

Criterion : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



FATIMA COLLEGE (AUTONOMOUS), MADURAI – 625018

NAME OF THE PROGRAMME: B.SC COMPUTER SCIENCE

PROGRAMME CODE: UACS

PROGRAMME OUTCOMES:

The learners will be able to

PO1: Apply acquired scientific knowledge to solve complex issues.

PO2: Attain Analytical skills to solve complex cultural, societal and environmental issues.

PO3: Employ latest and updated tools and technologies to analyse complex issues.

PO4: Demonstrate Professional Ethics that foster Community, Nation and Environment Building Initiatives.

PROGRAMME SPECIFIC OUTCOMES:

On completion of B.Sc. Computer Science programme, the students are expected to

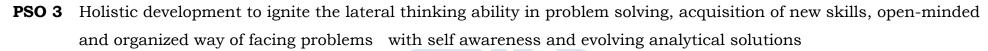
- **PSO 1** Develop professionally competent citizens by applying the scientific knowledge of Computer Science with the ability to think clearly, rationally and creatively to support in evolving solutions to the social/public/scientific issues with responsible democratic participation
- **PSO 2** Enterprising resourcefulness to identify, plan, formulate, design and evaluate solutions for complex computing problems that address the specific needs with appropriate consideration for Societal, Cultural, Environmental and Industrial domains.



Criterion: I – Curricular Aspects

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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



- **PSO 4** Create and initiate innovations effectively and communicate efficiently with the computing community and society at large to bridge the gap between computing industry and academia
- **PSO 5** Through Digital Literacy, understand, assess and commit to professional and ethical principles, norms and responsibilities of the cyber world and the ability for work efficacy as a part of a team and engage effectively with diverse stakeholders
- **PSO 6** Ability and willingness to embark on new ventures and initiatives with critical thinking and desire for more continuous learning focusing on life skills.





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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



2019 - 2020

2019 - 2020				
Course Code	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	COURSE DESCRIPTION	Course Outcomes
19B1CC1	Programming in	National	To introduce and form	CO1: Identify the basic concepts needed for
	С		a firm foundation in	program development
			program <mark>min</mark> g.	CO2: Apply the basic concepts and develop
	z.A		To stress the	program to find solutions for simple
		37	importance of clarity,	problems
		811	simplicity and the	CO3: Design programs to solve complex
		3) (6)	efficiency in writing	problems by using suitable control
			programs	statements
				CO4: Analyze the problem and design
			4 DITTOP	efficient program using functions
				CO5: Use array and structure to handle



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



				volume of data
19B1CC2	Lab – I (Programming in C)	National	Improve the skill of writing programs in C Utilize various features in C to various situations	CO1: Develop algorithms to find solutions for simple problems CO2: Analyze the source code and rectify errors if any and bring out necessary solution CO3: Utilize proper control statements to find solution for a given problem CO4: Develop source code using arrays to handle volume of data CO5: Design source code for console applications
19B1NME1	Animation Techniques (NME)	National	To offer a job oriented course and teach them to design animated applications	CO1: Create a movie with simple animation using built-in animation techniques. CO2: Create a movie with improved animation and background using Frame by frame animation.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			ACOZ	CO3: Design a movie with many scenes using motion tween technique and multilayer concept. CO4: Design a complex movie with more objects and enhanced animation using symbols. CO5: Design a interactive animation using buttons and movie clip symbols.
19B2CC3	Programming in C++	National	To introduce Object Oriented Programming concepts using C++ and improve their OOP Skill.	CO1: Compare Procedure-oriented programming and the evolution of Object oriented programming CO2: Identify basic concepts of OOP, benefits and its applications. CO3: Write object oriented programs using classes and objects. CO4: Design object oriented programs that can focus on reusability – Inheritance.

pointers and virtual functions.

CO5: Apply Object oriented programming

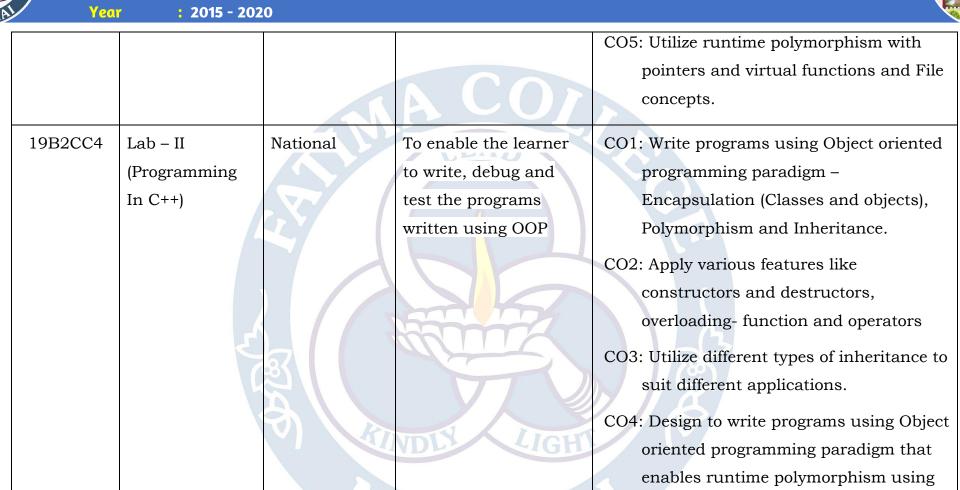
paradigm for flat file organization.



Criterion: I – Curricular Aspects

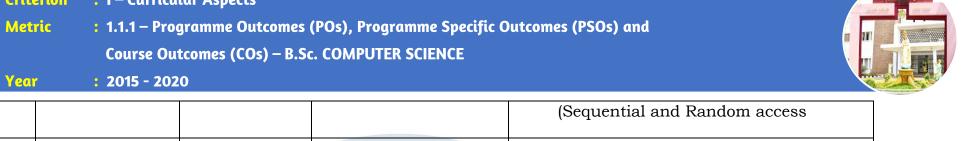
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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE





Criterion : I – Curricular Aspects



				(Sequential and Random access
19B2AC2	Computer System Architecture (Allied -II)	National	To understand the organization and design of basic digital computer. To understand the procedure for implementing the arithmetic algorithm in digital hardware. To discuss the techniques that computers use to communicate with I/O devices and Memory.	CO1: Outline the structure of a basic computer system and explain the role of functional units CO2: Explain the instruction cycle according to the type and addressing mode of the instruction CO3: Design the control logic circuit for various digital circuits such as registers, memory and adder - logic circuit of a basic computer system CO4: Identify the memory requirement of a CPU, select the memory chips and design a mapping circuit CO5: Explain the structure and the usage of various interfacing devices needed for connecting peripheral devices with the CPU



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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



19B2NME2	Animation	National	To offer a job oriented	CO1: Create a movie with simple animation
	Techniques		course and teach them	using built-in animation techniques.
	(Nme)	M	to design animated	CO2: Create a movie with improved
			applications	animation and background using
				Frame by frame animation.
				CO3: Design a movie with many scenes
		4/		using motion tween technique and
				multilayer concept.
				CO4: Design a complex movie with more
	حد			objects and enhanced animation using
		37		symbols.
				CO5: Design a interactive animation using
		7	VDLY LIGHT	buttons and movie clip symbols.
Course	Course Title	NATURE OF THE COURSE	Course Description	Course Objectives
CODE		(LOCAL/NATIO		
		NAL/REGIONAL /GLOBAL)		
ВЗСС5	Data Structures	National	To inculcate the skill	Identify data structures needed to solve
			<u> </u>	



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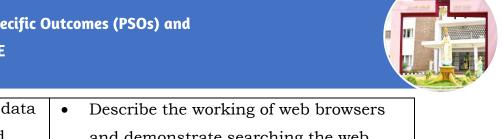
	And Algorithms		of developing an algorithm with the apt Data Structures.	 specific problems Analyse the data structures for effective use in problem solving Design and develop efficient algorithms in terms of Space and Time Troubleshoot algorithms Analyse time complexity of algorithms
B3CC6	Lab –Iii (Data Structures In C++)	National	Programs to be written using OOP concepts to implement data structures.	 Write efficient programs consuming less memory Compile and Execute programs using required data structures Implement the algorithms using C++ Debug programs
B3SB1	Skill Based Elective- Internet	National	To facilitate the students to explore the basics of internet.	Discuss the way in which internet is used, classify the different types of connections.



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	Programming	To introduce how data •	Describe the working of web browsers
	Paper I	can be shared and	and demonstrate searching the web
	Introduction to	accessed thru' internet	using effective web browsing tips
	Internet	LEAD	Design a simple web site and discuss the method for web hosting. Identify internet addressing and various internet protocols used for the communication. Explain the tips and techniques for managing the e-mails and protecting the privacy.
	3		(8)
B4CC7	Relational National	To impart complete •	Explain basic architecture, major
	Database	understanding of	components behind relational
	System	Relational database	databases, various set operations and
	Concepts	concepts and its usage	their implementation in RDBMS and
		in the real world	key advantages of using RDBMS in real
		applications	world computing.
		To encapsulate the	Assess how SQL evolves as the



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		implementation of		communication language to access the
		database system		data.
		concepts in SQL		Discuss functional dependencies and various forms of normalization in maintaining the integrity of data. Prepare E-R diagram which represents the data their relationship. Demonstrate implementation of the relational operators in SQL, Boolean and Arithmetic operators, Pattern matching techniques and Utilize group, date and time functions to handle complex queries.
B4CC8	Lab - IV (Visual Programming)	Programs to be written using IDE for window applications	•	Write simple programs in VB Compile, Debug and Execute programs in VB Design and simulate simple game



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		A COZ	applications Write programs for the data base applications Write programs using menu editors and MDI forms
B4SB2 Skill Based Elective- Internet Programming Paper II Web Designing using Html	National	To teach the basic concept of designing a Web page.	Create simple web page using physical tags Present the information in standard form in a web page using structure tags supported by the browsers Design the layout for a web page using browser support tags Develop a web site with the provision to go around all pages Design layout for a web document using frames



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B5CC9	Programming in	National	To understand the	•	Explain the fundamental concepts of
	Java		fundamental concepts		object-oriented programming and
		N.	of object-oriented	3	acquire programming skills using the
			programming and be		basic language constructs and the core
			familiar with the basic		APIs provided by Java.
			language constructs		Design, write, compile, execute, test,
		377	and the core APIs		and debug object-oriented programs in
			provided by Java.		Java.
					Develop well-documented and
					structured event handling programs
	4				using Applet
		3			(8)
)>	Identify the use of Java in a variety of
		TO MA	IDIY / LOU		technologies and on different platforms.
			VDL SIGH	•	Implement GUI based client
					applications and TCP/ IP and UDP
			4 DITTOP		based Network programs
B5CC10	Operating	National	To develop critical	•	Explain what operating systems are,
			<u> </u>	1	

and debug object-oriented programs in



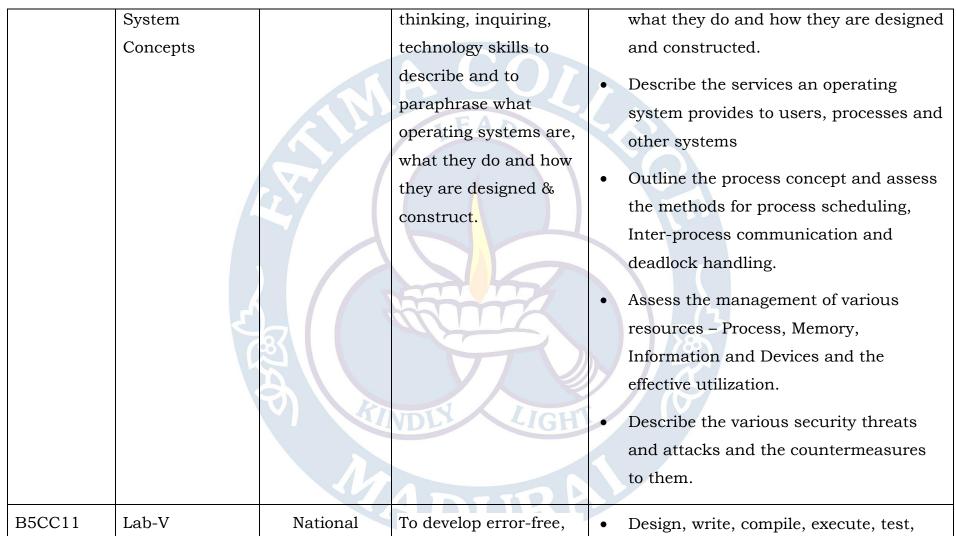
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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020

(Programming



well-documented,



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	in Java)		structured Java programs and to compile, execute, test, and debug the same	 Write packages, access specifies and interfaces in a program Write programs to handle exception and implement Multithreading Develop simple graphical user interfaces for Java Applications and Applets using GUI components such as labels, buttons and Layout Manager Create Java event-handling model to respond to events arising from the GUI components
B5CC12	Project - I	National	The project work motivates them and also gives insights about Software Development.	 Analyze. Plan and Design a software system Apply Project Management, Requirement analysis and other Software engineering concepts



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	Major Elective – I Software Engineering	National	Creating students with knowledge to solve real-world problems by providing thorough understanding of all concepts and techniques. To introduce the		Exhibit the skill of documenting. Simulate and test the project with realtime data. Acquire presentation skills Explain the basic concepts and techniques. Plan for building efficient and reliable software. Analyze the challenges of small to large scale software development. Identify suitable model for various kind of projects. Explain the concept of time management, managerial and technical skill required by human resources.
B5ME2	Latest	National	basics of various	•	Explain the key technologies,



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	1		1	
	computing		computing	architecture, strengths, limitations and
	Technologies		technologies like	applications of cloud computing
		37	Mobile Computing, Soft Computing, Grid computing, Cloud Computing and Green Computing	 Describe soft computing techniques and their roles in building intelligent machines Explain the genesis and applications of grid computing Explain the approaches to green computing and its future Describe wireless and mobile communications systems
B5ME3	Data Mining And Data Warehousing	National	To introduce analysis & extraction of knowledge	 Explain the data extraction and transformation techniques. List the association rule mining
			4DUR!	techniques and understand association mining to correlation analysis, constraint based association mining.



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			ACOZ	• /	Describe operational database, warehousing and multidimensional need of data base to meet industrial needs. Explain the components of warehousing, classification methods and clustering analysis. Identify and discuss the Business analysis, query tools and application, OLAP etc
P5MEB1	Programming With C (Elective offered to Physics)	National	To introduce and form a firm foundation in programming		Explain the Fundamentals of C programming language. Write Programs using Control Statements and Loop Structures. Describe the concept of Array and String Functions. Explain the concepts of structure and



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B5SB3	Skill Based Elective- Internet Programming Paper III – Client Side Programming Using Java Script& Css	National	To understand the JavaScript language To alter, show, hide and move objects on a web page	Demonstrate the concept of pointers and solve the problem using pointers Design a website with boosted styles using style sheets Design uniform layout for all pages of a website through tags and style sheets Create a webpage with menu bar to navigate through different pages of a website. Create a dynamic webpage using java script Create a webpage with a facility to collect and validate data
B5SB4	Skill Based Elective-	National	Defline basic concepts of NET	Define the Basic Concepts, Architecture and Components of .NET Framework.
	Internet		FrameWork3.5,	



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Pa	rogramming aper IV – erver Side	F	Architecture of .NET Frame Work and Components of .NET	•	Discuss and use Web Forms with Standard Controls. Apply validations to standard controls
	rogramming sing Asp.Net		Framework .		of web form. Design and develop web applications using navigation controls. Write basic SQL commands and develop web applications with DML operations using SQL commands.
	2EE rogramming	i i i i i i i i i i i i i i i i i i i	To Understand J2EE as an architecture and platform for building and deploying web- based, n-tier enterprise applications.		Explain J2EE Architecture and Standard Services used Create Remote methods and apply it in J2EE applications using RMI Develop Server side Java Applications using Servlet and JSP Design programs with Data Base Connectivity using JDBC



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160	1			
				Identify the type of Java Messaging
				Service
B6CC14	Data	National	To provide detailed	Explain the structure of internet
	Communications		knowledge and	according to OSI model
	and Networking		understanding in the	Analyse the capacity, efficiency and the
			concepts of internet model of	usage of different transmission mediun
			telecommunications	Outline the different switching
			and netw <mark>ork</mark> ing.	techniques used for data transmission
				• Explain the various error and flow
		a l		control algorithms used for effective communication
				Communication
			Y / Q	Outline the various addressing used for
			VDLY LIGHT	communication between source and
				destination through internet
				Compare the format of data
			ADIRE	transmission using TCP and UDP
				protocols



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				Explain the standard algorithms used for data security
B6CC15	Lab-VI (J2EE Programming)	National	e program for network chatting	 Write program for network chatting Write programs to access Data Base using JDBC Create remote methods in Remote Server and write Client program to access it Develop Server side Java Applications using Servlet Develop Server side Java Applications using JSP
B6CC16	Project – II (Outside)	National	Analyze, Plan and Design a software system	 Analyze. Plan and Design a software system Apply Project Management, Requirement analysis and other



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B6ME4	Major Elective –	National	Acquire, articulate,	 Software engineering concepts Exhibit the skill of documenting. Simulate and test the project with realtime data. Acquire presentation skills Identify the basic concepts used in
	II Computer Graphics	45 (S)	and apply specialized terminology and knowledge relevant to graphic design including relationships to other disciplines and to contemporary global issues.	 computer graphics. Analyze different output primitives. Explain the techniques of transformations and three dimensional graphics with display methods. Discuss the importance of viewing and clipping. Explain the fundamentals of animation and virtual reality
B6ME5	Software	National	To introduce the	Explain various testing processes and



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	Testing		software development life cycle to develop error-free quality software.	. / . /	continuous quality improvement Describe White box testing and Black box testing Discuss integration testing and its types Explain Performance and Regression testing Discuss Internationalization Testing and Ad-hoc testing procedures
В6МЕ6	Cloud Computing	National	Define cloud computing and related concepts		Define cloud computing and related concepts Explain the key dimensions of the challenges of Cloud Computing Discuss the assessment of the economics, financial, and technological implications for selecting cloud computing for an organization



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			ACOZ		Describe the benefits of cloud computing and to understand different layers of the cloud technologies, practical solutions Explain the challenges of cloud computing and determine the suitability of in-house v/s hosted solutions
B6ME7	Major Elective – III Introduction to Artificial Intelligence	National	To orient towards the latest concepts of the emerging technology.		Differentiate AI method of problem solving from normal method Identify heuristics for a given problem Explain the various search techniques Explain predicate logic Describe the fundamentals of Game Playing, NLP, NN and Expert Systems
B6ME8	Principles of Mobile	National	To enable the students to understand the OS, protocols and security	•	Explain Pervasive Computing Identify different operating systems



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	Computing		used in mobile technology and enable them to know in detail about mobile computing.	 Discuss the importance of Security Explain Internet Protocols Describe different Gateways
В6МЕ9	Big Data Fundamentals	National	Explain the fundamental concepts of Big data	 Explain the fundamental concepts of Big data Describe Big data Adoption and Planning Explain Big data Storage Concept Utilize Big data and Processing Concepts Demonstrate Big Data Analysis Techniques.
B6SB5	Skill Based Elective- Internet	National	To understand and write PHP code, and use it to build dynamic	 Explain fundamental concepts of PHP Identify and use array and array related



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	Programming		web pages		functions
	Paper V - Server		To further their	•	Design and Develop Form with PHP
	Side		knowledge of web		Code.
	Programming		application	۲.	Develop File operations.
	Using Php		development with PHP	X	
				•	Demonstrate Data Manipulation
		37			commands in MYSQL
B6SB6	Skill Based	National	To Know <mark>a</mark> bout Web	•	Define the Web Services that convert
	Elective-		Services that convert		application into a Web-application
	Internet		application into a Web-		Analyze the differences between HTML
	Programming		application		and XML
	Paper - VI -Web	3	To understand the	h. /	Apply XML mark-up language for
	Services		differences between		transferring data
	Development		HTML and XML		
	Using XML		1011		Create and validate XML documents
					Discuss Simple Object Access Protocol
			4 DITE		in detail



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COURSE CODE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	Course Description	Course Objectives
B1CC1	Programming in C	National	To identify the basic concepts needed for program development, to apply the basic concepts and develop program to find solutions for simple problems	 To introduce and form a firm foundation in programming To stress the importance of clarity , simplicity and the efficiency in writing programs



Criterion: I – Curricular Aspects

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B1CC2	Lab – I (Programming in C)	National	To develop algorithms to find solutions for simple problems, to analyze the source code and rectify errors if any and bring out necessary solution	 Improve the skill of writing programs in C Utilize various features in C to various situations
B1NME1	Animation Techniques (NME)	National	To create a movie with simple animation using built-in animation techniques, to design a movie with many scenes using motion tween technique and multilayer concept and enhanced animation using symbols.	To offer a job oriented course and teach them to design animated applications
B2CC3	Programming in C++	National	To compare Procedure- oriented programming	To introduce Object Oriented Programming concepts using C++ and



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			and the evolution of	improve their OOP Skill.
			Object oriented	
			programming, to	
			identify basic concepts	
			of OOP, benefits and its	
			applications. To design	
		A 34	object oriented	
			programs that can focus	
			on reus <mark>ab</mark> ility –	
			Inherita <mark>nc</mark> e.	
B2CC4	Lab – II	National	To write programs using	To enable the learner to write, debug
	(Programm	ning	Object oriented	and test the programs written using
	in C++)		programming paradigm	OOP
			Encapsulation	
		1	(Classes and objects),	
			Polymorphism and	
		1/1	Inheritance. To apply	
			various features like	
			constructors and	



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		destructors, overloading- function and operators, To design to write programs using Object oriented programming paradigm that enables runtime polymorphism using pointers and virtual functions.
B2AC2	Computer System Architecture (Allied -II)	To outline the structure of a basic computer system and explain the role of functional units, to explain the instruction cycle according to the type and addressing mode of To understand the organization and design of basic digital computer. To understand the procedure for implementing the arithmetic algorithm in digital hardware. To discuss the techniques that computers use to communicate with



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			the instruction, to	I/O devices and Memory.
			design the control logic	
			circuit for various digital	
			circuits such as	
			registers, memory and	
			adder - logic circuit of a	
	/3	3	basic computer system	
B2NME2	Animation	National	To create a movie with	• To offer a job oriented course and
	Techniques		simple animation using	teach them to design animated
	(NME)		built-in animation	applications
	(2)	4	techniques, to design a	_C3
	(6)		movie with many scenes	\(\lambda\)\(\rangle\)\(\rangle\)
	1		using motion tween	
			technique and	
		The state of the s	multilayer concept and	
			enhanced animation	
			using symbols.	
B3CC5	Data Structures	National	To identify data	To inculcate the skill of developing an



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	and Algorithms		structures needed to	algorithm with the apt Data
			solve specific problems,	Structures.
			to analyze the data	
		N	structures for effective	
			use in problem solving,	
			to design and develop	
		3	efficient algorithms in	
			terms of Space and	
			Time	
B3CC6	Lob III (Doto	National	To write efficient	Duamana ta ha muittan main n OOD
BSCCO	Lab –III (Data	National		• Programs to be written using OOP
	Structures in		programs consuming	concepts to implement data
	C++)		less memory, to compile	structures.
	X		and Execute programs	
) R	using required data	
		1	structures	
B3SB1	Skill Based	National	To discuss the way in	To facilitate the students to explore
	Elective-		which internet is used,	the basics of internet.
	Internet		classify the different	• To introduce how data can be shared
			22	



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Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Programming		types of connections, to	and accessed thru' internet
	Paper I		describe the working of	
	Introduction to		web browsers and	
	Internet	W	demonstrate searching	
			the web using effective	
			web browsing tips, to	
			design a simple web site	
			and discuss the method	
			for web <mark>ho</mark> sting.	
B4CC7	RDBMS With Oracle	ional	To explain basic architecture, major components behind relational databases, various set operations and their implementation in RDBMS and key advantages of using RDBMS in real world	 To impart complete understanding of Relational database concepts and its usage in the real world applications To encapsulate the implementation of database system concepts in SQL



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Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		computing. To assess how SQL evolves as the communication language to access the data. To discuss functional dependencies and various forms of normalization in maintaining the integrity of data.
B4CC8	Lab - IV (Visual National Programming)	To write simple programs in VB, to compile, Debug and Execute programs in VB, to design and simulate simple game applications



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	T			
B4SB2	Skill Based	National	To create simple web	• To teach the basic concept of
	Elective-		page using physical	designing a Web page.
	Internet		tags, to present the	
	Programming		information in standard	
	Paper II Html		form in a web page	
		-3//	using structure tags	X
	/3	37	supported by the	
		7	browsers, to design the	
			layout for a web page	
			using browser support	
			tags	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	2			
B5CC9	Programming in	National	To explain the	• To understand the fundamental
	Java		fundamental concepts of	concepts of object-oriented
		KIN	object-oriented	programming and be familiar with
			programming and	the basic language constructs and
			acquire programming	the core APIs provided by Java
			skills using the basic	
			language constructs	
			and the core APIs	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			provided by Java. To design, write, compile, execute, test, and debug object-oriented programs in Java.	
B5CC10	Operating System Concepts	National	To explain what operating systems are, what they do and how they are designed and constructed. To describe the services an operating system provides to users, processes and other systems.	To develop critical thinking, inquiring, technology skills to describe and to paraphrase what operating systems are, what they do and how they are designed & construct.
B5CC11	Lab-V (Programming in Java)	National	To design, write, compile, execute, test, and debug object-	To develop error-free, well-documented , structured Java programs and to compile, execute,



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			oriented programs in	test, and debug the same
			Java. To write packages,	
			access specifies and	
			interfaces in a program.	
			To write programs to	
			handle exception and	
		/3/3/	implement	
			Multithreading, To	
			develop <mark>si</mark> mple graphical	
			user int <mark>erf</mark> aces for Java	
			Applications and	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \
		507	Applets using GUI.	
B5CC12	Project - I	National	To analyze. Plan and	The project work motivates them and
			Design a software	also gives insights about Software
		AIN	system. To apply Project	Development.
			Management,	
		1/1	Requirement analysis	
			and other Software	
			engineering concepts	
			3 3 3 3 3 3 3	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B5ME1	Major Elective – I Software Engineering	National	To explain the basic concepts and techniques. To plan for building efficient and reliable software. To analyze the challenges of small to large scale software development.	Creating students with knowledge to solve real-world problems by providing thorough understanding of all concepts and techniques.
B5ME2	Latest Computing Technologies	National	To explain the key technologies, architecture, strengths, limitations and applications of cloud computing, To describe soft computing techniques and their roles in building intelligent machines	To introduce the basics of various computing technologies like Mobile Computing, Soft Computing, Grid computing, Cloud Computing and Green Computing



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



P5MEB1	Programming With C (Elective offered to Physics)	National	To explain the Fundamentals of C programming language, To describe the concept of Array and String Functions.	To introduce and form a firm foundation in programming
B5SB3	Skill Based Elective- Internet Programming Paper III – Client Side Programming Using Java Script& Css	National	To design a website with boosted styles using style sheets, To design uniform layout for all pages of a website through tags and style sheets	 To understand the JavaScript language To alter, show, hide and move objects on a web page
B5SB4	Skill Based Elective- Internet	National	To define the Basic Concepts, Architecture and Components of	• Define basic concepts of NET FrameWork3.5, Architecture of .NET Frame Work and Components of



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Programming		.NET Framework. To	.NET Framework .
	Paperiv –		discuss and use Web	
	Server Side		Forms with Standard	
	Programming		Controls. To apply	
	Using Asp.Net		validations to standard	
			controls of web form.	
	//		To design and develop	
		7	web app <mark>li</mark> cations using	
			navigati <mark>on</mark> controls.	
B6CC13	J2EE	National	To avaloin IOFF	To Hadamatand IOEE as an
BOCCIS		National	To explain J2EE	• To Understand J2EE as an
	Programming		Architecture and	architecture and platform for building
			Standard Services used,	and deploying web-based, n-tier
			To create Remote	enterprise applications.
			methods and apply it in	
		1	J2EE applications using	
			RMI, To develop Server	
		1V1	side Java Applications	
			using Servlet and JSP,	
			To design programs with	
		1	<u> </u>	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			Data Base Connectivity	
			using JDBC, To identify	
			the type of Java	
			Messaging Service	
B6CC14	Data	National	To explain the structure	To provide detailed knowledge and
	Communications	77/	of internet according to	understanding in the concepts of
	And Networking	37	OSI model, To analyze	internet model of
			the capa <mark>ci</mark> ty, efficiency	telecommunications and networking.
			and the <mark>us</mark> age of	
			different transmission	
	(2)	4	medium, To outline the	1 3
	(%)		different switching	1 1 2 3 3 3 3 3 3 3 3 3 3
			techniques used for	
			data transmission, To	
		The state of the s	explain the various error	
			and flow control	
		1/1	algorithms used for	
			effective	
			communication, various	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			addressing used for communication between source and destination through internet, to compare the format of data transmission using TCP and UDP protocols, to explain the standard algorithms used for data security	
B6CC15	Lab-VI (J2EE Programming)	National	To write program for network chatting, to access Data Base using JDBC, to create remote methods in Remote Server and write Client program to access it	• To introduce the students the principles, foundations, and applications of different computing technologies, and its significance in reshaping information technology processes.
B6CC16	Project – II	National	To analyze, Plan and	Students are offered career training as part of the curriculum through the



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			Design a software system, to apply Project Management, Requirement analysis and other Software engineering concepts, to exhibit the skill of documenting.	Project. • Project work motivates them and also gives insights about Software Development.
В6МЕЗ	Major Elective – II Computer Graphics	National	Acquire, articulate, and apply specialized terminology and knowledge relevant to graphic design including relationships to other disciplines and to contemporary global issues	 To learn the fundamentals of Computer Graphics concepts and algorithms To provide wider scope on transformations and Interactive GUI
B6ME4	Software	National	To introduce the	• To introduce the software



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Testing		software development	development life cycle to develop
			life cycle to develop	error-free quality software.
			error-free quality	
			software.	
			LEAD	
B6ME5	Major Elective –	National	Define cloud computing	• To orient towards the latest concepts
	III Introduction	7.7	and related concepts	of the emerging technology.
	to Artificial			
	Intelligence			
B6ME6	Principles of	National	To orient towards the	To enable the students to understand
	Mobile	7 2	latest concepts of the	the OS, protocols and security used
	Computing	7	emerging technology.	in mobile technology and enable
				them to know in detail about mobile
				computing.
		A STA	DLY LIGHT	
B6SB5	Skill Based	National	To understand and write	• To understand and write PHP code,
	Elective-		PHP code, and use it to	and use it to build dynamic web
	Internet		build dynamic web	pages
	Programming		pages	• To further their knowledge of web



Criterion : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	T			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Paper V - Server		To further their	application development with PHP
	Side		knowledge of web	
	Programming		application development	
	Using PHP		with PHP	
B6SB6	Skill Based	National	To Know about Web	To Know about Web Services that
	Elective-	7.5	Services that convert	convert application into a Web-
	Internet		applicat <mark>io</mark> n into a Web-	application
	Programming		applicati <mark>o</mark> n	• To understand the differences
	Paper VI -Web		To unde <mark>rst</mark> and the	between HTML and XML
	Services		differences between	λ
	Development		HTML and XML	3



Criterion: I - Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



2017 -2018

COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/GLOBAL)	Course Description	Course Objective
B1CC1	Programming in C	National	To identify the basic concepts needed for program development, to apply the basic concepts and develop program to find solutions for simple problems	 To introduce and form a firm foundation in programming To stress the importance of clarity , simplicity and the efficiency in writing programs
B1CC2	Lab – I (Programming in C)	National	To develop algorithms to find solutions for simple problems, to	 Improve the skill of writing programs in C Utilize various features in C to



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			analyze the source code	various situations
			and rectify errors if any	
			and bring out	
			necessary solution	
			EAD	
B1NME1	Animation	National	To create a movie with	To offer a job oriented course and
	Techniques (NME)	77	simple animation using	teach them to design animated
		27	built-in animation	applications
			tec <mark>hn</mark> iques, to design a	
	,		mo <mark>vie</mark> with many	
)	RE	scenes using motion	
	E)	THE THE	tween technique and	14-63
	C	3	multilayer concept and	(A)
			enhanced animation	
		V ALAIDI	using symbols.	
B2CC3	Programming in	National	To compare Procedure-	To introduce Object Oriented
22000	C++	Tidiolidi	oriented programming	Programming concepts using C++
		SU/A		
		361	and the evolution of	and improve their OOP Skill.
			Object oriented	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



programming, to identify basic concepts of OOP, benefits and its applications. To design object oriented programs that can	
of OOP, benefits and its applications. To design object oriented programs that can	
applications. To design object oriented programs that can	
object oriented programs that can	
programs that can	
focus on reusability –	
Inheritance.	
B2CC4 Lab – II National To write programs • To enable the learner	to write,
(Programming in using Object oriented debug and test the	programs
C++) programming paradigm written using OOP	
Encapsulation	
(Classes and objects),	
Polymorphism and	
Inheritance. To apply	
various features like	
constructors and	
destructors,	
overloading- function	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			and operators, To design to write programs using Object oriented programming paradigm that enables runtime polymorphism using pointers and virtual functions.	
B2AC2	Computer System Architecture (Allied -II)	National	To outline the structure of a basic computer system and explain the role of functional units, to explain the instruction cycle according to the type and addressing mode of the instruction, to design the control logic	 To understand the organization and design of basic digital computer. To understand the procedure for implementing the arithmetic algorithm in digital hardware. To discuss the techniques that computers use to communicate with I/O devices and Memory.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			circuit for various	
			digital circuits such as	
			registers, memory and	
			adder - logic circuit of	
			a basic computer	
			system	
B2NME2	Animation	National	To create a movie with	To offer a job oriented course and
	Techniques (NME)		sim <mark>pl</mark> e animation using	teach them to design animated
	,		buil <mark>t-i</mark> n animation	applications
	/	The state of the s	tec <mark>hni</mark> ques, to design a	
	E)		movie with many	163
	C		scenes using motion	
			tween technique and	
		V AVAID!	multilayer concept and	
		TAND	enhanced animation	
		1	using symbols.	
ВЗСС5	Data Structures	National	To identify data	To inculcate the skill of developing
	and Algorithms	4	structures needed to	an algorithm with the apt Data



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		I	I	
			solve specific problems,	Structures.
			to analyse the data	
			structures for effective	
			use in problem solving,	
			to design and develop	
			efficient algorithms in	
			terms of Space and	
	/ h	57	Tim <mark>e</mark>	
B3CC6	Lab –III (Data	National	To write efficient	Programs to be written using OOP
	Structures in C++)	The state of the s	programs consuming	concepts to implement data
	£)	THE THE	less memory, to	structures.
		B	compile and Execute	
			programs using	
			required data	
		TAMDI	structures	
B3SB1	Skill Based	National	To discuss the way in	To facilitate the students to
	Elective- Internet		which internet is used,	explore the basics of internet.
		TO I		explore the basies of interfict.
	Programming		classify the different	• To introduce how data can be



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Paper I Introduction		types of connections, to		shared	and	accesse	d thru'
	to Internet		describe the working of		internet			
			web browsers and					
			demonstrate searching					
			the web using effective					
			web browsing tips, to					
			design a simple web					
			site and discuss the					
			met <mark>ho</mark> d for web					
)		hos <mark>tin</mark> g.					
B4CC7	RDBMS With Oracle	National	To explain basic architecture, major components behind relational databases, various set operations and their implementation in RDBMS and key advantages of using	•	To understa database in the res	e concer al world encap ntation	of I ots and applicat sulate of	complete Relational its usage ions the database



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			RDBMS in real world	
			computing. To assess	
		A	how SQL evolves as the	
			communication	
		33/	language to access the	
			data.	
		37	To discuss functional	
		7	dep <mark>e</mark> ndencies and	
			vari <mark>ou</mark> s forms of	
			nor <mark>ma</mark> lization in	
	4	1	maintaining the	M A
		3	integrity of data.	
B4CC8	Lab - IV (Visual	National	To write simple	Programs to be written using IDE
	Programming)	V AIND	programs in VB, to	for window applications
	,	, AMD	compile, Debug and	
			Execute programs in	
			VB, to design and	
		The state of the s	simulate simple game	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			applications	
B4SB2	Skill Based	National	To create simple web	• To teach the basic concept of
	Elective- Internet		page using physical	designing a Web page.
	Programming		tags, to present the	
	Paper II Html		information in standard	
			form in a web page	G'
		27	using structure tags	
			supported by the	
	_		browsers, to design the	
)	RE	layout for a web page	
	\mathcal{E}	THE THE	using browser support	16
	C	3	tags	
B5CC9	Programming in	National	To explain the	• To understand the fundamental
	Java	TINDI	fundamental concepts	concepts of object-oriented
			of object-oriented	programming and be familiar
			programming and	with the basic language
		X/A	acquire programming	constructs and the core APIs
			skills using the basic	provided by Java



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			language constructs and the core APIs provided by Java. To design, write, compile, execute, test, and debug object-oriented programs in Java.	
B5CC10	System Software and Operating System Concepts	National	To explain what operating systems are, what they do and how they are designed and constructed. To describe the services an operating system provides to users, processes and other systems.	 To present a general model of a compiler that may be used as a basis for designing and studying compilers. To explore the structure and effectiveness of an operating system in terms of resource management.
B5CC11	Lab-V	National	To design, write,	• To develop error-free, well-



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	(Programming in		compile, execute, test,	documented , structured Java
	Java)		and debug object-	programs and to compile,
		A	oriented programs in	execute, test, and debug the same
			Java. To write	
		37/	packages, access	
			specifies and interfaces	
			in a program. To write	
		7	programs to handle	
			exc <mark>ept</mark> ion and	
			imp <mark>le</mark> ment	
	4		Multithreading, To	
		7	develop simple	
	\6		graphical user	
		3	interfaces for Java	
		TINDI	Applications and	
			Applets using GUI.	
B5CC12	Project - I	National	To analyze, plan and	The project work motivates them
			design a software	and also gives insights about
			system. To apply	Software Development.
			57	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		MA	Project Management, Requirement analysis and other Software engineering concepts	
B5ME1	Major Elective – I Software Engineering	National	To explain the basic concepts and techniques. To plan for building efficient and reliable software. To analyze the challenges of small to large scale software development.	Creating students with knowledge to solve real-world problems by providing thorough understanding of all concepts and techniques.
B5ME2	Computer Graphics	National	Acquire, articulate, and apply specialized terminology and knowledge relevant to graphic design including relationships	 To learn the fundamentals of Computer Graphics concepts and algorithms To provide wider scope on transformations and Interactive GUI



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			to other disciplines and	
			to contemporary global	
		an A	issues.	
P5MEB1	Programming With	National	To explain the	• To introduce and form a firm
	C (Elective offered		Fundamentals of C	foundation in programming
	to Physics)		programming language,	(54)
		27	To describe the concept	
			of A <mark>rr</mark> ay and String	
	,		Fun <mark>cti</mark> ons.	
B5SB3	Skill Based	National	To design a website	• To understand the JavaScript
	Elective- Internet	7	with boosted styles	language
	Programming		using style sheets, To	• To alter, show, hide and move
	Paper III – Client	3	design uniform layout	objects on a web page
	Side Programming	TINDI	for all pages of a	objects on a web page
	Using Java Script&		website through tags	
	Css		and style sheets	
			DUR	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B5SB4	Skill Based	National	To define the Basic	• Define basic concepts of NET
	Elective- Internet		Concepts, Architecture	FrameWork3.5, Architecture of
	Programming		and Components of	.NET Frame Work and
	Paper IV – Server Side Programming		.NET Framework. To discuss and use Web	Components of .NET Framework .
	Using Asp.Net	37	Forms with Standard Controls. To apply	
	2		validations to standard controls of web form. To design and develop web applications using navigation	
			controls.	B
B6CC13	J2EE Programming	National	To explain J2EE Architecture and Standard Services	• To Understand J2EE as an architecture and platform for building and deploying web-
		MA	used, To create Remote methods and apply it in J2EE applications	based, n-tier enterprise applications.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			using RMI, To develop Server side Java Applications using Servlet and JSP, To design programs with Data Base Connectivity using JDBC, To identify the type of Java Messaging Service	
B6CC14	Data Communications And Networking	National	To explain the structure of internet according to OSI model, To analyse the capacity, efficiency and the usage of different transmission medium, To outline the different switching techniques used for data	To provide detailed knowledge and understanding in the concepts of internet model of telecommunications and networking.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			transmission, To	
			explain the various	
			error and flow control	
			algorithms used for	
		33/	effective	
			communication.	
B6CC15	Lab-VI (J2EE	National	To write program for	• Write program for network
	Programming)		network chatting, to	chatting
			acc <mark>ess</mark> Data Base using	
)	RE	JDBC, to create remote	
	[4]	THE THE	methods in Remote	______\\\\\\\\\\\\\\\\
		3	Server and write Client	1/285
			program to access it.	
B6CC16	Project – II	National	To analyze, Plan and	• Students are offered career
			Design a software	training as part of the curriculum
			system, to apply Project	through the Project.
			Management,	Project work motivates them and
			Requirement analysis	also gives insights about



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		MA	and other Software engineering concepts, to exhibit the skill of documenting	Software Development.
В6МЕЗ	Major Elective – II Computer Graphics	National	To explain the key technologies, architecture, strengths, limitations and applications of cloud computing, To describe soft computing techniques and their roles in building intelligent machines	 To introduce the basics of various computing technologies like Mobile Computing, Soft Computing, Grid computing, Cloud Computing and Green Computing To introduce the students the principles, foundations, and applications of different computing technologies, and its significance in reshaping information technology processes.
B6ME4	Software Testing	National	To introduce the software development	• To introduce the software development life cycle to develop



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		A A	life cycle to develop error-free quality software.	error-free quality software.
B6ME5	Major Elective – III Introduction to Artificial Intelligence	National	Define cloud computing and related concepts	• To orient towards the latest concepts of the emerging technology.
В6МЕ6	Principles of Mobile Computing	National	To orient towards the latest concepts of the emerging technology.	• To enable the students to understand the OS, protocols and security used in mobile technology and enable them to know in detail about mobile computing.
B6SB5	Skill Based Elective- Internet Programming Paper V - Server	National	To Know about Web Services that convert application into a Web- application	 To Know about Web Services that convert application into a Webapplication To understand the differences



Criterion : I – Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Side Programming		To understand the	between HTML and XML
	Using PHP		differences between	
		AA	HTML and XML	
B6SB6	Skill Based	National	To understand and	• To understand and write PHP
	Elective- Internet		write PHP code, and	code, and use it to build dynamic
	Programming	77/	use it to build dynamic	web pages
	Paper VI -Web	3/	web pages	To further their knowledge of web
	Services		To f <mark>ur</mark> ther their	application development with PHP
	Development		kno <mark>wl</mark> edge of web	
	1		application	
			development with PHP	163
				1 (6)



Criterion : I – Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



2016 -2017

2016 -2	2017	2. A	COR	
COURSE CODE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/GLOBAL)	Course Description	Course Objective
B1CC1	Programming in C	National	To identify the basic concepts needed for program development, to apply the basic concepts and develop program to find solutions for simple problems	 To introduce and form a firm foundation in programming To stress the importance of clarity, simplicity and the efficiency in writing programs
B1CC2	Lab – I (Programming in C)	National	To develop algorithms to find solutions for simple problems, to analyze the source code and rectify	 Improve the skill of writing programs in C Utilize various features in C to various situations



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			errors if any and bring out	
			necessary solution	
B1NME1	Animation	National	To create a movie with	To offer a job oriented course
	Techniques (NME)		simple animation using	and teach them to design
			built-in animation	animated applications
		AN	techniques, to design a	
		77	movie with many scenes	
			usin <mark>g</mark> motion tween	
			tech <mark>niq</mark> ue and multilayer	
		RE	conc <mark>ep</mark> t and enhanced	
	2		animation using symbols.	6
B2CC3	Programming in	National	To compare Procedure-	To introduce Object Oriented
	C++		oriented programming and	Programming concepts using
		MIND	the evolution of Object	C++ and improve their OOP
			oriented programming, to	Skill.
			identify basic concepts of	
			OOP, benefits and its	
			applications. To design	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		an A	object oriented programs that can focus on reusability – Inheritance.	
B2CC4	Lab – II (Programming in C++)	National	To write programs using Object oriented programming paradigm – Encapsulation (Classes and objects), Polymorphism and Inheritance. To apply various features like constructors and destructors, overloading- function and operators, To design to write programs using Object oriented programming paradigm that enables runtime polymorphism	To enable the learner to write, debug and test the programs written using OOP



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



uter System ecture (Allied	National	using pointers and virtual functions. To outline the structure of	
J	National	CO	
J	National	To outline the structure of	
		a basic computer system and explain the role of functional units, to explain the instruction cycle according to the type and addressing mode of the instruction, to design the control logic circuit for various digital circuits such as registers, memory	 To understand the organization and design of basic digital computer. To understand the procedure for implementing the arithmetic algorithm in digital hardware. To discuss the techniques that computers use to communicate with I/O devices and Memory.
	National	and adder - logic circuit of a basic computer system To create a movie with	To offer a job oriented course
	ion	ion National	a basic computer system



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		SIMA	techniques, to design a movie with many scenes using motion tween technique and multilayer concept and enhanced animation using symbols.	
B3CC5	Data Structures and Algorithms	National	To identify data structures needed to solve specific problems, to analyse the data structures for effective use in problem solving, to design and develop efficient algorithms in terms of Space and Time	To inculcate the skill of developing an algorithm with the apt Data Structures.
B3CC6	Lab –III (Data Structures in C++)	National	To write efficient programs consuming less memory, to compile and Execute	Programs to be written using OOP concepts to implement data structures.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			programs using required data structures	
B3SB1	Skill Based Elective- Internet Programming Paper I Introduction to Internet	National	To discuss the way in which internet is used, classify the different types of connections, to describe the working of web browsers and demonstrate searching the web using effective web browsing tips, to design a simple web site and discuss the method for web hosting.	 To facilitate the students to explore the basics of internet. To introduce how data can be shared and accessed thru' internet
B4CC7	RDBMS With Oracle	National	To explain basic architecture, major components behind relational databases, various set Operations and	To impart complete understanding of Relational database concepts and its usage in the real world applications



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		I		
			their implementation in	To encapsulate the
			RDBMS and key	implementation of database
		A A	advantages of using	system concepts in SQL
			RDBMS in real world	
			computing. To assess how	
			SQL evolves as the	
		39	communication language	
		57	to access the data.	
			To discuss functional	
			dependencies and various	
	4		forms of normalization in	\frac{1}{2}
		2	maintaining the integrity	
	1	311	of data.	2
B4CC8	Lab - IV (Visual	National	To write simple programs	Programs to be written using
	Programming)	L	in VB, to compile, Debug	IDE for window applications
			and Execute programs in	
		N/A	VB, to design and simulate	
		46	simple game applications	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B4SB2	Skill Based	National	To create simple web page	To teach the basic concept of
	Elective- Internet		using physical tags, to	designing a Web page.
	Programming		present the information in	
	Paper II Html		standard form in a web	
			page using structure tags	
			supported by the	
		37	browsers, to design the	
			layout for a web page	
			usin <mark>g b</mark> rowser support	
			tags	
B5CC9	Programming in	National	To explain the	To understand the fundamental
	Java	3(1)	fondamental concepts of	concepts of object-oriented
			object-oriented	programming and be familiar
		V) AVAID	programming and acquire	with the basic language
		TO STAND	programming skills using	constructs and the core APIs
			the basic language	provided by Java.
		N/A	constructs and the core	
		1	APIs provided by Java. To	
			design, write, compile,	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		A A	execute, test, and debug object-oriented programs in Java.	
B5CC10	System Software and Operating System Concepts	National	To explain what operating Systems are, what they do and how they are designed and constructed. To describe the services an operating system provides to users, processes and other systems.	 To present a general model of a compiler that may be used as a basis for designing and studying compilers. To explore the structure and effectiveness of an operating system in terms of resource management.
B5CC11	Lab-V (Programming in Java)	National	To design, write, compile, execute, test, and debug object-oriented programs in Java. To write packages, access specifies and interfaces in a program. To write programs to handle	To develop error-free, well-documented, structured Java programs and to compile, execute, test, and debug the same



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			exception and implement Multithreading, To develop simple graphical user interfaces for Java Applications and Applets using GUI.	
B5CC12	Project - I	National	To analyze, plan and design a software system. To apply Project Management, Requirement analysis and other Software engineering concepts	The project work motivates them and also gives insights about Software Development.
B5ME1	Major Elective – I Software Engineering	National	To explain the basic concepts and techniques. To plan for building efficient and reliable software. To analyze the	Creating students with knowledge to solve real-world problems by providing thorough understanding of all concepts and techniques.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			challenges of Small to	
			large scale software	
		A A	development.	
B5ME2	Computer Graphics	National	Acquire, articulate, and apply specialized terminology and knowledge relevant to graphic design including relationships to other disciplines and to contemporary global issues.	 To learn the fundamentals of Computer Graphics concepts and algorithms To provide wider scope on transformations and Interactive GUI
P5MEB1	Programming With C (Elective offered to Physics)	National	To explain the Fundamentals of C programming language, To describe the concept of Array and String Functions.	To introduce and form a firm foundation in programming

objects on a web page



Criterion : I – Curricular Aspects

Paper III - Client

Side Programming

Using Java Script&

Elective- Internet

Paper IV - Server

Side Programming

Using Asp.Net

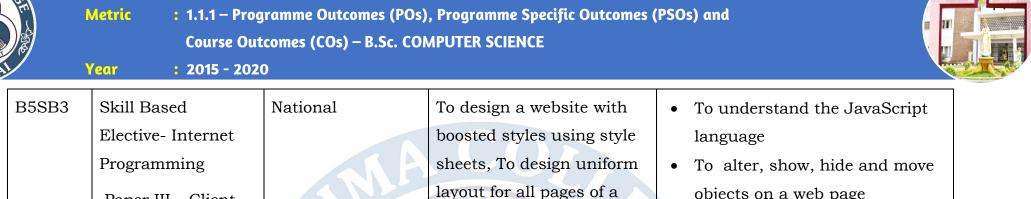
Programming

National

CSS

B5SB4

Skill Based



website through tags and

style sheets



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B6CC13	J2EE Programming	National	To explain J2EE Architecture and Standard Services used, To create Remote methods and apply it in J2EE applications using RMI, To develop Server side Java Applications using Servlet and JSP, To design programs with Data Base Connectivity using JDBC, To identify the type of Java Messaging Service		To Understand J2EE as an architecture and platform for building and deploying webbased, n-tier enterprise applications To Acquire knowledge on how various J2EE technologies are used together to build enterprise applications To Understand J2EE as an architecture and platform for building and deploying webbased, n-tier enterprise applications.
B6CC14	Data Communications And Networking	National	To explain the structure of internet according to OSI model, To analyse the capacity, efficiency and the usage of different	•	To provide detailed knowledge and understanding in the concepts of internet model of telecommunications and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B6CC15	Lab-VI (J2EE Programming) Project – II	National	transmission medium, To outline the different switching techniques used for data transmission, To explain the various error and flow control algorithms used for effective communication. To write program for network chatting, to access Data Base using JDBC, to create remote methods in Remote Server and write Client program to access it	 To Understand the concept of Servlet and JSP as dynamic content generation technologies (Web-Server & support Technologies) To Understand RMI as Distributed-Objects Technology To Understand the use of Java Messaging Service Students are offered career
Boccio	Troject – II	Ivational	Design a software system,	• Students are offered career



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		CINIA CONTRACTOR OF THE PARTY O	to apply Project Management, Requirement analysis and other Software engineering concepts, to exhibit the skill of documenting.	training as part of the curriculum through the Project. Project work motivates them and also gives insights about Software Development.
В6МЕЗ	Major Elective – II Computer Graphics	National	To explain the key technologies, architecture, strengths, limitations and applications of cloud computing, To describe soft computing techniques and their roles in building intelligent machines	To introduce the basics of various computing technologies like Mobile Computing, Soft Computing, Grid computing, Cloud Computing and Green Computing To introduce the students the principles, foundations, and applications of different computing technologies, and its significance in reshaping information technology processes.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B6ME4	Software Testing	National	To introduce the software development life cycle to develop error-free quality software.	To introduce the software development life cycle to develop error-free quality software.
B6ME5	Major Elective – III Introduction to Artificial Intelligence	National	To orient towards the latest concepts of the emerging technology.	To orient towards the latest concepts of the emerging technology.
B6ME6	Principles of Mobile Computing	National	Define mobile computing and related concepts	To enable the students to understand the OS, protocols and security used in mobile technology and enable them to know in detail about mobile computing.
B6SB5	Skill Based Elective- Internet Programming	National	To Know about Web Services that convert application into a Web-	To Know about Web Services that convert application into a Web-application



Criterion: I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Paper V - Server		application	To understand the differences
	Side Programming Using PHP	TIMA	To understand the differences between HTML and XML	between HTML and XML
B6SB6	Skill Based	National	To understand and write	To understand and write PHP
	Elective- Internet		PHP code, and use it to	code, and use it to build
	Programming		buil <mark>d d</mark> ynamic web pages	dynamic web pages
	Paper VI -Web		To further their knowledge	To further their knowledge of
	Services		of web application	web application development
	Development	87	development with PHP	with PHP
	K			



Criterion : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



2015 -2016

COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/GLOBAL)	Course Description	Course Objectives
B1CC1	Programming in C	National	To identify the basic concepts needed for program development, to apply the basic concepts and develop program to find solutions for simple problems	 To introduce and form a firm foundation in programming To stress the importance of clarity, simplicity and the efficiency in writing programs
B1CC2	Lab – I (Programming in C)	National	To develop algorithms to find solutions for simple problems, to analyze the source code and rectify errors if any and bring out	 Improve the skill of writing programs in C Utilize various features in C to various situations



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			necessary solution	
B1NME1	Animation Techniques (NME)	National	To create a movie with simple animation using built-in animation techniques, to design a movie with many scenes using motion tween technique and multilayer concept and enhanced animation using symbols.	To offer a job oriented course and teach them to design animated applications
B2CC3	Programming in C++	National	To understand concepts like arrays, pointers and files, their benefits and applications.	 To provide contemporary approach to programming To learn higher concepts and to strengthen the programming skill To stress the importance of clarity, legibility, modularity and efficiency of program



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



				design.
B2CC4	Lab – II (Programming in C++)	National	To write programs using arrays, functions, structures, pointers and files.	To introduce and form a firm foundation in programming by practicing programs (To write, test and programs)
B2AC2	Computer System Architecture (Allied -II)	National	To outline the structure of a basic computer system and explain the role of functional units, to explain the instruction cycle according to the type and addressing mode of the instruction, to design the control logic circuit for various digital circuits such as registers, memory and adder - logic circuit of a basic computer system	 To understand the organization and design of basic digital computer. To understand the procedure for implementing the arithmetic algorithm in digital hardware. To discuss the techniques that computers use to communicate with I/O devices and Memory.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



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Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	Structures in C++)	MA	consuming less memory, to compile and Execute programs using required data structures	OOP concepts to implement data structures.
B3SB1	Skill Based Elective- Internet Programming Paper I Introduction to Internet	National	To discuss the way in which internet is used, classify the different types of connections, to describe the working of web browsers and demonstrate searching the web using effective web browsing tips, to design a simple web site and discuss the method for web hosting.	 To facilitate the students to explore the basics of internet. To introduce how data can be shared and accessed thru' internet
B4CC7	RDBMS With Oracle	National	To explain basic architecture, major components behind relational databases,	To impart complete understanding of Relational database concepts and its usage in the real world



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			various set operations and	applications
			their implementation in	To encapsulate the
		A	RDBMS and key advantages	implementation of database
			of using RDBMS in real	system concepts in SQL
			world computing. To assess	1
			how SQL evolves as the	
		X9/ /	communication language to	
	/-	57	access the data.	
			To discuss functional	
			dependencies and various	
	4		forms of normalization in	<u>A</u>
		वर	maintaining the integrity of	
	K		data.	
B4CC8	Lab - IV (Visual	National	To write simple programs in	Programs to be written using
	Programming)		VB, to compile, Debug and	IDE for window applications
			Execute programs in VB, to	
		N/A	design and simulate simple	
		The state of the s	game applications	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B4SB2	Skill Based	National	To create simple web page	To teach the basic concept of
	Elective- Internet		using physical tags, to	designing a Web page.
	Programming	A A	present the information in	
	Paper II Html		standard form in a web	
			page using structure tags	
			supported by the browsers,	
		37	to design the layout for a	
			web page using browser	
			support tags	
DECCO	D	N. C. 1		
B5CC9	Programming in	National	To explain the fundamental	To understand the
	Java	$\overline{\alpha}$	concepts of object-oriented	fundamental concepts of
	\Q	211	programming and acquire	object-oriented programming
			programming skills using	and be familiar with the basic
		KIND	the basic language	language constructs and the
		The state of the s	constructs and the core	core APIs provided by Java.
			APIs provided by Java. To	
			design, write, compile,	
		The state of the s	execute, test, and debug	
			object-oriented programs in	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



			Java.	
B5CC10	System Software and Operating System Concepts	National	To explain what operating systems are, what they do and how they are designed and constructed. To describe the services an operating system provides to users, processes and other systems.	 To present a general model of a compiler that may be used as a basis for designing and studying compilers. To explore the structure and effectiveness of an operating system in terms of resource management.
B5CC11	Lab-V (Programming in Java)	National	To design, write, compile, execute, test, and debug object-oriented programs in Java. To write packages, access specifies and interfaces in a program. To write programs to handle exception and implement Multithreading, To develop	To develop error-free, well-documented, structured Java programs and to compile, execute, test, and debug the same



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B5CC12	Project - I	National	simple graphical user interfaces for Java Applications and Applets using GUI. To analyze, plan and design a software system. To apply Project Management, Requirement analysis and other Software engineering	• The project work motivates them and also gives insights about Software Development.
B5ME1	Major Elective – I	National	To explain the basic	
	Software Engineering	MIND	concepts and techniques. To plan for building efficient and reliable software. To analyze the challenges of small to large scale software development.	• Creating students with knowledge to solve real-world problems by providing thorough understanding of all concepts and techniques.
B5ME2	Computer Graphics	National	Acquire, articulate, and	To learn the fundamentals of



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



		AMA	apply specialized terminology and knowledge relevant to graphic design including relationships to other disciplines and to	Computer Graphics concepts and algorithms To provide wider scope on transformations and Interactive GUI
P5MEB1	Programming With C (Elective offered to Physics)	National	To explain the Fundamentals of C programming language, To describe the concept of Array and String Functions.	To introduce and form a firm foundation in programming
B5SB3	Skill Based Elective- Internet Programming Paper III – Client Side Programming Using Java Script& Css	National	To design a website with boosted styles using style sheets, To design uniform layout for all pages of a website through tags and style sheets	 To understand the JavaScript language To alter, show, hide and move objects on a web page



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B5SB4	Skill Based	National	To define the Basic	Define basic concepts of NET
	Elective- Internet	1.44.75.734.7	Concepts, Architecture and	FrameWork3.5, Architecture
	Programming	A A	Components of .NET	of .NET Frame Work and
	Paper IV – Server		Framework. To discuss and	Components of .NET
	Side Programming		use Web Forms with	Framework .
	Using Asp.Net		Standard Controls. To apply	
		77	validations to standard	
			controls of web form. To	
			design and develop web	
			applications using	
	حر		navigation controls.	<u>_</u>
B6CC13	J2EE Programming	National	To explain J2EE	• To Understand J2EE as an
		9.	Architecture and Standard	architecture and platform for
		KIND	Services used, To create	building and deploying web-
			Remote methods and apply	based, n-tier enterprise
			it in J2EE applications	applications.
			using RMI, To develop	
			Server side Java	
			Applications using Servlet	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



	1			
			and JSP, To design	
			programs with Data Base	
		A A	Connectivity using JDBC,	
			To identify the type of Java	
			Messaging Service	
B6CC14	Data	National	To explain the structure of	To provide detailed knowledge
	Communications	27	internet according to OSI	and understanding in the
	And Networking		model, To analyse the	concepts of internet model of
			capacity, efficiency and the	telecommunications and
		The second	usage of different	networking.
	٤,		transmission medium, To	_3
		3	outline the different	\&\(\)
			switching techniques used	A Comment
			for data transmission, To	
		TAMD	explain the various error	
			and flow control algorithms	
		V/A	used for effective	
		16	communication.	

• Project work motivates them

Software Development.

and also gives insights about

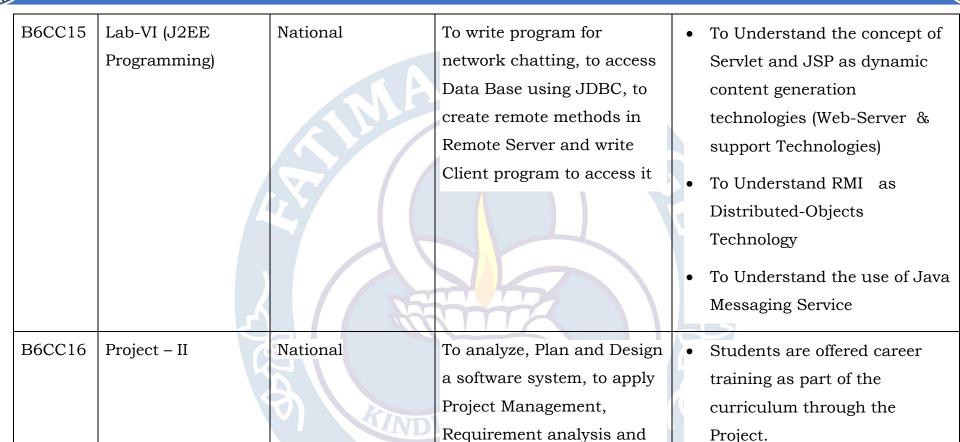


Criterion : I - Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year : 2015 - 2020



of documenting.

other Software engineering

concepts, to exhibit the skill

develop error-free quality

software.

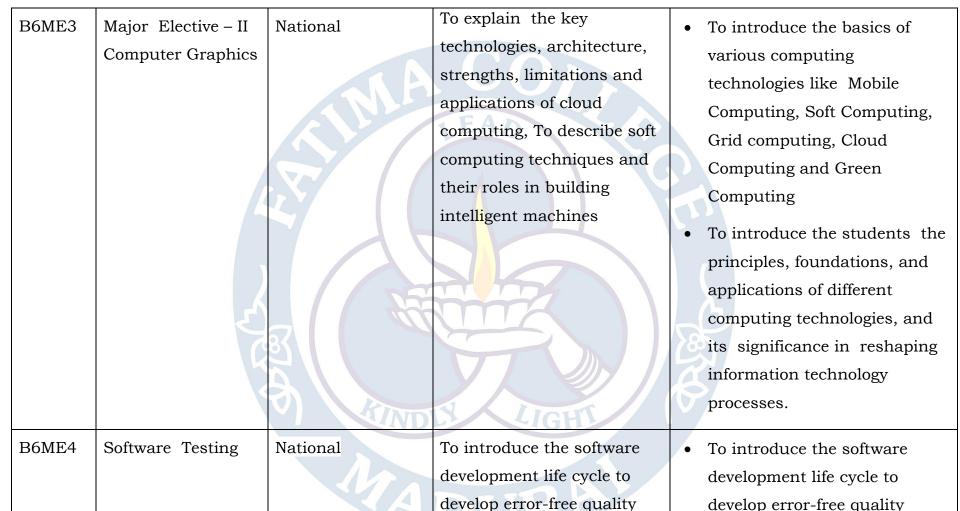


Criterion : I - Curricular Aspects

: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and Metric

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE

Year **:** 2015 - 2020



software.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



B6ME5	Major Elective – III Introduction to Artificial Intelligence	National	Define cloud computing and related concepts	To orient towards the latest concepts of the emerging technology.
В6МЕ6	Principles of Mobile Computing	National	To orient towards the latest concepts of the emerging technology.	• To enable the students to understand the OS, protocols and security used in mobile technology and enable them to know in detail about mobile computing.
B6SB5	Skill Based Elective- Internet Programming Paper V - Server Side Programming Using PHP	National	To Know about Web Services that convert application into a Web- application To understand the differences between HTML and XML	 To Know about Web Services that convert application into a Web-application To understand the differences between HTML and XML To understand XML as a markup language for



Criterion: I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – B.Sc. COMPUTER SCIENCE



				transferring data
		MA	COL	To learn XML syntax and to create and validate XML documents
B6SB6	Skill Based	National	To understand and write	To understand and write PHP
	Elective- Internet	X9/ /	PHP code, and use it to	code, and use it to build
	Programming	57	build dynamic web pages	dynamic web pages
	Paper VI -Web		To fu <mark>rt</mark> her their knowledge	To further their knowledge of
	Services		of w <mark>eb</mark> application	web application development
	Development		development with PHP	with PHP