VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI.

Scheme of Teaching and Examinations and Syllabus

Master of Computer and Applications(MCA)

(Effective from the Academic year 2022-23)

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Scheme of Teaching and Examinations – 2022
Master of Computer Applications (MCA)
Choice Based Credit System (CBCS) and Outcome-Based Education(OBE)

I SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination				Credits
				Theory	Practical/Seminar	Skill Development Activities (Hours are for Interaction between faculty and students)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	BSC	22MCA11	Mathematical Foundation for Computer Applications	04	--	--	04	50	50	100	4
2	IPCC	22MCA12	Operating System Concepts	03	02	--	04	50	50	100	4
3	PCC	22MCA13	Data Structures	03	--	--	03	50	50	100	3
4	PCC	22MCA14	Computer Networks	03	--	--	03	50	50	100	3
5	PCC	22MCA15	Design and Analysis of Algorithms	04	--	--	03	50	50	100	4
6	PCCL	22MCAL16	Data Structures with Algorithms Laboratory	--	03	--	03	50	50	100	1.5
7	PCCL	22MCAL17	Computer Networks Laboratory	--	03	--	03	50	50	100	1.5
8	MCC	22RMI18	Research Methodology and IPR	02	--	--	03	50	50	100	2
9	AUD/AEC	22AUD19	BOS recommended ONLINE courses	Classes and evaluation procedures are as per the policy of the online course providers.							PP
10	BC	22MCA110-BC*	Basics of Programming & CO	02	-	02	03	50	50	100	
			TOTAL	**21**	**08**	**02**	**31**	**450**	**450**	**900**	**23**

Note: BSC-Basic Science Courses, PCC: Professional core. IPCC-Integrated Professional Core Courses, MCC- Mandatory Credit Course, AUD/AEC –Audit Course / Ability Enhancement Course, PP-Passing is Mandatory *Only for non-computer science students

Note: PCC- Professional Core Course; PCE- Professional Elective Course

Each Course (PCC/PCE) shall have case study discussion and may be considered as a part of assignment.

Theory courses internal assessment (CIE) shall be based on internal test (50% weightage), 50% weightage may be given to other continues assessment carried out during the teaching learning processes. Course coordinator may select suitable assessment techniques/tools for continues evaluation such as weekly Multiple Choice Questions (MCQ) quiz, higher order cognitive level questions as assignment, and cas e study questions/ any other assignment useful for learning with a minimum cognitive level at the application level. Average marks of three internal tests have to be considered for CIE along with other continues evaluations.

Laboratory courses internal assessment shall be based on internal test (50% weightage), remaining 50% weightage shall be given to continues evaluation of practical execution during regular laboratory hours. During regular laboratory hours students may be asked to solve the extended versions of the laboratory program/problem, and demonstrate higher order cognitive level such as analysis and design programming assignment. During the laboratory hours after the program execution, technical quiz may be conducted. Wherever laboratory is also having project work students may be asked to solve novel problems in their projects work.

Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching–Learning hours (L : P : SDA) can be considered as (3 : 2 : 0) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practi cal part of IPCC shall be included in the SEE question paper.

Audit Courses /Ability Enhancement Courses Suggested by BOS (ONLINE courses): Audit Courses: These are the courses that will bridge the gap between the learned courses and courses intended to learn in feature. **Ability Enhancement Course**: These courses are designed to help students enhance their skills in communication, language, and personality development. These are the ONLINE courses; recommended course list session-wise will be published in advance for the information of students. These courses are not counted for the vertical progression, however the students have to study and pass these courses before completion of the program. As ONLINE courses are available for the parti cular session, for failed student the particular course if it is not available in the next session, he/she shall be permitted to select the different course from ongoing session. Those, who do not take-up/complete shall be declared as fail degree will not be awarded to such students.

Skill development activities:

Students and course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills of the study they have undertaken. The students with the help of the course teacher can take up technical –activities which will enhance their skill or the students should interact with industry (small, medium and large), understand their problems or foresee what can be undertaken for study in the form of research/testing/projects, and for creative and innovative methods to solve the identified problem.

The students shall

(1) Gain confidence in modelling of systems and algorithms.
(2) Work on different software/s (tools) to Simulate, analyze and authenticate the output to interpret and conclude. Operate the simulated system under steady-state conditions to study the system with respect to thermal study, transient and steady-state operations, etc.
(3) Handle advanced instruments to enhance technical talent.

(4) Involve in case studies and field visits/ fieldwork.

(5) Accustom with the use of standards/codes etc., to narrow the gap between academia and industry.

All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.

Bridge course: 22MCA110-BC

22MCA110-BC: Bridge course is a non-credit course introduced to the students who admits into MCA program from non-computer science background. Students have to secure eligibility by scoring 50% marks in aggregate (CIE and SEE).

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Choice Based Credit System (CBCS) and Outcome Based Education(OBE)

II SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	Practical/Seminar	Skill Development Activities (Hours are for Interaction between faculty and students)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	22MCA21	Database Management System	03	--	--	03	50	50	100	3
2	PCC	22MCA22	Object Oriented Programming Using Java	03	--	--	03	50	50	100	3
3	PCC	22MCA23	Software Engineering	04	--	--	03	50	50	100	4
4	IPCC	22MCA24	Web Technologies	03	02	--	04	50	50	100	4
5	PEC	22MCA25x	Professional Elective 1	02	--	02	03	50	50	100	3
6	PEC	22MCA26x	Professional Elective 2	02	--	02	03	50	50	100	3
7	PCCL	22MCAL27	DBMS Laboratory	--	03	--	03	50	50	100	1.5
8	PCCL	22MCAL28	Java Programming Laboratory	--	03	--	03	50	50	100	1.5
9	SEM	22MCA29	SEMINAR	--	02	--	03	50	50	100	2
10	AUD/ AEC	22AUD210	BOS recommended ONLINE courses	--	--	--	--	--	--	--	PP
TOTAL				**16**	**10**	**05**	**28**	**450**	**450**	**900**	**25**

Note: PCC: Professional core courses, PEC: Professional Elective Courses, IPCC-Integrated Professional Core Courses. MPS-Mini Project With Seminar; AUD/AEC; Audit Courses / Ability Enhancement Courses (Mandatory)

Professional Elective 1		**Professional Elective 2**	
Course Code under 22MCA25X	**Course title**	**Course Code under 22MCA26X**	**Course title**
22MCA251	Computer Graphics with Open GL	22MCA261	Cryptography and Network Security
22MCA252	Data Mining and Business Intelligence	22MCA262	Artificial Intelligence
22MCA253	Enterprise Resource Planning	22MCA263	Mobile Application Development
22MCA254	User Interface Design	22MCA264	Distributed operating System
22MCA255	Optimization Techniques	22MCA265	Natural Language Processing

Note:

1. Seminar: This may be hands-on practice**,** Survey report, Data collection and analysis, Coding, APP development, Field visit, and report preparation, Modelling of the System, Simulation, Analysing and authenticating, Case studies. CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Students can present the seminar based on the mini-project undertaken. Participation in the seminar by all postgraduate students of the program shall be mandatory.

The CIE marks awarded for Seminar, shall be based on the evaluation of Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25. Seminar shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete shall be declared as fail in the seminar course and have to complete the same during the subsequent semester.

2. Internship: All the students shall have to undergo a mandatory internship of **06 weeks** during the vacation of II and III semesters. A University examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. The internship shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in internship course and have to complete the same during the subsequent University examination after satisfying the internship requirements.

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III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	Practical/Seminar	Skill Development Activities (Hours are for Interaction between faculty and students)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	PCC	22MCA31	Data Analytics Using Python	03	--	--	03	50	50	100	3
2	PCC	22MCA32	Internet of Things	03	--	--	03	50	50	100	3
3	PEC	22MCA33X	Professional Elective 3	02	--	02	03	50	50	100	3
4	OEC	22MCA34	Open elective Courses 1	02	--	--	03	50	50	100	3
5	PROJ1	22MCAL35	Project Work Phase 1	--	02	--	--	100	--	100	2
6	PCCL	22MCAL36	Data Analytics Lab with Mini-project	--	02	--	03	50	50	100	2
7	PCCL	22MCAL37	IoT Laboratory with Mini Project	--	02	--	03	50	50	100	2
8	SP	22MCAL38	Societal Project	--	02	--	--	100	--	100	2
9	INT	22MCA39	Internship	(06 weeks Internship Completed during the intervening vacation of II and III semesters.)			03	50	50	100	6
TOTAL				**10**	**08**	**02**	**21**	**550**	**350**	**900**	**26**

Note: PCC: Professional core Courses, PEC: Professional Elective Courses. PROJ-Project Work, INT-Internship, OEC Open Elective Courses, SP- Societal Project

Professional Elective 3		Open Elective 1	
Course Code under 22MCA33X	**Course title**	**Course Code under 22MCA34X**	**Course title**
22MCA331	Block chain Technology	22MCA341	Data Structures
22MCA332	Cloud Computing	22MCA342	Fundamentals of Cloud Computing
22MCA333	Digital Marketing	22MCA343	Basics of Python Programming
22MCA334	Object Oriented Design	22MCA344	Web Programming
22MCA335	NOSQL	22MCA345	E-commerce

Note:

1. Project Work Phase-1: Students in consultation with the guide/co-guide if any, shall pursue a literature survey and complete the preliminary requirements of the selected Project work. Each student shall prepare a relevant introductory project document, and present a seminar.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question and Answer session in the ratio of 50:25:25. There is no SEE (University examination) for this course.

2. Societal Project: Working out solutions for societal problems. Applying the technology to solve the societal problems. Those, who have not pursued /completed the Societal Project, shall be declared as fail in the that course and have to complete the same during subsequent semester after satisfying the Societal Project requirements. There is no SEE (University examination) for this course.

3. Internship: Those, who have not pursued /completed the internship, shall be declared as fail in the internship course and have to complete the same during subsequent University examinations after satisfying the internship requirements. Internship SEE (University examination) shall be as per the University norms.

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IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Hours /Week			Examination				Credits
				Theory	Practical/Seminar	Skill Development Activities (Hours are for Interaction between faculty and students)	Duration in hours	CIE Marks	SEE Marks	Total Marks	
				L	P	SDA					
1	IPCC	22MCA41	Advances in Web Technologies	03	--	01	04	50	50	100	4
2	PEC	22MCA42X	Professional Elective 4	02	--	02	03	50	50	100	3
3	PEC	22MCA43X	Professional Elective 5	03	--	02	03	50	50	100	3
4	SEM	22MCA44	SEMINAR (on Project work phase -2)	--	02	--	03	50	50	100	2
5	PROJ 2	22MCA45	Project work phase -2	--	05	--	03	100	100	200	14
TOTAL				**08**	**07**	**05**	**16**	**300**	**300**	**600**	**26**

Note: PCC: Professional core Courses, PEC: Professional Elective Courses. PROJ-Project Work, INT-Internship, OEC Open Elective Courses, SP- Societal Project

Professional Elective 4		Professional Elective 5	
Course Code under 22MCA33X	**Course title**	**Course Code under 22MCA34X**	**Course title**
22MCA421	Deep Learning	22MCA431	Cryptography and Network Security
22MCA422	Big Data Analytics	22MCA432	Semantic Web and Social Networks
22MCA423	Wireless Ad Hoc Networks	22MCA433	Optimization Techniques
22MCA424	Software Project Management	22MCA434	Data Mining & Data Warehousing
22MCA425	Software Defined Networks	22MCA435	Software Metrics & Quality Assurance

Note:

1. Project Work Phase-2:

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a Senior faculty of the department. The CIE marks awarded for project work phase -2, shall be based on the evaluation of Project Report subjected to plagiarism check, Project Presentation skill and performance in the Question and Answer session in the ratio 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the University norms.

2.Seminar:

Students can present the seminar based on the Project phase 1 & 2 undertaken. Participation in the seminar by all postgraduate students of the program shall be mandatory.

The CIE marks awarded for Seminar shall be based on the evaluation of Report, Presentation skill and performance in Question and Answer session in the ratio 50:25:25. Seminar shall be considered as a head of passing and shall be considered for the award of degree. Those, who do not take-up/ complete shall be declared as fail in the seminar course and have to complete the same during the subsequent semester.

Total Credits 23+25+26+26=100