devices and Control unit.	
CO5.	elucidate addressing techniques an	nd pipelining concepts in computer system.	

Core Course				
Course Code	e: HLCA12	Course Title:	Discrete Structures	
On successful completion of the course, the learners should be able to				
CO1.	list out the basic principles of discrete mathematical structures.			
CO2.	describe computer programs in a f	describe computer programs in a formal mathematical manner.		
CO3.	apply mathematical logic to solve problems.			
CO4.	evaluate the system of linear equat	ions by the use o	f matrices.	
CO5.	design and manipulate the differen	t concepts in The	cory of Automata.	

Core Course			
Course Co	de: HLCA12	Course Title: Discrete Structures	
On successf	ful completion of the course, the learn	ners should be able to	
CO1.	list out the basic principles of discrete mathematical structures.		
CO2.	describe computer programs in a f	formal mathematical manner.	
CO3.	apply mathematical logic to solve	problems.	
CO4.	evaluate the system of linear equa	tions by the use of matrices.	
CO5.	design and manipulate the differen	nt concepts in Theory of Automata.	
Course Co	de: HLCA13	Course Title: Data Structures and Algorithms	
On successf	ful completion of the course, the learn		
CO1.	describe the linear and nonlinear d	lata structures.	
CO2.	illustrate the concepts of linked Li	ists, Trees and Graphs.	
002	list various sorting techniques for	solving a problem.	
CO3.	select appropriate algorithmic con	cept to solve real time problems.	
CO3.	differentiate the dynamic programming and greedy methods.		
	differentiate the dynamic program	ming and greedy methods.	

	Core	Course
Course Co	de: HLCA14	Course Title: Object Oriented Programming with C++
On success	ful completion of the course, the learn	ners should be able to
CO1.	explain the Class, Objects and Pol	ymorphism.
CO2.	create object oriented programs us	sing Pointers and Function Overloading.
CO3.	apply the concept of Inheritance and	nd run time Polymorphism.
CO4.	elaborate templates and Exception	Handling mechanism.
CO4. CO5.	describe the basics of I/O Streams	-
CO5.	describe the basics of I/O Streams	
CO5.	describe the basics of I/O Streams Core de: HLCA1L1	Course Course Title: Data Structures and Algorithms Lab
CO5.	describe the basics of I/O Streams	Course Course Title: Data Structures and Algorithms Lab
CO5.	describe the basics of I/O Streams Core de: HLCA1L1 ful completion of the course, the learn	Course Course Title: Data Structures and Algorithms Lab
CO5. Course Co	describe the basics of I/O Streams Core de: HLCA1L1 ful completion of the course, the learn	Course Course Course Title: Data Structures and Algorithms Lab ners should be able to ing linear and non linear data structures.
CO5. Course Co On success CO1.	describe the basics of I/O Streams Core de: HLCA1L1 ful completion of the course, the learn construct programs for implement	Course Course Course Title: Data Structures and Algorithms Lab ners should be able to ing linear and non linear data structures.
CO5. Course Co On success CO1. CO2.	describe the basics of I/O Streams Core de: HLCA1L1 ful completion of the course, the learn construct programs for implement make use of different data structur	Course Course Course Title: Data Structures and Algorithms Lab ners should be able to ing linear and non linear data structures. re operations.

	Core (Course	
Course Code	e: HLCA1L1	Course Title:	Data Structures and Algorithms Lab
On successfu	l completion of the course, the learn	ners should be at	ble to
CO1.	construct programs for implementi	ing linear and no	on linear data structures.
CO2.	make use of different data structure	e operations.	
CO3.	build searching techniques.		
CO4.	create programs for various sorting	g algorithms.	
CO5.	develop programs for binary tree a	pplications.	

	Со	re Course
Course Co	ode: HLCA1L2	Course Title: C++ Programming Lab
On succes	sful completion of the course, the le	earners should be able to
C01.	make use of Arrays.	
CO2.	create Inline Function and Frie	nd Functions.
CO3.	design programs using Functio	n and Operator Overloading.
CO4.	construct programs using Inher	ritance.
CO5.		xception Handling mechanism.
	Со	re Course
Course Co	Со	re Course Course Title: Operating Systems
Course Co	Co ode: HLCA21 sful completion of the course, the le	re Course Course Title: Operating Systems
Course Co	Co ode: HLCA21 sful completion of the course, the le express the basic concepts and	re Course Course Title: Operating Systems earners should be able to
Course Co On success CO1.	Co ode: HLCA21 sful completion of the course, the left express the basic concepts and outline the various operations a	re Course Course Title: Operating Systems earners should be able to structures of Operating System. and scheduling algorithms of processes.
Course Co On success CO1. CO2.	Co ode: HLCA21 sful completion of the course, the left express the basic concepts and outline the various operations a illustrate various Synchronization	re Course Course Title: Operating Systems earners should be able to structures of Operating System. and scheduling algorithms of processes. ion problems and deadlock prevention, detection and

	Core (Course	
Course Cod	e: HLCA21	Course Title:	Operating Systems
On successfu	l completion of the course, the learn	ers should be ab	le to
CO1.	express the basic concepts and stru	ctures of Operat	ing System.
CO2.	outline the various operations and	scheduling algor	ithms of processes.
CO3.	illustrate various Synchronization recovery techniques.	problems and de	adlock prevention, detection and
CO4.	discuss the Memory Management	techniques.	
CO5.	describe the File systems and I/O s	systems.	

	Core	Course
Course Co	de: HLCA22	Course Title: Java Programming
On success	ful completion of the course, the learn	ners should be able to
CO1.	express the features, data types, st	atements, class and objects.
CO2.	create user-defined packages, inter	rfaces and exceptions.
CO3.	implement the concept of multi-th	read, I/O streams and strings.
CO4.	design applications using AWT co	ontrols.
CO5.	outline the theory of swing control	ls, networking and servlets.
	de: HLCA23	Course Course Title: Database Management System
	de: HLCA23	Course Title: Database Management System
	ful completion of the course, the learn	Course Title: Database Management System
On success	ful completion of the course, the learn	Course Title: Database Management System ners should be able to base architecture, relational and ER models.
On success: CO1.	Ful completion of the course, the learn explain the DBMS concepts, data create database design using the E	Course Title: Database Management System ners should be able to base architecture, relational and ER models.
On success: CO1. CO2.	Ful completion of the course, the learn explain the DBMS concepts, datal create database design using the E formulate simple and complex que	Course Title: Database Management System ners should be able to base architecture, relational and ER models.

	Core	Course
Course Code	e: HLCA23	Course Title: Database Management System
On successfu	l completion of the course, the learn	ners should be able to
CO1.	explain the DBMS concepts, datab	ase architecture, relational and ER models.
CO2.	create database design using the E	ntity Relationship model.
CO3.	formulate simple and complex que	ery statements using Structured Query Language.
CO4.	describe the formal relational quer concurrency control.	y languages, transaction management and
CO5.	discuss the recovery system and no	ormalization techniques.

	Core	Course	
Course Co	de: HLCA24	Course Title:	Microprocessors and Interfacing
On success	ful completion of the course, the learn	ners should be at	<u> </u>
CO1.	describe the architecture and organ	nization of 8085,	8086 and 80386 microprocesso
CO2.	distinguish the addressing modes of	of 8085,8086 and	1 80386 microprocessor.
CO3.	use different types of instruction s	ets and interrupt	S.
CO4.	interpret pins, signals and bus tran	sfer techniques of	of different microprocessors.
CO5.	illustrate the peripheral interfacing	Ţ.	
	de: HLCA2E	e Course Course Title:	Multimedia Systems
		e Course Course Title:	
	de: HLCA2E	e Course Course Title: ners should be at	
On success	de: HLCA2E ful completion of the course, the learn	e Course Course Title: hers should be at ltimedia.	ble to
On success CO1.	de: HLCA2E ful completion of the course, the learn describe the basic concepts of Mul	e Course Course Title: ners should be at ltimedia. igital audio & vi	ble to
On success CO1. CO2.	de: HLCA2E ful completion of the course, the learn describe the basic concepts of Mul summarize the characteristics of d	e Course Course Title: ners should be at ltimedia. igital audio & vi	ble to

	Elective	Course	
Course Code	e: HLCA2E	Course Title: M	Iultimedia Systems
On successfu	On successful completion of the course, the learners should be able to		
CO1.	describe the basic concepts of Mul	timedia.	
CO2.	summarize the characteristics of di	gital audio & video	0.
CO3.	critique the Photoshop workspace.		
CO4.	manipulate different Photoshop co	lor modes.	
CO5.	organize images and process files	using Bridge in Pho	otoshop

	Core	Course
Course Co	de: HLCA2L1	Course Title: Java Programming Lab
On success	ful completion of the course, the lea	mers should be able to
CO1.	develop programs using array, str	ing, class and inheritance.
CO2.	create user-defined packages, inte	erfaces and exceptions.
CO3.	implement the concept of multi-t	hread.
CO4.	design applications using Applet	and AWT and swing controls.
CO5.	construct network applications.	
	de: HLCA2L2	Course Course Title: DBMS Lab rners should be able to
On success	de: HLCA2L2	Course Title: DBMS Lab
	de: HLCA2L2	Course Title: DBMS Lab
On success	de: HLCA2L2	Course Title: DBMS Lab
On successi CO1.	de: HLCA2L2 ful completion of the course, the lea create the components of databas develop PL/SQL using cursors.	Course Title: DBMS Lab
On successi CO1. CO2.	de: HLCA2L2 ful completion of the course, the lea create the components of databas develop PL/SQL using cursors.	Course Title: DBMS Lab mers should be able to e and manipulate the data in the database.
On success CO1. CO2. CO3.	de: HLCA2L2 ful completion of the course, the leat create the components of databas develop PL/SQL using cursors. build PL/SQL programs using ful	Course Title: DBMS Lab mers should be able to e and manipulate the data in the database.

	Core (Course
Course Code	e: HLCA2L2	Course Title: DBMS Lab
On successfu	l completion of the course, the learn	ners should be able to
CO1.	create the components of database	and manipulate the data in the database.
CO2.	develop PL/SQL using cursors.	
CO3.	build PL/SQL programs using fun	actions, procedures and packages.
CO4.	create PL/SQL blocks, exception	and triggers.
CO5.	develop applications using forms.	

	Core (Course
Course Code	e: HLCA31	Course Title: Resource Management Techniques
On successfu	l completion of the course, the learn	ers should be able to
CO1.	summarize various algorithms, rule	es and terms to solve decision making problems.
CO2.	solve problems using Probability a	nd Markov Analysis.
CO3.	use various methods to solve Trans	sportation and Assignment Problems.
CO4.	analyze various models in Inventor	ry Theory and Queuing Theory.
CO5.	build networks to plan, schedule an	nd control Project activities.

	Core	Course
Course Co	de: HLCA31	Course Title: Resource Management Techniques
On success	ful completion of the course, the lea	rners should be able to
CO1.	summarize various algorithms, ru	les and terms to solve decision making problems
CO2.	solve problems using Probability	and Markov Analysis.
CO3.	use various methods to solve Tra	nsportation and Assignment Problems.
CO4	analyze various models in Invent	ory Theory and Queuing Theory
CO4.		ory moory and Quoting moory.
CO4.	build networks to plan, schedule	and control Project activities.
CO5.	build networks to plan, schedule	and control Project activities. Course Course Course Title: Unix and Network
CO5.	build networks to plan, schedule	and control Project activities. Course Course Course Title: Unix and Network Programming
CO5.	build networks to plan, schedule Core Ode: HLCA32	and control Project activities. Course Course Course Title: Unix and Network Programming rners should be able to
CO5. Course Co On success	build networks to plan, schedule Core Ode: HLCA32 ful completion of the course, the lear	and control Project activities. Course Course Course Title: Unix and Network Programming rners should be able to nctions, process functions.
CO5. Course Co On success CO1.	build networks to plan, schedule Core Ode: HLCA32 ful completion of the course, the lead describe the types of files, file fut explain coprocesses, signal and t examine Inter process communic	and control Project activities.
CO5. Course Co On success CO1. CO2.	build networks to plan, schedule Core Ode: HLCA32 ful completion of the course, the lead describe the types of files, file fut explain coprocesses, signal and t	and control Project activities.

Course Code: HLCA33 Course Title: Dot NET Programming On successful completion of the course, the learners should be able to CO1. describe the components of .NET framework, Namespaces, Pointers, Delegates, features of ASP.Net and AJAX. CO2. explain about Windows Presentation Foundation and Windows Workflow Foundation. CO3. create a connection to a database and design Smart Device Applications. CO4. summarize the properties, methods and events of Standard controls and Navigation Controls. CO5. make use of ASP.Net3.5 validation and database controls. Course Course Course Course Course Course CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of interrestiate and optimized object code. CO3. construct parse tree, transition diagram, NFA & DFA. CO3. make use of parsing techniques and regular expressions.	On successful CO1. CO2. CO3. CO4.	l completion of the course, the learr describe the components of .NET : features of ASP.Net and AJAX. explain about Windows Presentation Foundation. create a connection to a database a summarize the properties, methods	hers should be able to framework, Namespaces, Pointers, Delegates, on Foundation and Windows Workflow
CO1. describe the components of .NET framework, Namespaces, Pointers, Delegates, features of ASP.Net and AJAX. CO2. explain about Windows Presentation Foundation and Windows Workflow Foundation. CO3. create a connection to a database and design Smart Device Applications. CO4. summarize the properties, methods and events of Standard controls and Navigation Controls. CO5. make use of ASP.Net3.5 validation and database controls. CO5. make use of ASP.Net3.5 validation and database controls. CO5. make use of ASP.Net3.5 validation and database controls. Course Course Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	CO1. CO2. CO3. CO4.	describe the components of .NET features of ASP.Net and AJAX. explain about Windows Presentation Foundation. create a connection to a database a summarize the properties, methods	framework, Namespaces, Pointers, Delegates, on Foundation and Windows Workflow
features of ASP.Net and AJAX. CO2. explain about Windows Presentation Foundation and Windows Workflow Foundation. CO3. create a connection to a database and design Smart Device Applications. CO4. summarize the properties, methods and events of Standard controls and Navigation Controls. CO5. make use of ASP.Net3.5 validation and database controls. CO5. make use of ASP.Net3.5 validation and database controls. CO5. make use of ASP.Net3.5 validation and database controls. Course Code: HLCA34 Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of interrediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	CO2. CO3. CO4.	features of ASP.Net and AJAX. explain about Windows Presentation Foundation. create a connection to a database a summarize the properties, methods	on Foundation and Windows Workflow
Foundation. Foundation. CO3. create a connection to a database and design Smart Device Applications. CO4. summarize the properties, methods and events of Standard controls and Navigation Controls. CO5. make use of ASP.Net3.5 validation and database controls. Core Course Core Course Course Cole: HLCA34 Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO4. construct parse tree, transition diagram, NFA & DFA.	CO3. CO4.	Foundation. create a connection to a database a summarize the properties, methods	
Create a connection to a database and design smart bovice reprintations. CO4. summarize the properties, methods and events of Standard controls and Navigation Controls. CO5. make use of ASP.Net3.5 validation and database controls. Core Course Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4.	CO4.	summarize the properties, methods	nd design Smart Device Applications.
Controls. Controls. CO5. make use of ASP.Net3.5 validation and database controls. Core Course Core Course Course Code: HLCA34 Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.			
Core Course Course Course Course Code: HLCA34 Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	CO5.		s and events of Standard controls and Navigation
Course Code: HLCA34 Course Title: Principles of Compiler Design On successful completion of the course, the learners should be able to On successful completion of the course, the learners should be able to CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.		make use of ASP.Net3.5 validation	n and database controls.
CO1. describe the structure and phases of compiler. CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	Course Code	: HLCA34	
CO2. explain the tokens, finite automata, context free grammars and parsing techniques CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	On successful	completion of the course, the learn	ners should be able to
CO3. illustrate the generation of intermediate and optimized object code. CO4. construct parse tree, transition diagram, NFA & DFA.	CO1.	describe the structure and phases of	of compiler.
CO4. construct parse tree, transition diagram, NFA & DFA.	CO2.	explain the tokens, finite automata, context free grammars and parsing techniques.	
	CO3.	illustrate the generation of intermediate and optimized object code.	
CO5. make use of parsing techniques and regular expressions.	CO4.	construct parse tree, transition diagram, NFA & DFA.	
	CO5.	make use of parsing techniques and regular expressions.	

Core Course			
Course Code	e: HLCA34	Course Title:	Principles of Compiler Design
On successfu	On successful completion of the course, the learners should be able to		
CO1.	CO1. describe the structure and phases of compiler.		
CO2.	explain the tokens, finite automata, context free grammars and parsing techniques.		
CO3.	illustrate the generation of intermediate and optimized object code.		
CO4.	construct parse tree, transition diagram, NFA & DFA.		
CO5.	make use of parsing techniques and regular expressions.		

Core Course Course Code: HLCA3L1 Course Title: Drogramming Lab On successful completion of the course, the learners should be able to CO1. implement basic UNIX Commands. CO2. make use of System Calls. CO3. create program using signals. CO3. create program using signals. CO3. construct programs for Inter process communication using Pipes, FIFO, Message Queue and semaphore. CO3. develop networking programs using TCP and UDP. Network in the program using TCP and UDP. Course Code: HLCA3L2 Course Title: Det NET Programming Lab On successful completion of the course, the learners should be able to CO1. develop simple applications using VB.Net. CO2. create Simple Windows Applications with Database using ADO.Net. CO3. construct Web based Programs. CO3. combine Windows Applications with Database using ADO.Net. CO4. construct Web based Programs. CO3. build Master Pages. build Master Pages. CO3.

Core Course			
Course Code: HLCA3L2		Course Title:	Dot NET Programming Lab
On successfu	On successful completion of the course, the learners should be able to		
CO1.	CO1. develop simple applications using VB.Net.		
CO2.	create Simple Windowing Applications in C#.Net.		
CO3.	combine Windows Applications with Database using ADO.Net.		
CO4.	CO4. construct Web based Programs.		
CO5.	build Master Pages.		

Core Course			
Course Code: HLCA41 Course Title: Software Engineering			
On success	ful completion of the course, the learn	ners should be able to	
CO1.	discuss software, process, process and testing techniques.	ss models, requirements, design, quality, review	
CO2.	describe the elements and approarrisk management.	ches of SQA, estimation of software projects and	
CO3.	analyze the Software Testing S applications	Strategies for conventional and web oriented	
CO4.	examine the process models, review techniques and the metrics in the process and		
	project domains.		
CO5.	explore project scheduling, mainte	enance and reengineering.	
CO5.	explore project scheduling, mainte	enance and reengineering.	
	explore project scheduling, mainte		
Course Co	explore project scheduling, mainte	Course Course Title: Middleware Technologies	
Course Co	explore project scheduling, mainter Core de: HLCA42 ful completion of the course, the learn	Course Course Title: Middleware Technologies	
Course Co On success	explore project scheduling, mainter Core de: HLCA42 ful completion of the course, the learn	Course Course Title: Middleware Technologies ners should be able to , building blocks and CORBA overview.	
Course Co On success CO1.	explore project scheduling, mainter Core of de: HLCA42 ful completion of the course, the learn describe Client/Server computing, discuss OMG IDL to Java mappin	Course Course Title: Middleware Technologies ners should be able to , building blocks and CORBA overview.	
Course Co On success CO1. CO2.	explore project scheduling, mainter explore project scheduling, mainter Core of de: HLCA42 ful completion of the course, the learn describe Client/Server computing, discuss OMG IDL to Java mappin illustrate the components, interfac	Course Course Title: Middleware Technologies ners should be able to , building blocks and CORBA overview. ag and ORB run time system. res and dynamic linking of COM, HRESULTs,	

Core Course			
Course Code	e: HLCA42	Course Title:	Middleware Technologies
On successfu	On successful completion of the course, the learners should be able to		
CO1. describe Client/Server computing, building blocks and CORBA overview.			
CO2.	discuss OMG IDL to Java mapping and ORB run time system.		
CO3. illustrate the components, interfaces and dynamic linking of COM, HRESULTs, GUID, Class Factory.			
CO4.	CO4. create simple Java ORB applications.		
CO5.	build simple COM applications.		

	Core (Course
Course Co	de: HLCA43	Course Title: XML And Web Services
On success	ful completion of the course, the learn	ners should be able to
CO1.	explain the basics of XML, DTD,	Schemas, CSS, XSL and Web services.
CO2.	create well formed XML docume	nts using CSS, DTD and schemas.
CO3.	analyze XML Query and schema.	
CO4.	discuss XLinks, XPointer and XH	TML.
CO5.	develop web applications using XHTML and Web Services using SOAP and WSDL.	
Course Co		Course Title: Computer Networks
Course Co		Course Course Title: Computer Networks
		Course Title: Computer Networks
	de: HLCA44 ful completion of the course, the learr	Course Title: Computer Networks
On success	de: HLCA44 ful completion of the course, the learr describe the networks terminologi Wireless WANs	Course Title: Computer Networks ners should be able to es, the reference models, connecting devices and
On success CO1.	de: HLCA44 ful completion of the course, the learr describe the networks terminologi Wireless WANs discuss the transmission media, transport layer.	Course Title: Computer Networks
On success CO1. CO2.	de: HLCA44 ful completion of the course, the learr describe the networks terminologi Wireless WANs discuss the transmission media, transport layer. solve problems in multiplexing algorithms	Course Title: Computer Networks ners should be able to es, the reference models, connecting devices and switching and design issues of data link and

Core Course			
Course Code	Course Title: Computer Networks		
On successfu	On successful completion of the course, the learners should be able to		
C01.	describe the networks terminologi Wireless WANs	es, the reference models, connecting devices and	
CO2.	discuss the transmission media, switching and design issues of data link and transport layer.		
CO3.	CO3. solve problems in multiplexing, error detection & correction and routin algorithms		
CO4.	outline the protocols of data link, network, transport and application layers.		
CO5.	analyze routing algorithms, framin	g, flow controls and domain name system.	

	Core (Course	
Course Code	e: HLCA4L1	Course Title:	Middleware Technology Lab
On successfu	l completion of the course, the learn	ers should be ab	ble to
C01.	develop applications using RMI in	Java.	
CO2.	design the components in CORBA		
CO3.	create IDL file in Java.		
CO4.	build simple COM applications.		
CO5.	construct COM Components.		

	Core	Course	
Course Co	de: HLCA4L1	Course Title:	Middleware Technology Lab
On success	ful completion of the course, the lear	rners should be ab	
CO1.	develop applications using RMI i	n Java.	
CO2.	design the components in CORBA	А.	
CO3.	create IDL file in Java.		
CO4.	build simple COM applications.		
	build simple COM applications.		
CO5.	construct COM Components.	Course	
			Xml and Web Services La
Course Co	Core	Course Title:	
Course Co	Core de: HLCA4L2	Course Title:	le to
Course Co On success	Core de: HLCA4L2 ful completion of the course, the lear	Course Title: rners should be ab nents using CSS a	le to
Course Co On success CO1.	Core ode: HLCA4L2 ful completion of the course, the lear create a well-formed XML docun	Course Title: rners should be ab nents using CSS a	le to
Course Co On success CO1. CO2.	Core ode: HLCA4L2 ful completion of the course, the lear create a well-formed XML docun develop XML documents using E	Course Title: rners should be ab nents using CSS a	le to

	Core	Course	
Course Co	ode: HLCA51	Course Title:	Android Application Development
On success	ful completion of the course, the lear	mers should be ab	le to
CO1.	describe the working of Android Software Development Tools.		
CO2.	discuss the creation of basic Widg Menus and ActionBars.	gets, selection wic	lgets, Dialog boxes, Interactive
CO3.	examine the utilization of resource	ces, media, Googl	e maps and SMS.
CO4.	operate with selection widgets, m	nenus, dialog box	es and databases.
	operate with selection widgets, menus, dialog boxes and databases.		
CO5.	create Android applications using	different widgets	s and simple services.
			Data Mining and
Course Co	Core	Course Course Title:	Data Mining and Warehousing
Course Co	Core Dde: HLCA52	Course Course Title: mers should be ab	Data Mining and Warehousing
Course Co On success	Core Ode: HLCA52 Sful completion of the course, the lear describe the kinds of data, pat	Course Course Title: Thers should be ab terns, data cube	Data Mining and Warehousing le to computation and data mining
Course Co On success CO1.	Core Ode: HLCA52 Sful completion of the course, the lear describe the kinds of data, patt techniques.	Course Course Title: There should be ab terns, data cube ube and perform p	Data Mining and Warehousing de to computation and data mining preprocessing methods.
Course Co On success CO1. CO2.	Core Ode: HLCA52 oful completion of the course, the lear describe the kinds of data, path techniques. apply OLAP operations in data cu	Course Course Title: There should be ab terns, data cube ube and perform p mulate rules using	Data Mining and Warehousing ole to computation and data mining preprocessing methods. g algorithms.

	Core (Course	
Course Code	e: HLCA52	Course Title:	Data Mining and Warehousing
On successful completion of the course, the learners should be able to			
CO1.	describe the kinds of data, patter techniques.	erns, data cube	computation and data mining
CO2.	apply OLAP operations in data cul	be and perform p	reprocessing methods.
CO3.	find the frequent itemsets and form	nulate rules using	g algorithms.
CO4.	explain classification, clustering a	nd Outlier detect	ion algorithms.
CO5.	compare various data mining Tech	niques.	

Course Code: HLCA53 Course Title: Security in Computing On successful completion of the course, the learners should be able to CO1. explain the concepts of computer security, algorithms of cryptography, program security and protection mechanism CO2. analyze the encryption algorithms, firewalls to ensure security. CO3. discuss the database and data mining security. CO4. outline the threats in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and I security. Core Course Course Course Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.		le: HLCA53	
CO1. explain the concepts of computer security, algorithms of cryptography, program security and protection mechanism CO2. analyze the encryption algorithms, firewalls to ensure security. CO3. discuss the database and data mining security. CO4. outline the threats in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and I security. Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	Or successf		Course Title: Security in Computing
CO1. security and protection mechanism CO2. analyze the encryption algorithms, firewalls to ensure security. CO3. discuss the database and data mining security. CO4. outline the threats in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and I security. Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	On successio	ul completion of the course, the lean	mers should be able to
CO3. discuss the database and data mining security. CO4. outline the threats in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and I security. Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	CO1.		
CO4. outline the threats in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and I security. Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	CO2.		
Contract of the threads in network and network security controls. CO5. describe user authentication mechanism, intrusion detection systems and II security. Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	CO3.	discuss the database and data min	ing security.
security. Core Course Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	CO4.	outline the threats in network and	network security controls.
Core Course Course Code: HLCA5L1 Course Title: Android Application Development Lab On successful completion of the course, the learners should be able to On successful completion of the course, the learners should be able to CO1. develop simple Android Applications using Basic Widgets. CO2. create applications using scrollview and selection Widgets.	CO5.		echanism, intrusion detection systems and II
CO2. create applications using scrollview and selection Widgets.	On successfu	ul completion of the course, the lear	mers should be able to
	CO1.	develop simple Android Applicat	ions using Basic Widgets.
CO3. design applications using Menus and Action bars.	CO2.	create applications using scrollvi	ew and selection Widgets.
	CO3.	design applications using Menus	and Action bars.
CO4. formulate the applications to connect with the SQLite Database.	CO4.	formulate the applications to con	nect with the SQLite Database.
CO5. build advanced Android Programs for publishing.	CO5.	build advanced Android Program	ns for publishing.

		Core Course
Course Code	e: HLCA5L1	Course Title: Android Application Development Lab
On successfu	l completion of the cou	rse, the learners should be able to
C01.	develop simple Andro	id Applications using Basic Widgets.
CO2.	create applications us	ing scrollview and selection Widgets.
CO3.	design applications us	sing Menus and Action bars.
CO4.	formulate the application	tions to connect with the SQLite Database.
CO5.	build advanced Andro	oid Programs for publishing.

	Core	Course	
Course Co	de: HLCA5L2	Course Title:	Software Development Lab
On success	ful completion of the course, the learn	ners should be ab	le to
CO1.	create programs using Advanced Java Concepts.		
CO2.	develop programs using Server sid	develop programs using Server side scripts.	
CO3.	apply Data Mining and Image Pro	ocessing techniqu	ies.
CO4.	construct UML diagrams.		
CO5.	design programs using Networking		
Course Co		Course	PS algorithms. Project Work and Viva
	Core (de: HLCA6P	Course Course Title:	Project Work and Viva voce
	Core	Course Course Title:	Project Work and Viva voce
	Core (de: HLCA6P	Course Course Title: ners should be ab	Project Work and Viva voce
On success	Core de: HLCA6P ful completion of the course, the learn	Course Course Title: ners should be ab olutions for real-	Project Work and Viva voce le to time problem statement.
On success CO1.	Core de: HLCA6P ful completion of the course, the learn assess the literature and develop so make use of hardware and/or soft	Course Course Title: ners should be ab olutions for real- ware techniques	Project Work and Viva voce le to time problem statement.
On success CO1. CO2.	Core (de: HLCA6P ful completion of the course, the learn assess the literature and develop so make use of hardware and/or soft competency.	Course Course Title: ners should be ab olutions for real- ware techniques lanned project.	Project Work and Viva voce le to time problem statement.

	Core	Course	
Course Code	e: HLCA6P	Course Title:	Project Work and Viva voce
On successfu	l completion of the course, the learn	ners should be ab	ble to
CO1.	assess the literature and develop so	olutions for real-	time problem statement.
CO2.	make use of hardware and/or soft competency.	ware techniques	for business to meet the global
CO3.	test and analyze the modules of pl	anned project.	
CO4.	develop technical report and deliv	er presentation.	
CO5.	apply professional and manageria	l skills to achieve	e project goal.

	Core Elect	tive Course	
Course Coo	de: HLCA1E1	Course Title:	Graphics & Multimedia
On successf	ul completion of the course, the learn	ners should be ab	le to
CO1.	outline the various computer Graphics systems.		
CO2.	generate various shapes using output primitive.		
CO3.	discuss two dimensional and three	e dimensional tra	nsformations.
CO4.	apply Clipping operations in wind Detection Methods.	ows view port an	d classify Visible-Surface
CO5.	illustrate the working of Multimed	lia elements.	
Course Coo		tive Course Course Title:	Management
	de: HLCA1E2	Course Title:	Information System
		Course Title:	Information System
	de: HLCA1E2	Course Title:	Information System le to
On successf	de: HLCA1E2	Course Title: ners should be ab	Information System le to siness.
On successf CO1.	de: HLCA1E2	Course Title: ners should be ab	Information System le to siness.
On successf CO1. CO2.	de: HLCA1E2 ful completion of the course, the learn explain the management informati outline the role of the ethical, social	Course Title: ners should be ab ton systems in bu al, and security is	Information System le to siness. ssues of information system
On successf CO1. CO2. CO3.	de: HLCA1E2 ful completion of the course, the learn explain the management informati outline the role of the ethical, soci analyze and design a system.	Course Title: ners should be ab on systems in bu al, and security is & strategic design	Information System le to siness. ssues of information system
On successf CO1. CO2. CO3. CO4.	de: HLCA1E2 ful completion of the course, the learn explain the management informati outline the role of the ethical, soci analyze and design a system. discuss the development process &	Course Title: ners should be ab on systems in bu al, and security is & strategic design	Information System le to siness. ssues of information system

	Core Elect	ive Course	
Course Code	e: HLCA1E2	Course Title:	Management Information System
On successfu	l completion of the course, the learn	ners should be abl	e to
C01.	explain the management informati	on systems in bus	iness.
CO2.	outline the role of the ethical, socia	al, and security is	sues of information systems.
CO3.	analyze and design a system.		
CO4.	discuss the development process &	z strategic design	of MIS.
CO5.	apply MIS in various manufacturing	ng Sector.	

	Core Elec	tive Course	
Course Code	: HLCA1E3	Course Title: M-Commerce	
On successful	completion of the course, the lear	ners should be able to	
CO1.	CO1. explain the concept of Mobile commerce and its applications.		
CO2.	list the types of M-commerce ser	vices.	
CO3.	recall various mobile communica	ation systems.	
CO4.	examine the different security fea	tures.	
CO5.	make use of Mobile Business inte	etive Course	
	Core Elec	tive Course	
Course Code:	Core Elec	ctive Course Course Title: 3DAnimation Techniques	
Course Code: On successful	Core Elec : HLCA3E1 completion of the course, the lear	ctive Course Course Title: 3DAnimation Techniques	
Course Code: On successful CO1.	Core Elec : HLCA3E1 completion of the course, the lear describe the fundamentals of objects.	etive Course Course Title: 3DAnimation Techniques mers should be able to	
Course Code: On successful CO1. CO2. CO3.	Core Elec : HLCA3E1 completion of the course, the lear describe the fundamentals of objects illustrate the creation, transformation	etive Course Course Title: 3DAnimation Techniques mers should be able to , effects, Modifier and splines in 3ds Max.	
Course Code: On successful CO1. CO2. CO3. CO4.	Core Elec : HLCA3E1 completion of the course, the lear describe the fundamentals of objects illustrate the creation, transformation demonstrate the workings of char 3ds Max.	Course Course Title: 3DAnimation Techniques mers should be able to , effects, Modifier and splines in 3ds Max. h, lighting and texturing of objects in Maya.	

	Core Elect	ive Course	
Course Cod	e: HLCA3E1	Course Title: 3DAnimation Techniques	
On successfu	On successful completion of the course, the learners should be able to		
C01.	describe the fundamentals of objects,	effects, Modifier and splines in 3ds Max.	
CO2.	illustrate the creation, transformation,	lighting and texturing of objects in Maya.	
CO3.	demonstrate the workings of chara 3ds Max.	cter studio, particle systems and space wraps in	
CO4.	examine the creation, modification a Maya.	and rendering of Polygon and NURBS modeling in	
CO5.	apply transformation, lighting, texturi	ng and animation effects in Maya.	

	Core Elect	ive Course	
Course Code	e: HLCA3E2	Course Title:	Distributed Systems
On successfu	l completion of the course, the learn	ners should be ab	le to
C01.	explain the distributed systems, ne	tworking and sec	curity techniques.
CO2.	summarize the distributed file sys	tem concepts.	
CO3.	examine the transaction managem	ent and concurre	ency control.
CO4.	discuss the distributed deadlock a	nd fault tolerant	services.
CO5.	outline the characteristics and web	o services of dist	ributed multimedia systems.

	Core E	lective Course	
Course Co	de: HLCA3E2	Course Title:	Distributed Systems
On success	ful completion of the course, the lo	earners should be ab	le to
CO1.	explain the distributed systems.	, networking and sec	curity techniques.
CO2.	summarize the distributed file	system concepts.	
CO3.	examine the transaction manage	gement and concurre	ency control.
CO4.	discuss the distributed deadloc	k and fault tolerant	services.
CO4. CO5.	discuss the distributed deadloc outline the characteristics and		
	outline the characteristics and		
CO5.	outline the characteristics and	web services of dist	
CO5.	outline the characteristics and Core E	web services of dist lective Course Course Title:	ributed multimedia systems
CO5.	outline the characteristics and Core El de: HLCA3E3	web services of dist lective Course Course Title: earners should be ab	ributed multimedia systems Advanced Databases le to
CO5. Course Co On success	de: HLCA3E3 ful completion of the course, the le	web services of dist ective Course Course Title: earners should be ab ure and Advanced T	ributed multimedia systems Advanced Databases le to ransaction Processing.
CO5. Course Co On success CO1.	outline the characteristics and Core El de: HLCA3E3 ful completion of the course, the la explain the Database Architecture	web services of dist lective Course Course Title: earners should be ab ure and Advanced T and Object based dat	ributed multimedia systems Advanced Databases le to ransaction Processing.
CO5. Course Co On success CO1. CO2.	outline the characteristics and Core El de: HLCA3E3 ful completion of the course, the le explain the Database Architectu outline the Parallel databases a	web services of dist lective Course Course Title: earners should be ab ure and Advanced T and Object based dat es.	ributed multimedia systems Advanced Databases le to ransaction Processing.

	Core Elect	ive Course	
Course Code	e: HLCA4E1	Course Title:	Digital Image Processing
On successfu	l completion of the course, the learn	ers should be ab	le to
CO1.	describe the fundamentals of digita	al image and tran	sformation process.
CO2.	explicate filtering in frequency dor methods.	nain, image resto	pration and reconstruction
CO3.	outline histogram processing, poin	t, line and edge c	letection techniques.
CO4.	differentiate image segmentation, p filtering methodologies.	process of digital	image, compression and
CO5.	analyze the segmentation, filtering	and compression	n techniques.

	Со	ore Elective	Course	
Course Co	de: HLCA4E1	Co	ourse Title:	Digital Image Processin
On success	ful completion of the course,	the learners	should be ab	ole to
CO1.	describe the fundamentals	of digital in	nage and trar	nsformation process.
CO2.	explicate filtering in freque methods.	ency domain	ı, image rest	coration and reconstruction
CO3.	outline histogram processi	ng, point, li	ne and edge	detection techniques.
	differentiate image segmer	ntation, proc	and of disits	limage compression and
CO4.	filtering methodologies.	inution, prot	ess of digita	in image, compression and
CO4. CO5.	filtering methodologies. analyze the segmentation,		l compressio	
CO5.	filtering methodologies. analyze the segmentation,	filtering and	l compressio	
CO5.	filtering methodologies. analyze the segmentation, Co	filtering and	l compressio Course ourse Title:	on techniques. Soft Computing
CO5.	filtering methodologies. analyze the segmentation, Co de: HLCA4E2	filtering and ore Elective Co the learners	l compressio Course ourse Title: should be ab	on techniques. Soft Computing Dele to
CO5. Course Co On successi	filtering methodologies. analyze the segmentation, Co de: HLCA4E2 ful completion of the course,	filtering and ore Elective Co the learners ots, neural ne	d compression Course Durse Title: should be ab etworks and i	on techniques. Soft Computing Dele to its applications.
CO5. Course Co On successf CO1.	filtering methodologies. analyze the segmentation, Co de: HLCA4E2 ful completion of the course, recall Fuzzy Logic concep	filtering and ore Elective Co the learners ots, neural ne ad unsupervi	d compression Course Durse Title: should be ab etworks and i	on techniques. Soft Computing Dele to its applications.
CO5. Course Co On successf CO1. CO2.	filtering methodologies. analyze the segmentation, Co de: HLCA4E2 ful completion of the course, recall Fuzzy Logic concep differentiate supervised an	filtering and ore Elective Co the learners ots, neural ne od unsupervi e models.	d compression Course Durse Title: should be ab etworks and i sed learning.	on techniques. Soft Computing Dele to its applications.

	Core Elect	ive Course	
Course Code	e: HLCA4E3	Course Title:	Cloud Computing
On successfu	l completion of the course, the learn	ners should be abl	le to
CO1.	describe the architecture, services	and models of clo	oud.
CO2.	discuss virtualization technologies		
CO3.	examine cloud web services and se	ecurity mechanisi	n.
CO4.	explain the Service Oriented Archi	itecture.	
CO5.	elaborate the Cloud Mail Services	and streaming.	

	Core H	Elective Course	
Course Co	ode: HLCA4E3	Course Title:	Cloud Computing
On success	ful completion of the course, the	learners should be ab	le to
CO1.	describe the architecture, servi	ices and models of cl	oud.
CO2.	discuss virtualization technolo	ogies.	
CO3.	examine cloud web services an	nd security mechanis	m.
		Architecture	
CO4.	explain the Service Oriented A	Architecture.	
CO4. CO5.	elaborate the Cloud Mail Serv		
CO5.	elaborate the Cloud Mail Serv	ices and streaming.	UGC Net Preparatory Course – Computer Scienc
CO5.	elaborate the Cloud Mail Serv	ices and streaming. Elective Course Course Title:	Course – Computer Scienc
CO5.	elaborate the Cloud Mail Serv Core F	ices and streaming. Elective Course Course Title: learners should be ab	Course – Computer Scienc
CO5.	elaborate the Cloud Mail Serv Core H Course Code: HLCA5E1 ful completion of the course, the	ices and streaming. Elective Course Course Title: learners should be ab re areas of Computer	Course – Computer Science le to Science and applications.
CO5. CO5.	elaborate the Cloud Mail Serv Core F Course Code: HLCA5E1 oful completion of the course, the f recall the basic concepts in con identify the errors and program	ices and streaming. Elective Course Course Title: learners should be ab re areas of Computer mming logic used in	Course – Computer Science le to Science and applications. the given code.
CO5. CO5. CO1. CO2.	elaborate the Cloud Mail Serv Core H Course Code: HLCA5E1 oful completion of the course, the recall the basic concepts in con identify the errors and program examine the underlying proce	ices and streaming. Elective Course Course Title: learners should be ab re areas of Computer mming logic used in esses in different dom	Course – Computer Science le to Science and applications. the given code. aains on Computer Science and

	Core Elect	ive Course
Course Code	e: HLCA5E2	Course Title: Artificial Intelligent Systems
On successfu	Il completion of the course, the learn	ers should be able to
C01.	describe the Problem space, knowl	edge representations and Game playing.
CO2.	interpret knowledge using Predicat	e Logic and rules.
CO3.	summarize the statistical reasoning	g and learning.
CO4.	outline the connectionist models a	nd Fuzzy logic Systems.
CO5.	discuss the genetic algorithms and	natural language.

	Core Elec	ctive Course
Course Co		Course Title: Artificial Intelligent Systems
On success	ful completion of the course, the lear	
CO1.	describe the Problem space, know	vledge representations and Game playing.
CO2.	interpret knowledge using Predica	ate Logic and rules.
CO3.	summarize the statistical reasonin	ng and learning.
CO4.	outline the connectionist models a	and Fuzzy logic Systems.
CO4. CO5.	discuss the genetic algorithms and	
CO5.	discuss the genetic algorithms and Core Elect	d natural language. etive Course Course Title: Object Oriented Analysis
CO5.	discuss the genetic algorithms and Core Elec de: HLCA5E3	d natural language. etive Course Course Title: Object Oriented Analysis & Design
CO5. Course Co On success	discuss the genetic algorithms and Core Elect	d natural language. etive Course Course Title: Object Oriented Analysis & Design
CO5.	discuss the genetic algorithms and Core Elec de: HLCA5E3	d natural language. tive Course Course Title: Object Oriented Analysis & Design There should be able to
CO5. Course Co On success	discuss the genetic algorithms and Core Elec de: HLCA5E3 Ful completion of the course, the lear	d natural language. etive Course Course Course Title: Object Oriented Analysis & Design mers should be able to nted analysis and design.
CO5. Course Co On success: CO1.	discuss the genetic algorithms and Core Elec de: HLCA5E3 ful completion of the course, the lear outline the features of object orien illustrate the class, state and inter	d natural language. etive Course Course Course Title: Object Oriented Analysis & Design mers should be able to nted analysis and design.
CO5. Course Co On success: CO1. CO2.	discuss the genetic algorithms and Core Elec de: HLCA5E3 ful completion of the course, the lear outline the features of object orien illustrate the class, state and inter	d natural language. etive Course Course Title: Object Oriented Analysis & Design mers should be able to nted analysis and design. raction models. application analysis for a system.

	Core Elect	ive Course	
Course Code	e: HLCA5E4		Web Application Development
On successfu	l completion of the course, the learn	ers should be ab	le to
CO1.	explain HTML elements, user inter	ractive form elen	nents, multimedia elements.
CO2.	develop static and dynamic web pa	iges using form e	element.
CO3.	describe the overview of Java scrip the fundamentals in working with	· · · · ·	egration of PHP and AJAX and
CO4.	apply CSS and scripting to the HT	ML documents.	
CO5.	construct web pages using AJAX,	PHP and jQuery.	

	Core Elec	tive Course
Course Co	de: HLCA5E4	Course Title: Web Application Development
On success	ful completion of the course, the lear	ners should be able to
CO1.	explain HTML elements, user inte	eractive form elements, multimedia elements.
CO2.	develop static and dynamic web p	ages using form element.
CO3.	describe the overview of Java scri the fundamentals in working with	pt and AJAX, integration of PHP and AJAX and a jQuery.
CO4.	apply CSS and scripting to the HT	
CO5.	construct web pages using AJAX,	PHP and jQuery.
Course Co	de: HLCA5E5	Course Title: Mobile Computing
On success	ful completion of the course, the lear	ners should be able to
CO1.	explain Mobile Computing Archit	tecture.
CO2.	illustrate the technologies, service	es and architecture of GSM and SMS.
CO2. CO3.		and architecture of GSM and SMS.
		d on GPRS, WAP, CDMA, 3G and LAN.

	Core Elec	tive Course
Course Code	: HLCA5E6	Course Title: Big Data Analytics
On successful	completion of the course, the lear	ners should be able to
CO1.	explain the concepts, mining proc	ess of big data and multi-label big data mining
CO2.	describe the context and text cate	gorization and modelling.
CO3.	outline the distributed high dimer	nsional data clustering for Big Data.
CO4.	express the Hadoop technology.	
CO5.	make use of the big data database	es and programming.