University of Madras

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Undergraduate Programme

i n

Computer Science

Syllabus for
B.Sc Computer Science
(With effect from the Academic Year 2023 -24)

Learning Outcome Based Curriculum Framework

Note: The Board of Studies is designed Learning Outcomes Based Curriculum Framework of Under Graduate Computer Science Programme prescribed by UGC

Syllabus for B.Sc. Computer Science

(With effect from the Academic Year 2023-24)

I Preamble

Bachelor of Computer Science is a 3 – Year under Graduate Programme spread over six semesters. The course is designed to achieve high degree of technical skills in Problem solving and application development. The course develops requisite professional skills and problem solving abilities for pursuing a successful career in software industry and forms the required basics for pursuing higher studies in Computer Science.

II Eligibility

A pass in the Higher secondary Examination (Academic Stream) conducted by the Government of Tamil Nadu with Mathematics as one of the subjects.

III Programme Objectives

PO1	Scientific aptitude will be developed in Students
PO2	Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the Computer Science & humanities stream.
PO3	Students will become employable; Students will be eligible for career opportunities in education field, Industry, or will be able to opt for entrepreneurship.
PO4	Students will possess basic subject knowledge required for higher studies, professional and applied courses.
PO5	Students will be aware of and able to develop solution-oriented approach towards various Social and Environmental issues.
PO6	Ability to acquire in-depth knowledge of several branches of Computer Science and aligned areas. This Programme helps learners in building a solid foundation for higher studies in Computer Science and applications.
PO7	The skills and knowledge gained leads to proficiency in analytical reasoning, which can be utilized in modelling and solving real life problems.
PO8	Utilize computer programming skills to solve theoretical and applied problems by critical understanding, analysis and synthesis.
PO9	Ability to share ideas and insights while seeking and benefitting from knowledge and insight of others.
PO10	Mould the students into responsible citizens in a rapidly changing interdependent society.

IV Programme Specific Objectives

PSO1	Think in a critical and logical based manner
PSO2	Familiarize the students with suitable software tools of computer science and industrial applications to handle issues and solve problems in mathematics or statistics and realtime application related sciences.
PSO3	Know when there is a need for information, to be able to identify, locate, evaluate, and effectively usethat information for the issue or problem at hand.
PSO4	Understand, formulate, develop programming model with logical approaches to Address issues arisingin social science, business and other contexts.
PSO5	Acquire good knowledge and understanding to solve specific theoretical and applied problems in advanced areas of Computer science and Industrial statistics.
PSO6	Provide students/learners sufficient knowledge and skills enabling them to undertake further studies inComputer Science or Applications or Information Technology and its allied areas on multiple disciplines linked with Computer Science.
PSO7	Equip with Computer science technical ability, problem solving skills, creative talent and power of communication necessary for various forms of employment.
PSO8	Develop a range of generic skills helpful in employment, internships& societal activities.
PSO9	Get adequate exposure to global and local concerns that provides platform for further exploration into multi-dimensional aspects of computing sciences.
PSO10	The state of art technologies in conducting a Explain in a scientific and systematic way and arriving at a precise solution is ensured

B.Sc. Computer Science - COURSE STRUCTURE

YEAR – I SEMESTER – I

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part-I	----	Language Paper-I	3	6	25	75	100
Part-II	100L1Z	English Paper-I	3	6	25	75	100
Part-III	125C1A	CC- I: Python Programming **@#$%&**	5	4	25	75	100
	125C11	CC- II: Python Programming Practical **@#$%&**	5	5	40	60	100
	125E1A 125E1B 125E1C	EC - I Generic / Discipline Specific (Any one): Mathematics I **@#$%& /** Statistics I **@#$%& /** Physics I **#$%**	3	5	25	75	100
			2	3	25	75	100
	---	Physics-I Practical **#$%**	---	2	---	---	---
Part-IV	125S1A	SEC - I: Office Automation **@#$%&** *	2	2	25	75	100
	100S1A	Basic Tamil-I (Other Language Students) *					
	100S1B	Advanced Tamil-I (Other Language Students) *					
	125B1A	FC: Fundamentals of Computers **@#$%&**	2	2	25	75	100
			22/23	30			

*** PART-IV: SEC-1 / Basic Tamil / Advanced Tamil (Any one)**

1. Students who have studied Tamil upto XII STD and also have taken Tamil in Part I shall take SEC-I.
2. Students who have not studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take Basic Tamil comprising of Two Courses (level will be at 6th Std.).
3. Students who have studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take Advanced Tamil comprising of Two Courses.

YEAR – I SEMESTER – II

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part-I	----	Language Paper-II	3	6	25	75	100
Part-II	100L2Z	English Paper-II	3	6	25	75	100
Part-III	125C2A	CC-III: Introduction to Computer Architecture and Microprocessor **$**	5	4	25	75	100
	125C21	CC - IV: Introduction to Computer Architecture and Microprocessor Practical **$**	5	5	40	60	100
	125E2A 125E2B 125E2C	EC-II Generic / Discipline Specific: Mathematics II **@#$%&**/ Statistics II **@#$%&**/ Physics II **#$%**	3	5	25	75	100
			2	3	25	75	100
	125E21	Physics I & II (Practicals) **#$%**	2	2	40	60	100
Part-IV	125S2A	SEC- II: Quantitative Aptitude **@#$%&** *	2	2	25	75	100
	100S2A	Basic Tamil-II (Other Language Students) *					
	100S2B	Advanced Tamil-II (Other Language Students) *					
	125S2B	SEC- III: Problem Solving Techniques **$**	2	2	25	75	100
			23/24	30			

YEAR – II SEMESTER – III

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part-I	----	Language Paper-III	3	6	25	75	100
Part-II	200L3Z	English Paper-III	3	6	25	75	100
Part-III	225C3A	CC - V: Java Programming **@#$%&**	5	4	25	75	100
	225C31	CC - VI: Java Programming Practical **@#$%&**	5	5	40	60	100
	225E3A 225E3B 225E3C	EC-III Generic / Discipline Specific: Mathematics I **@#$%&**/ Statistics I **@#$%&**/ Physics I **#$%**	3	5	25	75	100
			2	3	25	75	100
	---	Physics-I Practical **#$%**	---	2	---	---	---
Part-IV	225S31	SEC- IV: (Entrepreneurial Based): Web Page Design Practical **@#$%&**	1	1	40	60	100
	225S32	SEC- V: Desktop Publishing Practical **@#$%&**	2	2	40	60	100
	----	Environmental Science	--	1	--	--	--
			21/22	30			

YEAR – II SEMESTER – IV

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part-I	----	Language Paper-IV	3	6	25	75	100
Part-II	200L4Z	English Paper-IV	3	6	25	75	100
Part-III	225C4A	CC - VII: Data Structures and Algorithms **$**	5	4	25	75	100
	225C41	CC -VIII: Data Structures and Algorithms Practical **$**	5	4	40	60	100
	225E4A 225E4B 225E4C	EC-IV Generic / Discipline Specific : Mathematics II **@#$%&**/ Statistics II **@#$%&**/ Physics II **#$%**	3	5	25	75	100
			2	3	25	75	100
	225E41	Physics I & II (Practicals) **#$%**	2	2	40	60	100
Part-IV	225S4A	SEC -VI: Emotional Intelligence **@#$%&**	2	2	25	75	100
	225S4B	SEC -VII: Technical Writing **@#$%&**	2	2	25	75	100
	---	Environmental Science	2	1	25	75	100
			25/26	30			

YEAR – III SEMESTER – V

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part- III	325C5A	CC - IX: Operating System **@$**	3	5	25	75	100
	325C51	CC - X: Operating System Practical **$**	5	5	40	60	100
	325C5B	CC - XI: Relational Database Management System **@#$**	4	5	25	75	100
	325C52	CC-XII: Relational Database Management System Practical **#$**	4	5	40	60	100
	325E5A 325E5B 325E5C	EC-V: Computer Networks **#$%&**/ Mobile Ad-hoc Network **@#$%&** / Data Mining and Warehousing **@#$%&**	3	4	25	75	100
	325E5D 325E5E 325E5F	EC -VI: Software Engineering **@#$%&** / Software Testing **$** / Digital Image Processing **$**	3	4	25	75	100
Part-IV	---	Value Education	2	2	25	75	100
	---	Internship / Industrial Training (During summer vacation at the end of IV semester)	2	--	--	--	--
			26	30			

YEAR – III SEMESTER – VI

Part	Sub. Code	List of Courses	Credit	Hrs	Int.	Ext.	Total
Part- III	325C6A	CC- XIII: Programming in ASP.NET **#$**	4	6	25	75	100
	325C61	CC- XIV: Programming in ASP.NET Practical **#$**	4	6	40	60	100
	325C62	CC - XV: Project with Viva voce **#$**	4	6	40	60	100
	325E6A 325E6B 325E6C	EC -VII: Artificial Intelligence **$** / Introduction To Data Science **@#$** / Internet of Things and its Applications **@#$%&**	3	5	25	75	100
	325E6D 325E6E 325E6F	EC -VIII: Cloud Computing **@#$%&** / Big Data Analytics **@#$%&** / Block Chain Technology **$**	3	5	25	75	100
Part-IV	325S61	Professional Competency Skill Course: Advanced Excel Practical **#$**	2	2	40	60	100
Part-V	---	Extension Activity	1	--	--	--	--
			21	30			

@ - Common to B.C.A.
 # - Common to B.Sc. Software Applications
$ - Common to B.Sc. Computer Science
% - Common to B.Sc. Computer Science with Artificial Intelligence
& - Common to B.Sc. Computer Science with Data Science

-X-X-X-