University of Madras

Chepauk, Chennai 600 005

[Est. 1857, State University, NAAC 'A^{++}' Grade, CGPA 3.59, NIRF 2019 Rank: 20]

Website: www.unom.ac.in, Tel. 044-2539 9561

Postgraduate Programme
in
M.Sc. Computer Science

Curriculum and Syllabus
(with effect from the Academic Year 2023-24)

June 2023

Learning Outcome Based Curriculum Framework

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

REGULATIONS ON LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK FOR POSTGRADUATE EDUCATION	
Programme	**M.Sc. Computer Science**
Programme Code	
Duration	**PG - Two Year**
Programme Outcomes (POs)	○ To possess advanced knowledge of Computing, Mathematical basics for contemporary Computing Specialization and Knowledge of defined problem domain ○ To identify a prospective domain, review research literature and analyze the problems using mathematical methods and suggest ○ To have the Ability to use design tools, design software as per needs and specifications ○ To apply acquired knowledge of the domain in investigating the software design, from design of experiments, analysis of data to provision of valid conclusions. ○ To possess the skills to use modern software and hardware tools to analyze problems. ○ To possess the knowledge of ethical and legal principles and cyber regulations ○ To Possess ability for self-education and attitude for life-long learning in the broadest context of technological change ○ To possess the ability to communicate scientific facts effectively in both verbal and written form to the society ○ To possess the ability to understand the impact of IT solutions in a global and societal context ○ To possess the skill to find out the right opportunity for entrepreneurship for the betterment of an individual and society at large
Programme Specific Outcomes (PSOs)	• Implement the concept of theory and technology with classical and modern techniques for solving the complex problems in Computer Science. • Be more curious towards learning new and emerging technologies that adapt quickly to changes. • Design, execute and evaluate computing projects in academia and industries using appropriate technologies. • Know the contextual knowledge in computing science research and communicate effectively with stakeholders with the society at large for enhancing the quality of life. • Be honest in upholding the ethical principles and social responsibilities along with socio-economic innovations.

PROGRAMME OUTCOMES (PO) - PROGRAMME SPECIFIC OUTCOMES (PSO) MAPPING

PROGRAMME SPECIFIC OUTCOMES (PSO)					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
PSO1	**3**	**3**	**3**	**3**	**3**
PSO2	**3**	**3**	**3**	**3**	**3**
PSO3	**3**	**3**	**3**	**3**	**3**
PSO4	**3**	**3**	**3**	**3**	**3**
PSO5	**3**	**3**	**3**	**3**	**3**

Level of Correlation between PO's and PSO's
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Assign the value
1 – Low
2 – Medium
3 – High
0 – No Correlation

METHODS OF EVALUATION		
Internal Evaluation	Continuous Internal Assessment Test	**25 Marks**
	Assignments / Snap Test / Quiz	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	**75 Marks**
Total		**100 Marks**

METHODS OF ASSESSMENT	
Remembering (K1)	● The lowest level of questions require students to recall information from the course content ● Knowledge questions usually require students to identify information in the textbook.
Understanding (K2)	● Understanding of facts and ideas by comprehending organizing, comparing, translating, interpolating and interpreting in their own words. ● The questions go beyond simple recall and require students to combined together
Application (K3)	● Students have to solve problems by using / applying a concept learned in the classroom. ● Students must use their knowledge to determine a exact response.
Analyze (K4)	● Analyzing the question is one that asks the students to break down something into its component parts. ● Analyzing requires students to identify reasons causes or motives and reach conclusions or generalizations.
Evaluate (K5)	● Evaluation requires an individual to make judgment on something. ● Questions to be asked to judge the value of an idea, a character, a work of art, or a solution to a problem. ● Students are engaged in decision-making and problem–solving. ● Evaluation questions do not have single right answers.
Create (K6)	● The questions of this category challenge students to get engaged in creative and original thinking. ● Developing original ideas and problem solving skills

Course	Number of Credits	Hours Per Week	Examination Duration (hrs)	Marks		
				I. A	ESE	Total
Semester - I						
436C1A: Core – I Theory Advanced Data Structures and Algorithms	4	5	3	25	75	100
436C1B: Core – II Theory Advanced Python Programming	4	5	3	25	75	100
436C1C: Core – III Practical Advanced Data Structures and Algorithms Practical	3	5	3	40	60	100
436C1D: Core – IV Practical Advanced Python Programming Practical	3	5	3	40	60	100
Elective – I Theory (Any one) 436E1A: Cloud Computing 436E1B: Internet of Things 436E1C: Advanced Computer Architecture	3	5	3	25	75	100
Elective – II Theory (Any one) 436E1D: Principles of Complier Design 436E1E: Natural Language Processing 436E1F: Distributed Database Systems	3	5	3	25	75	100
	20	**30**				

Course	Number of Credits	Hours Per Week	Examination Duration (hrs)	Marks		
				I. A	ESE	Total
Semester - II						
436C2A: Core -V Theory Data Mining and Warehousing	4	5	3	25	75	100
436C2B: Core – VI Theory Web Technology and Advanced Java	4	5	3	25	75	100
436C2C: Core – VII Practical Data Mining and Warehousing Practical	4	5	3	40	60	100
436C2D: Core – VIII Practical Web Technology and Advanced Java Practical	3	4	3	40	60	100
Elective - III (Any one) 436E2A: Artificial Intelligence 436E2B: Software Development Technologies 436E2C: Artificial Neural Networks and Deep Learning	3	5	3	25	75	100
Elective – IV (Any one) 436E2D: Computer Vision 436E2E: Agile Software Engineering 436E2F: Human Computer Interaction	3	4	3	25	75	100
436S2A: SEC-I - Fundamentals of Human Rights	2	2	3	25	75	100
	23	**30**				

Course	Number of Credits	Hours Per Week	Examination Duration (hrs)	Marks		
				I. A	ESE	Total
Semester – III						
536C3A: Core IX Theory Data Science and Analytics	4	4	3	25	75	100
536C3B: Core X Theory Machine Learning	4	5	3	25	75	100
536C3C: Core XI Theory Theory of Computation	3	5	3	25	75	100
536C3D: Core XII Practical Data Science and Analytics Practical	3	5	3	40	60	100
536C3E: Core XIII Practical Machine Learning Practical	3	5	3	40	60	100
Elective –V (Any one) 536E3A: Network Security 536E3B: Cryptography 536E3C: Parallel and Distributed Computing	3	4	3	25	75	100
536S3A: SEC–II-Cyber Security	2	2	3	25	75	100
536S3B: Internship Industrial Activity	2	-	-	-	100	100
	24	**30**				

Course	Number of Credits	Hours Per Week	Examination Duration (hrs)	Marks		
				I. A	ESE	Total
Semester – IV						
536C4A: Core - XIV Theory Digital Image Processing	4	5	3	25	75	100
536C4B: Core - XV Project with Viva voce	14	18		20	60+20	100
Elective – VI (Any one) 536E4A: Robotic Process Automation For Business 536E4B: Block Chain Technology 536E4C: Embedded Systems	3	4	3	25	75	100
Skill Enhancement/ Professional Competency Skill (Any one) 536S4A: UML Practical 536S4B: Documentation and Interview skills for Software Engineers	2	3	3	40	60	100
536V4A: Extension Activity	1					
	24	**30**				
Total Credits	**91**					

Component wise Credit Distribution

Credits	Sem I	Sem II	Sem III	Sem IV	Total
PartA	**14**	**15**	**17**	**18**	**64**
Part B **(i) Discipline– Centric/GenericSkill**	**6**	**6**	**5**	**3**	**20**
(ii)SoftSkill		**2**		**2**	**4**
(iii)SummerInternship/IndustrialTraining			**2**		2
PartC				**1**	**1**
Total	**20**	**23**	**24**	**24**	**91**