SYLLABUS

DR VISHWANATH KARAD
MIT - WORLD PEACE UNIVERSITY

FACULTY OF SCIENCE

Master of Computer Applications

MCA

BATCH 2021-23

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

Prepared By	Checked and Verified By	Approved By	
Dr. Anuradha Kanade Assistant Professor SoCS	Dr. C. H. Patil PH/HOS SoCS	Dr. Shubhalaxmi Joshi Associate Dean Chairman BOS MITWPU	Dr. Prasad Khandekar In-charge, Division I & Dean, Faculty of Engineering and Technology, MITWPU

PROGRAMME STRUCTURE

Preamble:

First year provides foundation of basic computer fundamental courses along with spiritual sessions. This is tri-semester pattern and first year builds foundation for entire program which will provide complete exposure of prerequisites which are necessary for advance learning from second year onwards. Spiritual sessions will help the students grooming from social and ethical behavior point of view. Three months internship program at the end of First year will be based on mini project related to basic technologies learned in first year.

Second year courses are designed with specialization approach which would help students to develop basic and advanced skills in areas of their interest thereby increasing their level of expertise. At the end of the second-year students will be exposed to student's internship/exchange programs based on the specializations. Second year will be focused on Industry sponsored Research project on Innovation in Technology belonging to the specialization approach for three months, as well as last two trimesters (six months) there will be Industry Internship programs for the students which will be as good as pre-placement exposure with the Industry to work on live projects. This will also help the students to learn managerial and leadership skills, problem solving skills, team spirit, and professional ethics

Intended philosophy of the syllabus is to meet following guidelines:

Give strong foundation on core Computer Science and application courses.
Expose student to emerging trends in a gradual and incremental way.
Offer specialization on a chosen area.
Create research temper among students in the whole process.

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Vision and Mission of the Programme

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.

Programme 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.
- They will be able to transform complex business scenarios and contemporary issues into problems, investigate, understand and propose integrated solutions using emerging technologies.
- 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.
- Develop software solutions to problems across a broad range of application domains through analysis and design.
- Contribute to research in their chosen field and function and communicate effectively, to perform both individually and in a multi-disciplinary team
- Continue the process of life-long learning through professional activities; adapt themselves with ease to new technologies, while exhibiting ethical and professional standards and will be able to work collaboratively as a member or leader in multidisciplinary teams
- To prepare learners for higher positions in the IT industries.

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Programme Specific Outcomes

- Develop an ability to apply knowledge in the computing discipline.
- Develop ability to design and conduct experiments, as well as interpret data
- Develop ability to demonstrate team work with the ability of leadership, analytical reasoning for solving time critical problems and strong human values for responsible professional.
- Develop ability to use current technologies, skills and models for computing practice.
- Develop ability to communicate ideas effectively
- Develop ability to use research, experiment, contemporary issues to solve industrial problems.
- Develop techniques to enhance ability for lifelong learning.
- Develop class environment congenial and competitive for generation of ideas, innovation and sharing.
- To make graduates understand cross cultural, societal, professional, legal and ethical issues prevailing in 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.
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.

Prepared By
Dr. Anuradha Kanade
Assistant Professor
SoCS

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PH/HOS
SoCS

Approved By
Dr. Shubhalaxmi Joshi
Associate Dean
Chairman BOS
MITWPU

Dr. Prasad Khandekar
In-charge, Division I &
Dean, Faculty of
Engineering and
Technology, MITWPU

Programme Structure:

(a) Programme duration: 2 years full time.

(b) System followed: Trimester Pattern

(c) Credits System:

(i) Per Year

First Year – 50

Second Year – 38

(ii) Total in the programme - 88

(d) Credits for activities other than academics: NA

(e) Internship: Yes.

(f) Assessment Criteria: 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 programme: In order to be eligible for admission to Master of Computer Applications a candidate must have any Science graduate or BCA with 50% of Marks (45% marks aggregate in case of reserved category students from Maharashtra state only). Mathematics is desirable at 12^{th} or graduation level. Every eligible candidate has to pass Common Entrance Test and personal interview to be conducted by MIT-WPU.

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Master of Computer Applications
2021-22

A. Definition of Credit: -

3Hr.Lecture 1 Tutorial per week	3 credit
6HoursPractical (Lab) per week	2 credit

B. Credits: -

Total number of credits for two-year postgraduate MCA Programme would be 88.

C. Structure of Credits for Postgraduate MCA Program:-

S. No.	Category	Suggested Breakup of
1	Humanities and Social Sciences and Peace Programmes.	06
2	Professional core courses including Laboratory/Mini Project Work	54
3	Professional Elective courses	04
4	Full Time Industrial Training	24
	Total	**88**

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D. Course code and definition:-

Course code	Definitions
L	Lecture
T	Tutorial
WPC	World Peace Courses
SEC	Skill Enhancement Courses
MCA	Master of Computer Applications

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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Dr. Vishwanath Karad
MIT WORLD PEACE UNIVERSITY | PUNE
TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

M. C. A. (Science)
(Batch 2021-23) W.E.F. A.Y.2021-22
(First Year) Trimester – I

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		Object Oriented Programming using Java	Core	3	1		3		50		50	100
2		RDBMS Concepts	Core	3	1		3		50		50	100
3		Operating Systems	Core	3	1		3		50		50	100
4		Data Communications and Networking	Core	3	1		3		50		50	100
5		Mini Project and Lab on RDBMS & Lab on Object Oriented Programming using Java	Core			6		2		50	50	100
6		World Famous Philosophers, Sages/Saints and Great Kings	SEC	3			2		30		70	100
		Total:		15	4	6	14	2	230	50	320	600

Weekly Teaching Hours: 25
Total Credits Trimester I: 16

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

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Assistant Professor
SoCS

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SoCS

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(First Year) Trimester – II

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		Web Technologies	Core	3	1		3		50		50	100
2		Data Structures	Core	3	1		3		50		50	100
3		Software Engineering Concepts	Core	3	1		3		50		50	100
4		Advanced Java	Core	3	1		3		50		50	100
5		Mini Project and Lab on Web Technologies, NOSQL & Lab on Adv. Java	Core			6		2		50	50	100
6		Philosophy of Science and Religion/Spirituality	SEC	3			2		30		70	100
		Total :		15	4	12	14	2	230	50	320	600

Weekly Teaching Hours: 25
Total Credits Trimester II: 16

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Dr. Anuradha Kanade
Assistant Professor
SoCS

Checked and Verified By
Dr. C. H. Patil
PH/HOS/
SoCS

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Associate Dean
Chairman BOS
MITWPU

Dr. Prasad Khandekar
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M. C. A. (Science)
(Batch 2021-23) W.E.F. A.Y.2021-22
(First Year) Trimester – III

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		Advanced Web Technologies	Core	3	1		3		50		50	100
2		.NET Framework (ASP.NET)	Core	3	1		3		50		50	100
3		Software Project Management	Core	3			2		50		50	100
4		Design and Analysis of Algorithms	Core	3	1		3		50		50	100
5		Python	Core	3	1		3		50		50	100
6		Mini Project and Lab on ASP.Net & Lab on Advanced Web Technologies	Core			6		2		50	50	100
7		Study of Languages ,Peace in Communications and Human Dynamics	SEC	3			2		30		70	100
		Total :		18	4	6	16	2	280	50	370	700

Weekly Teaching Hours: 28
Total Credits Trimester III: 18

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* LCA: Laboratory Continuous Assessment

***NOTE: 1 Credit for Yoga or Rural Immersion Program. Without which Degree will not be awarded.**

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Dr. Anuradha Kanade
Assistant Professor
SoCS

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PH/HOS/
SoCS

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M. C. A. (Science)
(Batch 2021-23) W.E.F. A.Y.2021-22
(Second Year) Trimester – IV

Sr. No.	Course Code	Name of Course		Type	Weekly Workload, Hrs.			Credits		Assessment Marks**			
					Theory	Tutorial	Lab	Th	Lab	CCA*	LCA*	End Term Test	Tot al
1		Mobile Application Development		Core	3	1		3		50		50	100
2		Artificial Intelligence and Machine Learning		Core	3	1		3		50		50	100
3		Elective I	Web Development using Angular	Elective	3			2		50		50	100
			DevOps										
			Database Administration										
			Software Testing and Quality Assurance										
4		Elective II	Internet of Things	Elective	3			2		50		50	100
			Information Security										
			Cloud Computing										
			Data Science using R										
5		Mini Project and Lab on Mobile Application Development & Lab on AI and ML		Core			6		2		50	50	100
		Total :			12	2	6	10	2	200	50	250	500

Weekly Teaching Hours: 20
Total Credits Trimester IV: 12

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*LCA: Laboratory Continuous Assessment

***NOTE: Attending National Tour is compulsory and submission of Report, without which Degree will not be awarded.**

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Dr. Anuradha Kanade
Assistant Professor
SoCS

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PH/HOS/
SoCS

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MITWPU

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(Second Year) Trimester – V

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs.			Credits		Assessment Marks**			
				Theory	Tutorial	Industry	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Full Time Industrial Internship I	Core			40		12		300	300	600
2		Writing Research Paper	Core		3			1	100			100
		Total:		-	3	40		13	100	300	300	700

Total Credits Trimester V: 13

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Assistant Professor
SoCS

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PH/HOS
SoCS

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Associate Dean
Chairman BOS
MITWPU

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Faculty of Engineering and
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MIT WORLD PEACE UNIVERSITY | PUNE
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(Second Year) Trimester – VI

Sr. No.	Course Code	Name of Course	Type	Weekly Workload, Hrs			Credits		Assessment Marks**			
				Theory	Tutorial	Industry	Th	Lab	CCA*	LCA*	End Term Test	Total
1		Full Time Industrial Internship II	Core			40		12		300	300	600
2		Writing Research Project Proposal	Core		3			1	100			100
		Total:		-	3	40		13	100	300	300	700

Total Credits Trimester VI: 13

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M. C. A. (Science)

Credit Distribution

Trimester	Core	Core Elective	Internship	Peace
I	14			02
II	14			02
III	16			02
IV	08	04		
V	01		12	
VI	01		12	
Total	**54**	**04**	**24**	**06**
Percentage	**65 %**	**35%**		

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Assistant Professor	PH/HOS	Associate Dean	In-cha
SoCS	SoCS	Chairman BOS	Faculty
		MITWPU	Techn