DR VISHWANATH KARAD
MIT - WORLD PEACE UNIVERSITY

FACULTY OF SCIENCE

M.Sc. Computer Science

BATCH – 2021-23

W. E. F. A.Y. 2021-22

PROGRAM STRUCTURE

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Dr. Prasad Khandekar
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PROGRAM STRUCTURE

Preamble:

In first year, courses like Advanced Operating Systems and Network Security are included to form the basic building blocks to understand the operating system in detail and the security related issues in networking. Introduction to Data Science with R is included to give brief overview of data science concepts and learn R programming. Advanced Java Programming, Android programming, Angular are included to have a hands on training on the programming concepts. Artificial Intelligence, Machine Learning, Cloud Computing courses are included to cope up with the current IT industry demands. Labs of Artificial Intelligence and Machine Learning are carried on Python programming to prepare the students industry as well as research. Two practical courses in computer science per trimester are designed to supplement the theoretical training. Along with Computer Science practical courses mini projects are included to help in building a strong foundation. Students get the opportunity to select courses offered by other schools through Open Elective Basket.

In the second year, departmental elective, courses on writing research paper and practical courses are offered. Practical includes industry internship which gives students hands on experience in solving a real world problem. Students need to select elective courses offered to them as well as MOOC courses are also offered in the three trimesters.

Elective courses include Microservices with Java, Next Generation Databases, Data Mining and Warehousing, Deep Learning, Internet of Things, DevOps, keeping in mind the future requirement of the IT Industry. In trimester five and six students must do internship where they have to work in the software company for 6 months and they need to present the work at the end term exam.

Foundation Program of 2 weeks has been introduced to brush-up the basic numerical computation, programming and other concepts related to Computer Science. The aim and objective of this endeavor is to prepare the students for better performance in learning and placement activities.

Intended philosophy of the syllabus is to meet following guidelines:

Gives strong foundation on core Computer Science subjects.
Expose students to emerging trends in a gradual and incremental way.
Prepare students community to meet the demands of ICT industry.
Offer specialization in a chosen area.
Create research temperament among students in the whole process.

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Vision and Mission of the Program

Vision:

To contribute to the society through excellence in scientific and knowledge-based education utilizing the potential of computer science with a deep passion for wisdom, culture and values.

Mission:

- To create knowledge, to disseminate knowledge, and to provide service to our society
- Provide quality undergraduate and graduate education in both the theoretical and applied foundations of computer science
- Train students to effectively apply this education to solve real-world problems thus amplifying their potential for lifelong high-quality careers
- To give them a competitive advantage in the ever-changing and challenging global work environment
- To achieve a distinguished position in Computer Science through innovative teaching learning methods and research.
- To develop strong fundamentals and habit of life-long learning in students to fulfill the needs of Industry

Program Outcomes

PO1	An ability to apply fundamental knowledge of computing, mathematics, science and engineering appropriate to the discipline.
PO2	An ability to analyze a problem, identify and formulate the computing requirements appropriate to its solution.
PO3	An ability to design, implement, and evaluate a computer - based system, process, component, or program for various applications like public health, environmental safety, human resource management, economical sustainability, cross - cultural and societal needs.
PO4	An ability to formulate models, design and conduct experiments, as well as to analyze and interpret data.
PO5	An ability to use current techniques, skills, and modern tools necessary for computing practice.
PO6	An ability to analyze the local and global impact of computing on individuals, organizations, and society.
PO7	Knowledge of emerging technologies and current trends.

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PO8	An understanding of professional, ethical, legal, security and social issues and responsibilities.
PO9	An ability to function effectively individually and on teams, including diverse and multidisciplinary, to accomplish a common goal.
PO10	Development of emphatic written and verbal communication skills.
PO11	Continuous professional development through long term learning.
PO12	An understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects.

Program Educational Objectives

- Demonstrate proficiency in the analysis of complex problems and the synthesis of solutions to those problems
- Exhibit comprehension of modern software engineering principles
- Establish a breadth and depth of knowledge in the discipline of computer science
- Prove the ability to work effectively as a team member and/or leader in an ever-changing professional environment
- To apply design and development principles in the construction of software systems of varying complexity
- To focus on 'data science and technology' and 'software technology 'to continue innovation in the future
- To prepare learners for higher positions in the IT industries
- To become successful professionals able to gain Employment and/or to be accepted into a Computer Science Ph.D. program

Program Specific Outcomes

- A student with a M.Sc. in Computer Science will have the ability to communicate computer science concepts, designs, and solutions effectively and professionally
- Apply knowledge of computing to produce effective designs and solutions for specific problems
- Identify, analyze, and synthesize scholarly literature relating to the field of computer science
- Use software development tools, software systems, and modern computing platforms.
- Project work gives students hands on experience in solving a real world problem.

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- Students able to design dynamic website in the form of web programming.
- The Syllabus also develops requisite professional skills and problem solving abilities for pursuing a career in Software Industry.

Program Structure:

(a) Program duration: 2 years full time.

(b) System followed: Trimester

(c) Credits System:

(i) Per Year

First Year- 50

Second Year- 38

(ii) Total credits in the program - 88

(d) Credits for activities other than academics: NA

(e) Internship: Full time Six months Industrial training should be completed.

(f) Assessment Criteria:

A student is allowed to take admission in Second Year, if he/she has a backlog of not more than four papers and two practical's of total number of First Year Examination. Minimum 50% credits of first year are required to take admission in second year.

(g) Branches or Specializations: NA

(h) Medium of Instruction and Examination: English

(i) Eligibility criteria for admission to the program: B.Sc.(CS), BCS, B.Sc.(IT) with 50% of Marks (45% marks aggregate in case of candidate backward class categories and persons with disability belonging to Maharashtra state only)

M.Sc. Computer Science
2021-2023

A. Definition of Credit:-

4Hrs.Lecture / Tutorial per week	3credit
6 Hrs. Practical(Lab) per week	2credit

B. Credits:-

Total number of credits for two year Post Graduate M.Sc**.** Program would be 88.

C. Structure of Credits for Postgraduate M.Sc. Program:-

S. No.	Category	Suggested Breakup of Credits(Total 88)
1	Humanities and Social Sciences and Peace Program	06
2	Professional core courses including Laboratory/Mini Project Work	44
3	Professional Elective courses	06
4	Open Electives	02
5	MOOC	06
6	Full Time Industrial Training	24
	Total	**88**

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D. Course code and definition:-

Course code	Definitions
L	Lecture
T	Tutorial
WP	Humanities and Social Sciences and Peace Programs
SEC	Skill Enhancement Courses
OEC	Open Elective Courses
MOOC	Massive Open Online Courses
MSC	M.Sc.(Computer Science)

E. Grading Scheme:

Grades & Grade Points Marks Out of 100	Grade	Grade Point
80-100	O: Outstanding	10
70-79	A+: Excellent	9
60-69	A: Very Good	8
55-59	B+: Good	7
50-54	B: Above Average	6
45-49	C: Average	5
40-44	Pass	4
0-39	Fail	0
Ab	Absent	NA

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F. Foundation Program:

For Foundation Program, 2 weeks (10 days) duration, shall have minimum 4 hours of teaching every day. In total, 40 hours will be given for Foundation Program.
This aim and objective of this program is to re-establish and enhance the basic concepts of Computer Science in order to prepare the students for better learning and placement activities.

At the end of teaching the concern course teacher shall give assignment / case study to the students which shall be submitted to the respective course teacher within a specified time limit. **No credits shall be assigned to any of the course of foundation program.**

S. No.	Name of the Course	Hours of Teaching
1.	Basic Numerical Computation	20
2.	Object-Oriented Programming & Data Base Management System	10
3.	Operating System & Computer Networks	10
	Total	40

M. Sc. Computer Science (First Year) BATCH – 2021-23 (w.e.f. 2021)

Trimester – I

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment, Marks			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
0	Foundation Program										
1	MSC501B	Advanced Java	Core	4		3		50		50	100
2	MSC502B	Advanced Operating System	Core	4		3		50		50	100
3	MSC503B	Introduction to Data Science and R programming	Core	4		3		50		50	100
4	MSC504B	Network Security	Core	4		3		50		50	100
5	MSC505B	Lab on Advanced Java& Mini Project	Core		6		2		50	50	100
6		Lab on Data Science &R and Mini Project	Core		6		2		50	50	100
7	WPC1	World Famous Philosophers, Sages/Saints and Great Kings	SEC	3		2		70		30	100
		Total :		19	12	14	04	270	100	330	700

Weekly Teaching Hours: 31
Total Credits Trimester I: 18

* CCA: Class Continuous Assessment
* LCA: Laboratory Continuous Assessment

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Trimester – II

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks **			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	MSC507B	Algorithm Design Strategies	Core	4		3		50		50	100
2	MSC508B	Android Programming	Core	4		3		50		50	100
3	MSC512B	Artificial Intelligence	Core	4		3		50		50	100
4	MSC510B	Lab on Android & Mini Project	Core		6		2		50	50	100
5	MSC515B	Lab on Python and AI & Mini Project	Core		6		2		50	50	100
6		Open Elective	OEC	3		2		50		50	100
7	WPC4	Philosophy of Science and Religion/Spirituality	WP	3		2		70		30	100
		Total:		18	12	13	04	270	100	330	700

Weekly Teaching Hours: 30
Total Credits Trimester II: 17

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Trimester – III

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	MSC2101	Angular	Core	4		3		50		50	100
2	MSC2102	Machine Learning	Core	4		3		50		50	100
3		Professional Elective I	PE	4		3		50		50	100
4	MSC2104	Lab on Angular & Mini Project	Core		6		2		50	50	100
5	MSC2105	Lab on Python and ML & Mini Project	Core		6		2		50	50	100
6	WPC2	Study of Languages, Peace in Communications and Human Dynamics	WP	3		2		70		30	100
		Total:		15	12	11	04	220	100	280	600

Weekly Teaching Hours: 27
Total Credits Trimester III: 15

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* LCA: Laboratory Continuous Assessment

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Trimester – IV

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	MSC514B	Cloud Computing	Core	4		3		50		50	100
2		Professional Elective II	PE	4		3		50		50	100
3		MOOC I	MOOC			2					
		Total:		08		08		100		100	200

Weekly Teaching Hours: 08
Total Credits Trimester IV: 08

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* LCA: Laboratory Continuous Assessment

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M.Sc. Computer Science (Second Year) BATCH – 2021-23 (w.e.f. 2021)

Trimester – V

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs		Credits		Assessment Marks**			
				Theory	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	MSC2201	Full Time Industrial Training I	Core		36		12		300	300	600
2		MOOC-II	MOOC			2					
3		Writing Research Paper -I	Core	01		1			50		50
		Total :		01	36	03	12		350	300	650

Weekly Teaching Hours: 37
Total Credits Trimester V: 15

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Trimester – VI

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Total
1	MSC2301	Full Time Industrial Training II	Core			36		12		300	300	600
2		MOOC-III	MOOC				02					
3		Writing Research Paper -II	Core	01			01		50			50
		Total :		01		36	03	12	50	300	300	650

Weekly Teaching Hours: 36
Total Credits Trimester VI: 15

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Professional Elective Courses:

Type	Code	Title	Code	Title	Code	Title
Professional Elective I	MSC509B	Data Mining & Warehousing	MSC518B	Next Generation Databases	MSC513B	Microservices using Java
Professional Elective II		Deep Learning	MIT-WPU-MS2107	IoT(Internet of Things)	MIT-WPU-MS2108	Dev Ops

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