

CHHATRAPATI SHAHU INSTITUTE OF BUSINESS EDUCATION & RESEARCH KOLHAPUR

(An Autonomous Institute under UGC Act)



STRUCTURE AND SYLLABUS OF MASTER OF COMPUTER APPLICATION (MCA) Program under the Faculty of Science

TO BE IMPLEMENTED FROM ACADEMIC YEAR- 2023-24

CURRICULUM OF MCA PROGRAMME

The MCA is a Full Time Programme of Two-year duration and is divided into four semesters. Semester I & II will be taught in the First Year of the programme and Semester III & IV during the second year of the programme. In each semester, there will be teaching for 15 weeks followed by an End-of-Semester (EOS) examination.

ELIGIBILITY:

1. A candidate for being eligible for admission to MCA programme (Faculty of Science) must have passed Bachelors Degree Examination of the Shivaji University or any other University recognized by A.I.U. (Association of Indian Universities) with minimum of aggregate 50% marks for open category and 45% for Reserve category.
2. Having studied Mathematics at 12th examination or having studied Mathematics as one of the subject at graduation level examination.
3. The candidates who have completed B.C.A. are also eligible.
4. In order to become eligible for admission to MCA programme, the candidate has undergo the process prescribed by DTE-Maharashtra from time to time.

DURATION:

MCA is a full time programme of **TWO** Years duration. The programme consists of Four Semesters. The examination to be held in the First and Second Semester will be called Part – I (First Year) and the examination to be held in the Third and Fourth Semester will be called Part – II (Second Year)

If a candidate fails to clear all heads of passing within **SIX** years of his/her first year registration, the past performance will stand automatically nullified.

If a candidate discontinues any of the terms (i.e. Semester – I to IV) on any account, will be allowed to complete the incomplete terms in the subsequent years subject to it is within the stipulated time duration of **SIX** years.

In addition to the above, once a student's term (Semester) is granted, he/she shall be allowed to appear and pass in any of the subsequent examinations held, provided the examinations are within the stipulated period of **SIX** years.

After taking the admission for **FIRST YEAR** and the Semester term (Semester – I or II) is NOT granted in this case the student has to seek fresh admission in the next year and complete the term and pass the examination also within **SIX** years of his/her registration. After taking the admission for **FIRST YEAR** and the Semester term (Semester – I and II) is NOT granted in this case student performance will be nullified.

After taking the admission for SECOND YEAR and the Semester term (Semester – III and IV) is NOT granted in this case the student has to seek fresh admission in the next year and complete the term and pass the examination also within **SIX** years of his/her first year registration.

- **Programme Completion with Break in Between :**

A student who has passed M.C.A.–I and is seeking admission to M.C.A.–II after a long gap (Provided the gap lies within the stipulated duration of **SIX** years) should complete the programme syllabus which is in existence at the time he has sought the admission for the academic year.

Award of degree:

At the end of each semester credits earned by the students will be uploaded Academic Bank Credits (ABC) of each student. Student can **MCA** degree on redemption of 104 earned credits. After successful completion of four semesters of **MCA** mark list ledgers will be forwarded to the Shivaji University for the award of Master's degree (minimum of 104 Credits).

Credit Specification:

- i) Theory Course: A minimum of 15 hrs of teaching per credit is required in a semester.
- ii) Laboratory Course / Field Project: A minimum of 30 hrs in Laboratory activities per credit is required in a semester.

Credit Pattern:

Every course offered will have three components associated with the teaching-learning process of the course, namely

Lecture - L, Tutorial - T, Practice - P

Where, **L** stands for **Lecture** session, **T** stands for **Tutorial** Session consisting participatory discussion / self-study/ desk work/ brief seminar presentations by students and such other novel methods that make a student to absorb and assimilate more effectively the contents delivered in the Lecture classes and **P** stands for **Practice** Session and it consists of Hands on experience / Laboratory Experiments / Field Studies / Case studies that equip students to acquire the much required skill component.

MCA consists of all the three components with weightage depending upon the paper.

If a course is of 4 credits, then the different credit distribution patterns in L: T: P format could be:

Theory Papers: 3: 0.5: 0.5

Practical: 1: 0: 3.0

- **Programme Outcomes:**

1. **Conceptual Knowledge:** Nurturing a foundation of comprehensive understanding and analytical thinking.
2. **Research and Innovation:** Fostering a spirit of research and innovation among students for formulating novel solutions.
3. **Collaborative Learning:** Imbibing collaboration and leadership skills for individual growth and collective empowerment.
4. **Problem-Solving and Critical Thinking:** Developing critical thinking skills for problem-solving and innovative solutions to meet dynamic challenges.

PSOs

1. **Software Development Competency:** Design, develop, and implement software solutions using appropriate tools and technologies to meet industry standards.
2. **Core Computing Skills:** Demonstrate proficiency in core computing concepts and advance the current state-of-the-art through life long learning
3. **Cutting-Edge Technologies Enactment:** Apply cutting-edge technologies in the rapidly evolving field of computer application bearing social relevance and ethics.
4. **Proficiency in Application Domain:** Design and development of applications for varied domains and platforms using best practices.

ASSESSMENT:

Taking into considerations of the UGC and AICTE requirements SIBER has adopted “Choice Based Credit System.” (CBCS). A course can be either full credit (4 credits) or half credit (2 credits). A full credit course shall be of 60 contact hours duration and a half credit course shall be of 30 contact hours duration.

For Theory paper of 100 marks (Four credits) the distribution of the marks will be as follows –

- Internal Marks i.e. Concurrent evaluation - 40 Marks
- External Marks i.e. End of Semester examination - 60 marks

For Practical paper of 100 marks (Four credits) the distribution of the marks will be as follows –

- Practical Examination - 40 Marks
- External Marks i.e. End of Semester examination - 60 marks

For Theory paper of 50 marks (Two credits) the distribution of the marks will be as follows –

- Internal Marks i.e. Concurrent evaluation - 20 Marks
- External Marks i.e. End of Semester examination - 30 marks

Breakup of Internal Marks i.e. Concurrent evaluation -

Sr. No.	Head	Full Credit	Half Credit
1.	Class Participation	10 Marks	05 Marks
2.	Objective Test(Minimum One Test Per Unit)	10 Marks	05 Marks
3.	Seminar /Book Review/ Home Assignment/ Class Assignment	10 Marks	05 Marks
4.	Case Study / Term Paper	10 Marks	05 Marks
5.	Total	40 Marks	20 Marks

The final internal marks will be calculated using the heads shown in above table. **The internal marks obtained by the student has to be disclosed and signed by the student.**

For Practical examination of 40 marks there shall be three questions of 15 marks each, the student has to attempt any two. 10 marks reserved for journal.

- Journal marks - 10 Marks
- Practical Marks i.e. End examination - 30 Marks

The practical examination should be considered as one head of passing i.e. 40 marks.

For the Project Work of 100 marks, the distribution of the marks will be as follows –

- Internal Examiner - 30 Marks
- External Examiner - 30 Marks
- Seminar / Industrial Seminar - 40 Marks

For Project a group of maximum four students can work on a single project.

For Seminar a group of four students has to select a topic, prepare and present it before the examiners.

Sem III – Internship Project (Master Thesis) Evaluation (6 credits)

Students are required to complete one month internship after Semester II examination and evaluation of the same will be at the end of Semester III. (6 credits)

End of Semester Evaluation (60 Marks)			
	Presentation	Viva	Marks
Internal Examiner	15	15	30
External Examiner	15	15	30
Total			60
Internal Evaluation (40 Marks)			
Project Report			10
Mentor evaluation based on attendance & Progress report			10
Industry Confidential Report			20
Total			40

Semester Integrated – Semester IV - 4 credit project work

Project group size – Max 3

End of Semester Evaluation (60 Marks)			
	Presentation	Viva	Marks
Internal Examiner	15	15	30
External Examiner	15	15	30
Total			60
Internal Evaluation (40 Marks)			
Industrial Seminar Report			20
Industrial Seminar Viva			20
Total			40

For Theory Paper Assessment

- 1) The assessment of papers will be done by an Internal and External examiner. A difference of more than **20%** in the marks awarded by these examiners would necessitate the valuation of these papers by the Third examiner. The '**nearest**' highest marks will be considered for determining the average mark of such papers.
- 2) The examiner should submit the marks on separate sheet after completion of on-screen evaluation.
- 3) Once the Student is passed in the internal head of passing (Concurrent evaluation out of 40) in the report submitted to the examination department, the same should be carried forward whenever required.
- 4) The students who failed in the internal head of passing (Concurrent evaluation out of 40) should reappear for the same and the revised marks will be considered further calculation.
- 5) For AEC (Internal Course):

Internal Marks: Out of 50

- i) Class Participation - 10 Marks
- ii) Quiz/Assignment/Journal - 10 Marks
- iii) Practical courses based on practical examination and for other courses based on viva. - 30 Marks

(30 marks evaluation done jointly by internal and external examiners.)

STANDARD OF PASSING:

1. In order to pass in each passing head, a candidate should obtain 50% in the internal marks (Formative evaluation), 40% marks in theory, and minimum of 50% of the marks in aggregate.
2. To pass the M.C.A. examination, a candidate will have to pass in all Four Semester in Two Parts i.e. Part – I (Semester – I to II) and Part – II (Semester – III & IV)
3. To pass the Project work / Seminar course a candidate must obtain a minimum of 50% of the total marks. If a candidate fails in the seminar / project report and its viva-voce, he/she will be required to complete the particular seminar / project report and its viva-voce as a fresh candidate in the subsequent year.
4. A candidate from first year MCA will be eligible to proceed to the semester III ,if he/she is not having more than **FIVE** courses backlog (25% of passing heads) from the first year (i.e. Semester I and II)
5. If student passed in the internal head (formative assessment) as well as theory examination but fails in aggregate (total) head of passing in that case student has to appear only for the theory examination.
6. If students fails in internal marks (formative assessment) and passed in the theory examination, in that case students has to complete the internal marks in next subsequent semester at that time student must clear the aggregate head of passing.
7. Semester Performance Index (SPI)/Cumulative Performance Index (CPI) will be as follows.

Grading System:

Full Credit 100 Marks

Grade Table for Trimester/Semester Examination

Marks Obtained	Letter Grade	Grade Point
96-100	S+	10.0
91-95	S	9.0
86-90	E+	8.5
81-85	E	8.0
76-80	O+	7.5
71-75	O	7.0
66-70	A+	6.5
61-65	A	6.0
56-60	B+	5.5
50-55	B	5.0
--	X	0.0
--	XX	---

Half Credit 50 Marks

Grade Table for Trimester/Semester Examination

Marks Obtained	Letter Grade	Grade Point
48 – 50	S+	10.0
46 – 47	S	9.0
43 – 45	E+	8.5
41 – 42	E	8.0
38 – 40	O+	7.5
36 – 37	O	7.0
33 – 35	A+	6.5
31 – 32	A	6.0
28 – 30	B+	5.5
25 – 27	B	5.0
--	X	0.0
--	XX	---

2. Final Result: For the final result of the student Cumulative Performance Index (CPI) based on total earned credits vis-à-vis total earned grade points shall be calculated will be as follows.

Total earned grade points / Total credits i.e. **88** credits.

Result		
CPI	Final Grade	Classification of Final Result.
9.0 – 10.0	E	Excellent
8.0 – 8.9	O	Out Standing
7.0 – 7.9	A+	Very Good
6.0 – 6.9	A	Good
5.5 – 5.9	B+	Average
5.0 – 5.4	B	Pass
0.0 – 4.9	X	Unsatisfactory (Fail)

Note: An aggregate of **5.0** credit points are required to pass the M.Sc. program.

CALCULATION OF PERFORMANCE INDICES:

A distinction of the performance of one student from the other student is rather impossible to carry out from the grades obtained by a student in all the courses taken by him in a semester/year. Hence, the evaluation of various courses is cumulated in two performance indices termed as semester performance index (SPI) and cumulative performance index (CPI), the explanation of which is given below:

Semester Performance Index (SPI):

The performance of a student in a semester is indicated by a number called Semester Performance Index (SPI). SPI is the weighted average of all the grade points obtained by him in all the courses registered during the semester. If G_i is a grade with numerical equivalent as G_i obtained by a student for the course with credit C_i then, SPI for that semester is calculated using formula.

$$SPI = \frac{\sum_i C_i G_i}{\sum_i C_i}$$

Where summation is for all the courses registered by a student in that Semester SPI is calculated to two decimal places and rounded off. SPI once calculated shall never be modified. Generally, for the students failed in regular examinations SPI is calculated only after the declaration of re-examination grades.

Cumulative Performance Index (CPI):

An up-to-date assessment of the overall performance of a student from the first semester till completion of the programme is obtained by calculating an index called as Cumulative Performance Index (CPI). The CPI is weighted average of the grade points obtained in all the courses registered by a student since the

$$\text{CPI} = \frac{\sum_i C_i g_i}{\sum_i C_i}$$

Besides SPI, CPI is also calculated at the end of every semester upto two decimal places and is rounded off. It is necessary to ensure that one course appears only once in calculation of CPI and the denominator in above equation does not exceed the total number of credits registered by him.

GRACE MARKS UNDER DIFFERENT ORDINANCE.

S.O. No. 1:-Grace Marks for Passing in each head of Passing (Theory/Practical/Oral/ Sessional/External).

The Examinee shall be given the benefit of grace marks only for passing in each head of Passing Theory/Practical/Oral/Sessional/ in External examination as follows.

Head of Passing	Grace Marks
Up to – 50	2
051-100	3
101-150	4
151-200	5
201-250	6
251-300	7
301-350	8
351-400	9
And 401 and above.	10

Subject to the following conditions:

The benefit of such gracing marks in different heads of passing shall not exceed 1% of the aggregate marks in that examination.

The benefit of gracing of Marks under this Ordinance shall be applicable only if the candidate passes the entire examination of Semester.

The gracing is concurrent with the rules and guidelines of Professional statutory bodies at the All India level such as AICTE, MCI, Bar Council, CCIM, and CCIII. NCTE, UGC etc.

S.O. No. 2:- Grace Marks for Getting Higher Class

A Candidate who passes in all the courses and heads of passing in the examination without the benefit of either gracing or condonation rules and whose total number of Marks falls short for securing Second Class/Higher Second Class or First Class by marks not more 1% of the aggregate marks of that examination or up to 10 marks, whichever is less, shall be given the required marks to get the next higher class of grade as the case may be.

Provided that benefits of above mentioned grace marks shall not be given, if the candidate fails to secure necessary passing marks in the aggregate head of passing also, if prescribed in the examination concerned.

Provided further that the benefits of above mentioned grace marks shall be given to the candidate for such examination/s only for which provision of award of class has been prescribed.

Provided further that this gracing is concurrent with the rules and guidelines of Professional statutory bodies at the All India level such as AICTE, MCI, Bar Council, CCIM, and CCIII. NCTE, UGC etc.

S.O. No. 3 Condonation

If a candidate fails in more than one head of passing, his/her deficiency of marks in such head of passing may be condoned by not more than 1% at the aggregate marks of the examination. However condonation, whether in one head of passing or aggregate head of passing be restricted to maximum upto 10 marks only.

Condonation of deficiency of marks be shown in the statement of Marks in the form of asterisk and Ordinance number

Provided further that this gracing is concurrent with the rules and guidelines of Professional statutory bodies at the All India level such as AICTE, MCI, Bar Council, CCIM, and CCIII. NCTE, UGC etc..

BACKLOG:

1. A candidate will be permitted to proceed to the second Semester unconditionally even though he/she fails in one or more courses of the first semester, provided the first semester term is granted..
2. The students who have a backlog of not more than **five courses (25% of passing heads)** in the First year examination (Semester I & II) will be eligible to be admitted to the Second year (III Semester) of MCA.
3. A Candidate will be permitted to proceed to the Fourth Semester unconditionally even though he/she fails in one or more courses of the third semester, provided the third semester term is granted.

NO VERIFICATION OF MARKS AND RE-EVALUATION:

As CSIBER adopted the double evaluation system as well as ONSCREEN evaluation system due to this the verification of marks and re-evaluation of Answer book facility is NOT available in CSIBER.

CHHATRPATI SHAHU INSTITUTE OF BUSINESS EDUCATION AND RESEARCH (CSIBER)

University Road, Kolhapur – 416 004

Out Line Theory Question paper for all the programmes

(Four Unit Course)

Class:

Course Name:

Time: Three hours

Paper no. :

Total marks: 60

INSTURUCTIONS:

1. Question no. 1 is **COMPULSORY**
2. Attempt any **ONE** from Q. No. 2 and Q. No. 3.
3. Attempt any **ONE** from Q. No. 4 and Q. No. 5.
4. Figures to right indicate **FULL** marks

		Marks
Q. 1)	Case Study	(20)
Q. 2)	Essay Type Question	(20)
OR		
Q. 3)	Essay Type Question	(20)
Q. 4)	a) Long Answer Question b) Long Answer Question	(10) (10)
OR		
Q. 5)	a) Long Answer Question b) Long Answer Question	(10) (10)

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CHHATRPATI SHAHU INSTITUTE OF BUSINESS EDUCATION AND RESEARCH (CSIBER)

University Road, Kolhapur – 416 004

Out Line Theory Question paper for all the programmes

(Two Unit Course)

Class:

Course Name:

Paper no. :

Time: Two hours

Total marks: 30

INSTURUCTIONS:

1. Question no. 1 is **COMPULSORY**
2. Attempt any **ONE** from Q. No. 2 and Q. No. 3.
3. Attempt any **ONE** from Q. No. 4 and Q. No. 5.
4. Figures to right indicate **FULL** marks

		Marks
Q. 1)	Case Study	(10)
Q. 2)	Essay Type Question	(10)
OR		
Q. 3)	Essay Type Question	(10)
OR		
Q. 4)	Long Answer Question	(10)
Q. 5)	Long Answer Question	(10)

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CHHATRPATI SHAHU INSTITUTE OF BUSINESS EDUCATION AND RESEARCH (CSIBER)
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NATURE OF PRACTICAL QUESTION PAPER

Time : 2 Hours

Total Marks : 40

Instructions:

1. **Attempt any TWO questions.**
2. **10 Marks are reserved for journal**

		Marks
Q. 1)	ONE LONG QUSTION / DIVIDE QUESTION INTO TWO BITS	(15)
Q. 2)	ONE LONG QUSTION / DIVIDE QUESTION INTO TWO BITS	(15)
Q. 3)	ONE LONG QUSTION / DIVIDE QUESTION INTO TWO BITS	(15)

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MCA Course Structure (NEP 2020)

M. C. A. - I Semester-I

Course Code	Course Name	Credits	Contact Hours	Int. Marks	Pract. Marks	Ext. Marks	Total Marks
MCA-101	Object Oriented Software Engineering	4	60	40	--	60	100
MCA-02(P)	Web Design and Development	4	60	--	40	60	100
MCA-03(P)	Programming with 'C'	4	60	--	40	60	100
MCA-104	Design and Analysis of Algorithms	4	60	40	--	60	100
MCA-105	Statistical & Mathematical Application	4	60	40	--	60	100
MCA-106	Research Methodology	4	60	40	--	60	100
Total Credits		24	360	160	80	360	600

M. C. A. - I Semester-II

Course Code	Course Name	Credits	Hours	Int. Marks	Pract Marks	Ext. Marks	Total Marks
MCA-201	Computer Architecture and Operating system	4	60	40	--	60	100
MCA-202(P)	.Net Programming	4	60	--	40	60	100
MCA-203(P)	Java Programming	4	60	--	40	60	100
MCA-204	Relational Database Management Systems	4	60	40	--	60	100
MCA-205	Computer Networks	4	60	40	--	60	100
MCA-206	Advanced Web Technologies	4	60	40	--	60	100
MCA-207	Group Seminar and Project Work I	4	60	40	--	60	100
Total Credits		28	420	200	80	420	700

M. C. A. - II Semester-III

Course Code	Course Name	Credits	Hours	Int. Marks	Pract Marks	Ext. Marks	Total Marks
MCA-301	Software Project Management	2	30	20	--	30	50
MCA-302(P)	Machine Learning with Python	4	60	--	40	60	100
MCA-303(P)	Data and File Structure	4	60	--	40	60	100
MCA-304	Linux Administration	4	60	40	--	60	100
MCA-305	Blockchain Technology	4	60	40	--	60	100
MCA-306	A) Mobile Computing B) Spring Framework C) Computer Graphics	4	60	40	--	60	100
MCA-307	Internship Project and Viva-Voce (Master Thesis)	6	90	40	--	60	100
Total Credits		28	420	180	80	390	650

M. C. A. - II Semester-IV

Course Code	Course Name	Credits	Hours	Int. Marks	Pract Marks	Ext. Marks	Total Marks
MCA-401	Artificial Intelligence	4	60	40	--	60	100
MCA-402(P)	Full Stack Web Development	4	60	--	40	60	100
MCA-403	Internet of Things	4	60	40	--	60	100
MCA-404	Big Data Analytics	4	60	40	--	60	100
MCA-405	A) Cloud Computing B) Introduction to Containers Docker and Kubernetes C) Theoretical Computer Science	4	60	40	--	60	100
MCA-406	Industrial Seminar and Project work Viva-voce	4	60	40	--	60	100
Total Credits		24	360	200	40	360	600

Student undergo internship for duration of 30 days after completion of Sem III examination. The evaluation is done at the time of Sem III.