AQAR 2023-24

Criteria I

1.2.1 Number of Programmes in which Choice Based Credit System (CBCS)/ elective course system has been implemented includes following things.

8. Choice based Credit System (CBCS) and Grading:

The detail document about Choice based Credit System for PG Programme is available on university website. The Grading methodology is also available on university website. University reserves rights to revise CBCS and grading system time to time.

9. Medium of Instruction:

The medium of Instruction will be English.

10. Clarification of Syllabus:

It may be necessary to clarify certain points regarding the course. The BOS should meet to study and clarify any difficulties from the Institutes, as and when required.

11. Revision of Syllabus:

As the computer technology is changing very fast, revision of the syllabus should be considered every 2 years.

12. Attendance:

The student must meet the requirement of 75% attendance per semester per course for grant of the term. The Director shall have the right to withhold the student from appearing for examination of a specific course if the above requirement is not fulfilled. Since the emphasis is on continuous learning and concurrent evaluation, it is expected that the student's study all-round the semester. Therefore, there shall not be any preparatory leave before the University examinations.

13. ATKT Rules:

The ATKT rules mention in CBCS handbook (available on university website) is application to MCA Programme.

14. Maximum Duration for completion of the Programme:

The candidates shall complete the MCA Programme WITHIN 5 YEARS from the date of admission, by earning the requisite credits. The student will be finally declared as failed if she/he does not pass in all credits within a total period of four years. After that, such students will have to seek fresh admission as per the admission rules prevailing at that time.

15. Structure of the Programme and detail syllabus of each course:

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Institute of Informa   echnology
- Vidyanagari, Bar   ati Dist, Pune

Semester I

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Java Programming	IT11	3	50	25
2	Data Structure and Algorithms	IT12	3	50	25
3	Object Oriented Software Engineering	IT13	3	50	25
4	Operating System Concepts	IT14	3	50	25
5	Network Technologies	IT15	3	50	25
6	Open Course 1	OC11	1		25
7	Open Course 2	OC12	1		25
	* Practicals				
8	Practical	IT11L	5	50	75
9	Mini Project	ITC11	5	50	75
	Soft Skills				
10	Soft Skills - I	SS11	1		25
			28	350	350

Semester II

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Python Programming	IT21	3	50	25
2	Software Project Management	IT22	3	50	25
3	Optimization Techniques	MT21	3	50	25
4	Advanced Internet Technologies	IT23	3	50	25
5	Advanced DBMS	IT24	3	50	25
6	Open Course 3	OC21	1		25
7	Open Course 4	OC22	1		25
	* Practicals				
8	Practical	IT21L	5	50	75
9	Mini Project	ITC21	5	50	75
	Soft Skills				
10	Soft Skills - II	SS21	1		25
			28	350	350

Deshmukh

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Deshmukh

Director
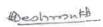**Vidya Pratishthan's**
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Vidyanagari, Baramati Dist, Pune

Semester III

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Mobile Application Development	IT31	3	50	25
2	Data Warehousing and Data Mining	IT32	3	50	25
3	Software Testing and Quality Assurance	IT33	3	50	25
4	Knowledge Representation & Artificial Intelligence - ML, DL	IT34	3	50	25
5	Cloud Computing	IT35	3	50	25
6	Open Course 5	OC31	1		25
7	Open Course 6	OC32	1		25
	* Practicals				
8	Practical	IT31L	5	50	75
9	Mini Project	ITC31	5	50	75
	Soft Skills				
10	Soft Skills- III	SS31	1		25
			28	350	350

Semester IV

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	DevOps	IT41	3	50	25
2	PPM and OB	BM41	3	50	25
2	Project	ITC41	22	250	300
			28	350	350

Semester	Credit	IE	UE
Semester I	28	350	350
Semester II	28	350	350
Semester III	28	350	350
Semester IV	28	350	350
Total	112	1400	1400
			2800

Deshmukh

Practical Training and Project Work:

At the end of the sixth semester of study, a student will be examined in the course" Project work".

1. The Major Project work will be in the Semester VI. It may be done individually or in groups in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to see the progress of individual modules is independent of others.
2. Students should take guidance from an internal guide and prepare a Project Report on "Project Work" back to back print (one copy) which is to be submitted to the Director of the Institute. Wherever possible, a separate file containing source-code listings should also be submitted. Every student should also submit soft copy of their project synopsis.
3. The Project Synopsis should contain an Introduction to Project, which should clearly explain the project scope in detail. Also, Data Dictionary, ERDs, File designs and a list of output reports should be included if required as per the project title and scope.
4. The project Work should be of such a nature that it could prove useful or be relevant from the commercial/management angle.
5. Selected project must have relevant scope for 400 marks.
6. For Major Project work, student must visit at least once in a week to the institute and the progress of the project must be communicated to project guide.
7. The project report will be duly accessed by the internal guide and marks will be communicated by the Director to the University along with the marks of the internal credit for theory and practical to be communicated for all other courses.
8. The project report should be prepared in a format prescribed by the University, which also specifies the contents and methods of presentation.
9. The major project work carry 150 marks for internal assessment and 250 marks for external viva. The external viva shall be conducted by a minimum of one external examiner.
10. Project work can be carried out in the Institute or outside with prior permission of the Institute.

(IV) Choice Based Credit System

Choice Based Credit System (CBCS) offers wide ranging choice for students to opt for courses based on their aptitude and their career goals. CBCS works on the fundamental premise that students are mature individuals, capable of making their own decisions.

CBCS enables a student to obtain a degree by accumulating required number of credits prescribed for that degree. The number of credits earned by the student reflects the knowledge or skills acquired by him / her. Each course is assigned a fixed number of credits based on the contents to be learned & the expected effort of the student. The grade points earned for each course reflects the student's proficiency in that course. CBCS is a process of evolution of educational reforms that would yield the result in subsequent years and after a few cycles of its implementation.

A. Key features of CBCS:

1. **Enriching Learning Environment:** A student is provided with an academically rich, highly flexible learning system blended with abundant provision for skill development and a practical orientation that he/she could imbibe without sacrificing his/her creativity. There is a definite movement away from the traditional lectures and written examination.

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2. **Continuous Learning & Student Centric Concurrent Evaluation:** CBCS makes the learning process continuous. Likewise the evaluation process is not only made continuous but also made learner-centric. The evaluation is designed to recognize the capability and talent of a student.

3. **Active Student-Teacher Participation:** CBCS leads to quality education with active teacher student participation. This provides avenues to meet student's scholastic needs and aspirations.

4. **Industry Institute Collaboration:** CBCS provides opportunities for meaningful collaboration with industry and foreign partners to foster innovation, by introduction of electives and half credit courses through the cafeteria approach. This will go a long way in capacity building of students and faculty.

5. **Interdisciplinary Curriculum:** Cutting edge developments generally occur at the interface of two or more discipline. The interdisciplinary approach enables integration of concepts, theories, techniques, and perspectives from two or more disciplines to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline.

6. **Employability Enhancement:** CBCS shall ensure that students enhance their skill/employability by taking up project work , entrepreneurship and vocational training

7. **Faculty Expertise:** CBCS shall give the Institutes the much needed flexibility to make best use of the available faculty expertise.

B. Pre-requisites for successful implementation of CBCS

The success of the CBCS also requires certain commitments from both the students and the teachers.

1. The student should be regular and punctual to his classes, studious in carrying out the assignments and should maintain consistency in his tempo of learning. He should make maximum use of the available library, internet and other facilities.

2. The teachers are expected to be alert and punctual and strictly adhere to the schedules of teaching, tests, seminars, evaluation and notification of results.

3. All teachers should notify the tentative schedule of teaching and tests of the entire semester, including the dates of tests, dates of score notification and all other schedules, which can be planned in advance.

4. The teachers are expected to adhere to unbiased and objective evaluation and marking of concurrent evaluation scores (internal examinations) which will not only maintain the confidence of the students, but, at the same time, ensure that merit is given due credit.

5. Transparency, objectivity and quality are the key factors that will sustain a good CBCS system.

6. At the post-graduate level, and in a professional programme, the syllabus is to be looked upon as the bare minimum requirement to be fulfilled and sufficient emphasis shall be laid on contemporary aspects, going beyond the syllabus.

C. Credits

Credit: The definition of 'credits' can be based on various parameters - such as the learning hours put in, learning outcomes and contact hours, the quantum of content/syllabus prescribed for the course.

Each course is assigned a certain credit, depending on the estimated effort put in by a student. When the student passes that course, he/she earns the credits associated with that course.

In the Credit system the emphasis is on the **hours put in by the learner and not on the workload of the teacher.** Each credit can be visualized as a individual and/or combination of **three components viz. Lecture (L), Tutorials (T), Practice (Practical / Project Work) (P) i.e. LTP Pattern.**

The effort of the learner for each Credit Point may be considered to have two parts:

a) One part consisting of the hours actually spent in class room / practical / field work instructions and
b) The other part consisting of notional hours spent by the Learner in self-study, in the library, peer interactions, case study, writing of journals and assignments, projects etc. for the completion of that course.

Every course offered may have three components and/or combination of three components associated with the teaching-learning process of the course, viz.

a) **Lecture (L):** Classroom sessions delivered by faculty in an *interactive mode*
b) **Tutorial (T):** Session consisting of 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 sessions
c) **Practice (P):** Practice session /Practical / Project Work consisting of Hands-on experience / Field Studies / Case studies that equip students to acquire the much required *skill component*.

The teaching / learning as well as evaluation are to be interpreted in a broader perspective as follows:
a) Teaching – Learning Processes: Classroom sessions, Group Exercises, Seminars, Small Group Projects, Self-study, etc.
b) Evaluation: Tutorials, Class Tests, Presentations, Field work, Assignments, Research papers, Term papers, etc.

In terms of credits, for a period of one semester of 15 weeks:
a) *every ONE hour session per week of L amounts to 1 credit per semester*
b) *a minimum of TWO hours per week of T amounts to 1 credit per semester,*
c) *a minimum of TWO hours per week of P amounts to 1 credit per semester,*

A course shall have either or all the three components, i.e. a course may have only lecture component, or only practice component or a combination of any two or all the three components.

The MCA programme is a combination of:
a) Four-Credit Courses (100 Marks each): 4 Credits each
b) Two-Credit Courses (50 Marks each): 2 Credits each
c) One-Credit Courses (25 Marks each) : 1 Credits each

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SEMESTER I

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Problem Solving using C++	IT11	4	70	30
2	Software Engineering using UML	IT12	4	70	30
3	Database Management System	IT13	4	70	30
4	Essentials of Operating System	IT14	4	70	30
5	Business Process Domain	BM11	4	70	30
6	Open Subject 1	OS11	1	-	25
7	Open Subject 2	OS12	1	-	25
8	Case Study on Requirement Gathering	CS11	1	-	25
Practicals					
9	Practical based on IT11	IT11L	2	-	50
10	Practical based on OS11 and OS12	OS1L	2	-	50
Soft Skills					
11	Soft Skills - I	SS11	1	-	25
			28	350	350

SEMESTER II

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Data Structure and Algorithm	IT21	4	70	30
2	Web Technology	IT22	4	70	30
3	Business Statistics	MT21	4	70	30
4	Essentials of Networking	IT23	4	70	30
5	Principles and Practices of Management and Organizational Behavior	BM21	4	70	30
6	Open Subject 3	OS21	1	-	25
7	Open Subject 4	OS22	1	-	25
8	Case Study on Feasibility Study and Analysis	CS21	1	-	25
Practicals					
9	Practical based on IT21	IT22L	2	-	50
10	Practical based on OS21 and OS22	OS2L	2	-	50
Soft Skill					
11	Soft Skills - II	SS21	1	-	25
			28	350	350

SEMESTER III

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Java Programming	IT31	4	70	30
2	Data Warehousing & Data Mining	IT32	4	70	30
3	Testing & Quality Assurance	IT33	4	70	30
4	Probability and Combinatorics	MT31	4	70	30
5	Cloud Computing	IT34	4	70	30
6	Open Subject 5	OS31	1	-	25
7	Open Subject 6	OS32	1	-	25
8	Case Study on Design	CS31	1	-	25
	* Practicals				
9	Practical based on IT31	IT31L	2	-	50
10	Practical based on OS31 and OS32	OS2L	2	-	50
	Soft Skills				
11	Soft Skills - III	SS31	1	-	25
			28	**350**	**350**

SEMESTER IV

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Python Programming	IT41	4	70	30
2	Information System and Security Audit	BM41	4	70	30
3	Optimization Techniques	MT41	4	70	30
4	Essentials of Architectural framework	IT42	4	70	30
5	Knowledge Representation & Artificial Intelligence	IT43	4	70	30
6	Open Subject 7	OS41	1	-	25
7	Open Subject 8	OS42	1	-	25
8	Case Study on Development	CS41	1	-	25
	* Practicals				
9	Practical based on IT41	IT41L	2	-	50
10	Practical based on OS41 and OS42	OS3L	2	-	50
	Soft Skills				
11	Soft Skills - IV	SS41	1	-	25
			28	**350**	**350**

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SEMESTER V

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Social Media and Digital Marketing	IT51	4	70	30
2	Mobile Application Development	IT52	4	70	30
3	Software Project Management	IT53	4	70	30
4	Mini Project	ITC51	8	150	50
5	Open Subject 9	OS51	1	-	25
6	Open Subject 10	OS52	1	-	25
7	Case Study on Implementation and Testing	CS51	1	-	25
* Practicals					
8	Practical based on IT51	IT51L	1	-	25
9	Practical based on OS51 and OS52	OS4L	2	-	50
Soft Skills					
10	Soft Skills- V	SS51	2	-	50
			28	360	340

SEMESTER VI

Sr. No.	Course Title	Course Code	CP	EXT	INT
1	Open Subject 11	OS61	4		100
2	Project	ITC61	16	250	150
			20	250	250

CP : Credit Points

Ext.: External Subject

Int.: Internal subject

Hardware and Software Requirements for all semesters

1	Open source IDE for C/C++ Editor/JAVA/Website designing
	Open source application server(s) : WAMP/XAMP etc.
2	Open Source Databases: Postgre SQL/MySQL/SQLite etc.
3	Open Source Accounting Packages: Tally Edu. Mode/GnuCash/LedgerSMB/TurboCASH
4	Open Source office suite : WPS Office Free/Suite Office/Open Office/ LibreOffice etc.
5	Open source Operating System : Linux (Fedora/Ubuntu) etc.
6	Microsoft Windows Operating System for [20 Machines for intake of 60 students]
7	Two Servers are mandatory [One Linux server & One Windows server]
	• Windows Server : Microsoft Windows Server for 20 users for intake of 60 students
	• Linux Server : Fedora/Ubuntu

Note: Institutes may use any other alternate open source software.

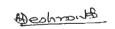| Hardware Requirements:		
Desktop Computers :	Processor: Dual Core or above	RAM: Min. 2 GB or Above
Server :	Processor: Xeon/equivalent AMD or above	RAM: Min 8 GB or above

	Course#	Semester I		Semester II		Semester III		Semester IV		Credits	CCE Marks	ESE Mark
		COMPULSORY CORE COURSES (GENERIC (GC) + SUBJECT (SC) + Summer Internship Project SIP)										
A	1	GC - 1	1	GC - 7	1	GC - 11	1	GC - 14		66 Credits		
	2	GC - 2	2	GC - 8	2	GC - 12	2	GC - 15				
	3	GC - 3	3	GC - 9	3	GC -13 (SIP)	3	SC - 5				
	4	GC - 4	4	GC - 10	4	SC - 3	4	SC - 6				
	5	GC - 5	5	SC - 1	5	SC - 4					1050	105
	6	GC- 6	6	SC - 2							2100	
		GENERIC ELECTIVE COURSES (UNIVERSITY LEVEL) – GE - UL										
B	7	GE UL - 1	7	GE UL - 4	6	GE UL – 7	5	GE UL - 10		22 Credits		
	8	GE UL - 2	8	GE UL - 5	7	GE UL – 8	6	GE UL - 11			0	55
	9	GE UL - 3	9	GE UL - 6	8	GE UL – 9					550	
		GENERIC / SUBJECT ELECTIVE COURSES (INSTITUTE LEVEL) - GE – IL / SE - IL										
C	10	GE IL - 1	10	GE IL - 4	9	SE IL -3	7	SE IL -6		22 Credits		
	11	GE IL - 2	11	SE IL -1	10	SE IL -4	8	SE IL -7			550	
	12	GE IL - 3	12	SE IL -2	11	SE IL -5					550	
										110	1600	1600
	12		12		11		8		43	Credits	CCE	ESE
		FOUNDATION COURSES (OPTIONAL)										
D		FOUNDATION 1 FOUNDATION 2 FOUNDATION 3 FOUNDATION 4 FOUNDATION 5 FOUNDATION 6		FOUNDATION 7 FOUNDATION 8 FOUNDATION 9 FOUNDATION 10						0 to 10 Credits		
		ENRICHMENT COURSES (OPTIONAL)										
E		ENRICHMENT 1 ENRICHMENT 2 ENRICHMENT 3 ENRICHMENT 4 ENRICHMENT 5 ENRICHMENT 6		ENRICHMENT 7 ENRICHMENT 8 ENRICHMENT 9 ENRICHMENT 10		ENRICHMENT 11 ENRICHMENT 12		ENRICHMENT 13 ENRICHMENT 14		0 to 14 Credits		
		ALTERNATIVE STUDY CREDIT COURSES (OPTIONAL)										
F		ASCC 1 ASCC 2		ASCC 4 ASCC 5		ASCC 7 ASCC 8		ASCC 10 ASCC 11		0 to 22 Credits		

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