MAHATMA GANDHI UNIVERSITY, KERALA

Abstract

MBA Programme (Full time) - 2024-25 admission onwards - Modified Scheme & Regulations - Approved - Orders issued

ACADEMIC A 4 SECTION

No. 6957/AC A 4/2025/MGU Priyadarsini Hills,Dated: 29.07.2025

Read:-1) U.O No:- 11135/AC A4/2024/MGU, Dated: 10.12.2024.

2) U.O No:- 68/AC A 4/2025/MGU, Dated: 04.01.2025.

3) Minutes of the meeting of Expert Committee of (MBA) Management (PG) held on 10.06.2025.

4) Minutes of the online meeting of Expert Committee of (MBA) Management (PG) held on 02.07.2025.

5) Recommendation of Convener, Expert Committee of (MBA) Management (PG) Dated: 23/07/2025

ORDER

The restructured Scheme & Regulations of Master of Business Administration (MBA) Programme (2024 Admission onwards), to be followed in the Affiliated Colleges of the University, has been approved and the Orders were issued vide Paper read as (1) above. Further modifications to the approved Scheme & Regulations of Master of Business Administration (MBA) Programme (2024 Admission onwards) were effected as per the U.O read as (2) above.

The Convener of the Expert Committee (MBA) Management (PG) has recommended the following amendments to the Scheme & Regulations of the Master of Business Management (MBA) programme, applicable from 2024 admission onwards.

Recommendations as per the minutes of the Expert Committe meeting read as Paper 3 above.

- **Maintain the existing five Functional elective streams. and to introduce Business Analytics as the fifth Functional elective stream.**
- **Remove the Sectoral Elective areas.**

- **Under Business Analytics stream, following elective courses are to be included.**

Course Code	Course Title	Category	Credits	Marks		
				CIE	ESE	Total
24MB03FE41	Database and Data Mining Applications in Business	S3-FEC	4	40	60	100
24MB03FE42	Python Programming for Business	S3-FEC	4	40	60	100
24MB03FE43	Data Visualization Using Tableau	S3-FEC	4	40	60	100
24MB03FE44	Introduction to Big Data & Cloud Computing	S3-FEC	4	40	60	100
24MB03FE45	Artificial Intelligence in Business Applications	S3-FEC	4	40	60	100
24MB04FE46	Social media, Web and Text Analytics	S4-FEC	4	40	60	100
24MB04FE47	Financial Modeling & Predictive Analytics	S4-FEC	4	40	60	100
24MB04FE48	Strategic Business Analytics	S4-FEC	4	40	60	100
24MB04FE49	Business Analytics using R	S4-FEC	4	40	60	100
24MB04FE50	Industry 4.0 and Internet of Things	S4-FEC	4	40	60	100

- **Valuation of Answer Scripts of End Semester Examination (ESE)**

  Following modifications are to be made:

  There shall be Single valuation of Answer Scripts of the End Semester Examination (ESE) by the additional examiners duly appointed by the University followed by the Chief valuation.

- Credit for Elective Courses in Semester 3 and Semester 4 shall be 4 per course.
- In the case of application related courses, due weightage need to be given for practical component in the continuous assessment.

Recommendations as per the minutes of the Expert Committee meeting read as Paper 4 above.

- **4.3.1 Elective Options**

A student should opt 2 Elective streams. From each stream, 2 Courses in 3rd Semester & 2 Courses in 4th Semester should be completed by a Student.

Table 26A & 26B can be replaced by Table 16 given below.

Table 16

Grade and Grade Point

Grades	Grade Point (GP)	% of Total Marks obtained in the course
S	10	90% and above
A+	9.0	85% and above but less than 90%
A	8.5	80% and above but less than 85%
B+	8.0	75% and above but less than 80%
B	7.5	70% and above but less than 75%
C+	7.0	65% and above but less than 70%
C	6.5	60% and above but less than 65%
D	6.0	55% and above but less than 60%
E	5.5	50% and above but less than 55%
F (Fail)	0	Below 50% (CIE + ESE) or Below 40% for ESE
Ab	0	Could not appear for the end semester examination but fulfills the eligibility criteria

- **5.3.2. End Semester Evaluation (ESE)**

A candidate is required to score a Grade point of 5.5 with Grade E for a pass in a course . If a candidate fails to score 40% marks in the ESE or 50% of marks when ESE & CIE combined together will not get the minimum grade point for pass for a course (ie 5.5 Grade E) . A minimum SGPA of 5.5 with Grade E is required for a pass in the semester.

The candidates who scores F Grade Or Absent (Ab) for a course in the End semester examination shall be required to reappear for a Supplementary examination for that particular course, which will be conducted along with the regular End-semester examination in the following Academic year.

Immediately after the publication of the results of the regular examinations in the third and

fourth semester, Special supplementary examinations will be conducted for the candidates who scores F Grade Or Absent (Ab). Special Supplementary Examination shall be conducted for Regular students only.

Provisions for Revaluation with Scrutiny

For all the courses candidates can apply for revaluation with or without scrutiny. The online application for revaluation and scrutiny shall be submitted within 15 days of the publication of the results.

- **Calculation of Grade Points, SGPA & CGPA**

Calculation of SGPA/CGPA: Semester Grade Point Average (SGPA) and Cumulative Grade

Point Average (CGPA) are calculated as follows.

SGPA = Σ(Ci×GPi)/ΣCi , where 'Ci' is the credit assigned for a course and 'GPi' is the grade point for that course. Summation is done for all courses specified in the curriculum of that semester.

The failed and incomplete courses shall also be considered in the calculation.

CGPA = Σ(Ci×GPi)/ΣCi , where 'Ci' is the credit assigned for a course and 'GPi' is the grade point for that course. Summation is done for all courses specified in the curriculum up to that semester for which the 'CGPA' is needed. Here the failed courses shall also be accounted.

SGPA and CGPA shall be rounded off to the nearest two decimal points.

Recommendation of Convener, Expert Committee of (MBA) Management (PG) read as Paper 5 above.

Table 16 A

SGPA/CGPA and Grades

SGPA/CGPA Range	Grade
>9 and <=10	S
>8.5 and <=9	A+
>8 and <=8.5	A
>7.5 and <=8	B+
>7 and <=7.5	B
>6.5 and <=7	C+
>6 and <=6.5	C
>5.5 and <=6	D
5.5	E

Percentage of marks = SGPA/CGPA * 10

The Vice Chancellor, by exercising powers of Academic Council under Section 10 (17), Chapter 3 of MGU Act 1985, has approved the above recommendations to be effected in the Scheme & Regulations of MBA Programme 2024-25 admission onwards.

Orders are issued accordingly.

SREEJITH R

ASSISTANT REGISTRAR I
(ACADEMIC)
For REGISTRAR

Copy To

1.P.S to V C/P V C
2. P.A to Registrar/C E
3. Convener, Expert Committee, (MBA) Management (PG).
4. JR/DR/AR(Exam/Academic)
5.EI-7/EI-35/EI-40/ACC 2/Legal sections
6.IT Cell/Record sections/Stock File

Encl

MBA Scheme & Regulations - 2024-25 - Modified

Forwarded / By Order

Section Officer

മഹാത്മാഗാന്ധി സർവ്വകലാശാല, കേരളം
Mahatma Gandhi University, Kerala
महात्मा गांधी विश्वविद्यालय, केरल

MASTER OF BUSINESS ADMINISTRATION
(Full-time)

Regulations, Scheme and Syllabus

For affiliated Non-Autonomous Colleges

With effect from Academic Year 2024-25

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Annexures

1. PREAMBLE

Nomenclature of the Programme: Master of Business Administration (MBA)

1.1 Nature of the Programme

Master of Business Administration (MBA) is a 2-year full-time postgraduate professional programme offered under the semester system. The programme is delivered under the Choice-based Credit and Semester System (CBCSS) with a grading system. The revised curriculum of the MBA will be introduced with effect from the Academic Year 2024-25. The full-time MBA programme is developed after considering the national requirements and best practices in management education, integrated with 21st-century skills. The recommendations in the AICTE model curriculum are also aligned with the new MBA curriculum. The new education policy, the evolving expectations from students, teachers, parents, and other stakeholders, were considered while developing the revised curriculum. Also, prime focus has been given to the outcome-based management education (OBE).

1.2 Programme Educational Objectives (PEOs)

The Programme Educational Objectives (PEOs) implies the broader futuristic performance of the students which will explicitly demonstrate what they can perform through the embodiment of knowledge, skills and attitude attained with the professional studies in the domain of management education. After successful completion of the MBA programme, the graduates will be able:

PEO 1: To extensively contribute towards better management practices with updated technology in India and abroad

PEO 2: To demonstrate astute leadership with a strong ethical background so as to efficiently and effectively manage business amidst of environmental turbulences

PEO 3: To initiate and nurture entrepreneurial ventures with an innovative and creative mindset

PEO 4: To contribute towards the management of non-business sectors and social enterprises with a main focus on the local and regional level.

PEO5: To be self and lifelong learners with strong values and to protect the environment amidst sustainable growth.

1.3 Programme Outcomes

PO1: Application-oriented Knowledge in Domain and Business Environment –

Ability to assimilate knowledge and skills pertaining to the framework of management and apply it to resolve complex problems in the business.

PO2: Analytical & Critical thinking – Ability to examine the business with multi-dimensional and micro-level approach to generate and appraise the data-driven managerial decisions.

PO3: Astute Leadership and Synergy – Ability to demonstrate intelligent leadership and team skills.

PO4: Communication & Creativity – Think creatively and communicate effectively, being adaptive to changing environment to achieve the organizational goals.

PO5: Entrepreneurial Approach – Ability to promote entrepreneurial ventures based on local and regional priorities and requirements aligned with broader objectives

PO6: Social Responsiveness and Ethical Standards –Ability to respond and intervene into the socio-economic environment and explore solutions towards sustainable development and growth of the society with ethical dimensions

PO7: Global Exposure and Cross-Cultural Appreciation–Ability to approach business problems from a global perspective and to be adaptive towards various management practices in different cultural environments

2.ELIGIBILITY AND ADMISSIONS

2.1 Eligibility

- The qualifying degree shall be any Bachelor's Degree of three years duration with not less than 50% marks in the aggregate or a Master's Degree examination with 50% marks in aggregate from Mahatma Gandhi University or any other recognized University. If the Bachelor's Degree is under the grading pattern, the equivalent percentage of marks shall be calculated to ensure that the candidate has secured 50% marks in aggregate. Under any circumstances, it shall be the responsibility of the Director / Principal of the affiliated college to ensure that a candidate is having 50% marks in aggregate in order to become

eligible for admission. Also, the Directors / Principals shall ensure that the candidate has passed the qualifying degree under the 10+2+3 pattern–the UG Degree shall be from a University recognized by Mahatma Gandhi University.

- The students who pass the UG Degree from a university outside the State of Kerala shall remit the prescribed fee towards the recognition of the qualifying degree.
- *The Reservation Rules are applicable as per the Government and University norms in all the affiliated colleges*. For SC/ST students: A pass in any Bachelor's Degree examination is required for SC/ST candidates.

2.2 Admission Procedure

The admission procedure in the affiliated colleges should be based on the norms stipulated by the Admissions Supervisory Committee (ASC). All affiliated colleges are required to prepare the prospectus in accordance with the directives from the Admissions Supervisory Committee (ASC) from time to time. The admissions to the MBA full-time program shall be strictly on the basis of merit as determined by the entrance examinations KMAT Kerala / CMAT / CAT, and Group Discussion and Personal Interview conducted at the institution level.

The rank list shall be prepared by affiliated institutions on the basis of the sum of the following components:

Table 1

Admissions – Components of Rank List

Component	Weight
Entrance Examination Score	80%
Group Discussion	10%
Personal Interview	10%

The application to join the MBA programme in affiliated colleges shall be submitted to the Director / Principal only through online as regulated by ASC Kerala. Based on the score in the entrance test and academic performance in the qualifying examination, candidates shall be short-listed for Group Discussion and Personal Interview. The Group Discussion and Personal Interview shall be conducted by a panel of senior faculty members deputed by the Director/ Principal. The provisional admission memo

shall be issued online by the Director / Principal of the affiliated college. The provisional admission status shall be clearly mentioned in the admission memo, and admissions will be confirmed only after verification by the Admissions Supervisory Committee (ASC- Kerala) and the University. While preparing the rank list, if there are the same index marks for more than one candidate, he/she will be ranked on the basis of actual marks obtained in the qualifying exam. Even after this, if there is a tie, they will be ranked on the basis of date of birth; i.e., the elder person is to be ranked higher. Based on the performance in the entrance examination, group discussion and interview, merit rank list shall be prepared and notified duly signed by the Director/Principal.

The Director/Principal of the affiliated college shall submit the list of admitted candidates along with the rank list to the Admissions Supervisory Committee (ASC-Kerala) on or before the cut-off date. Also, the list of admitted candidates shall be submitted to the university on the next working day after the closing date of admissions as stipulated by All India Council for Technical Education (AICTE) academic calendar. The details of submissions are as follows:

- The list of admitted candidates, along with the rank list, shall be submitted to the Registrar of the university with a copy to the Controller of Examinations.
- The format of submission is presented in Annexure 1 of the MBA Regulations.

3. COURSE DURATION–ACADEMIC AND INTERNSHIP/PROJECT CALENDAR

3.1 ACADEMIC CALENDAR

The academic and exam calendar published by the University should be strictly followed by all affiliated colleges in order to ensure the timely completion of the course, conduct of examinations, internships, project works, and declaration of results.

The dates for the Centralized Valuation (CV) Camp will be notified by the university after the completion of the examination. The Directors/Principals of all affiliated colleges can suggest a suitable time period for CV Camps to the Controller of Examinations so that the university can schedule it accordingly. The Directors / Principals shall ensure full participation of faculty members for the timely completion of the CV Camp.

3.2 INTERNSHIP AND PROJECT CALENDAR

The Summer Internship in the first year and the research-based project in the second year are scheduled during the months mentioned in Table 2.

Table2
MBA INTERNSHIP AND PROJECT CALENDAR

Semester	Internship/Project	Duration
S3	Summer Internship	April–May
S4	Research Project	April-May

3.3 DURATION OF THE COURSE

The minimum time period for the completion of MBA Programme shall be two years and the maximum period for securing a pass shall be four (4) years from the date of admission. The Directors / Principals of all affiliated colleges shall provide Course Completion Certificate to the candidates who have completed all courses in the curriculum. The Course Completion passing out ceremony may be conducted by all affiliated colleges during the months of June/July every year.

3.4 PROVISIONS FOR READMISSION

A candidate who discontinued studies during a semester or on completion of a semester of the programme for genuine reasons, with the prior intimation to and permission of the Director / Principal, he/she can be permitted to complete the programme by taking the required number of courses within a maximum period as stipulated by UGC and approved by the University from the date of commencement of the first semester of the programme, provided he/she has not been removed from the rolls by issuing a Transfer Certificate. In all cases of discontinuation and readmissions, candidates must submit an application countersigned by the Director / Principal and obtain the required statutory order for the same from the university. Candidates who are readmitted to repeat a course must follow the then existing syllabus for the said programme and will have no assurance to do the repeat course in the same syllabus which he/she had attempted initially for the course. They need to attend classes along with the new batch of students and should obtain the required percentage of attendance as usual. All there admissions to Programme Structure & Syllabus MBA 2024 shall be granted subject to the fulfillment of the following conditions stipulated by the university

(a) They should have been promoted to the next higher semester in which they are taking admission.

(b) They should be admitted in the beginning of the semester.

(c) They should be able to complete the course within eight semesters from the year of original admission.

4. MBA PROGRAMME SCHEME – CHOICE BASED CREDIT SEMESTER SYSTEM

As per National Policy and academic practices, the University has adopted Credit and grading system for MBA programme with effect from AY 2019-20. The credit and semester system are fine-tuned and implemented from AY2024- 25. Under the Choice based Credit Semester System (CBCSS) students can accumulate prescribed number of Credits to become eligible for the degree. The number of credits with the cumulative grade points earned by the students reflect their level of proficiency attained in the intended outcomes of the course.

The curriculum comprises of courses at three levels:

- Foundation Courses (FC) (No Credits)
- Core Courses (CC)
- Functional Elective Courses (FEC)

Apart from foundation, core, and elective courses, one summer internship and a research-based project are also part of the MBA programme.

- 2-month Summer Internship – At the end of Semester II
- 2-month Research Project–Semester IV

Under the credit system, all core and elective courses are presented in Lecture (L), Tutorial (T), and Practical (P) components as part of contact hours (LTP). Contact hours include work related to Lecture (L). Tutorial (T), Practical(P), and Project (I/P), where the affiliated colleges can exercise flexibility to decide course requirements. The theory course framework is presented with a lecture component only. However, the faculty members who deliver the course can decide on the tutorial and practical elements.

Lecture (L) refers to classroom sessions delivered by a faculty member in an interactive and participatory mode. Tutorial (T) comprises remedial sessions/discussions/self-study/ article or research paper reviews/group

assignments/class seminars with presentations, etc. Practical (P) comprises case study analysis/field work/observation study/software exercises for certain courses/management games/role plays / quizzes, and simulation exercises, etc. It varies from the nature of each course in different semesters. The prescribed syllabus for a course is presented in modules and a number of units within a module, with an overall indication for instructional hours. The Directors / Principals of the affiliated colleges shall strictly follow the instructional hours in order to ensure the timely completion of the syllabus. One credit is equal to 15 hours, and as such, all 3 credit courses should be delivered with 45 contact hours, out of which 30 is for class work. The remaining 15 hours are for learning and evaluation.

4.1 Foundation Programme

It is imperative to provide a foundation programme for the MBA aspirants since the professional course in management is meant for students from different disciplines. It is recommended to conduct the foundation programme in all affiliated colleges based on the course contents prescribed by the University. The foundation program consists of seven (7) courses with a specific number of hours allotted for completion. The Principal / Head of the Department shall allocate the courses in the foundation programme to Regular/ Guest Faculty Members.

The framework for the foundation programme is presented in Table 3.

Table 3
List of Foundation Courses

Course Code	Course Title	Category	L	T	P	I/P	Sessions	Marks		
								CIE	ESE	Total
24MB FC01	Introduction to Management	Foundation	7	0	0	0	7	40		40
24MB FC02	Quantitative Foundation	Foundation	5	0	0	0	5	40		40
24MB FC03	Fundamentals of Economics	Foundation	5	0	0	0	5	40		40
24MB FC04	Fundamentals of Accounting	Foundation	7	0	0	0	7	40		40
24MB FC05	Introduction to Case Methodology	Foundation	4	0	0	0	4	40		40

24MB FC06	Introduction to Business Research & Projects	Foundation	5	0	0	0	5	40		40
24MB FC07	General Orientation Programme (GOP)	Foundation	15	0	0	0	15			
			48				48	240		240

Suggested areas in the General Orientation Programme (GOP) are:

1. Goal Setting
2. Mind Setting & Attitude Formation
3. Self-discipline and Professionalism
4. Leadership & Synergy
5. Group Discussion & Presentation Skills
6. Self-Learning
7. Understand the Course Plan

For the Foundation Programme, a maximum of 48 hours is allotted (6 hours per day × 8 days). All affiliated colleges are required to complete the foundation programme within the stipulated time. The Principal/Head of the Department shall ensure the completion of the foundation program with an element of internal evaluation. The evaluation of the foundation courses shall be conducted internally through the appropriate modes. The suggested evaluation modes are:

(a) Written tests
(b) Q & A sessions
(c) Quizzing
(d) Presentations

The documents pertaining to the foundation program (Schedule, Content, and Evaluation) are to be prepared and kept by the Director / Principal of the affiliated college. On successful completion of the foundation courses by the candidates, the Director / Principal of the affiliated college shall issue a certificate showing the completion of the foundation programme in MBA.

4.2 Core Courses

There are 18 core courses in the MBA programme over 4 semesters. Core courses provide multi-disciplined domain knowledge and skills at the basic and working level

to the participants. These core courses lay a strong foundation for management concepts, which can be further studied in depth during the elective phase.

Table 4

Semester I Core Courses

Course Code	Course Title	Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB01 CC01	Management Concepts & Organizational Behaviour	Core	3	0	0	0	3	3	40	60	100
24MB01 CC02	Business Communication	Core	3	0	0	0	3	3	40	60	100
24MB01 CC03	Managerial Economics	Core	3	0	0	0	3	3	40	60	100
24MB01 CC04	Accounting for Management	Core	4	0	0	0	3	4	40	60	100
24MB01 CC05	Quantitative Methods	Core	4	0	0	0	3	4	40	60	100
24MB01 CC06	Legal Environment of Business	Core	3	0	0	0	3	3	40	60	100
24MB01 CC07	Environment & Disaster Management	Core	3	0	0	0	3	3	40	60	100
Total			**23**	**0**	**0**	**0**	**21**	**23**	**280**	**420**	**700**

Table 5

Semester II Core Courses

Course Code	Course Title	Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB02 CC08	Financial Management	Core	3	0	0	0	3	3	40	60	100
24MB02 CC09	Marketing Management	Core	3	0	0	0	3	3	40	60	100
24MB02 CC10	Human Resource Management	Core	3	0	0	0	3	3	40	60	100
24MB02 CC11	Operations Management	Core	3	0	0	0	3	3	40	60	100
24MB02 CC12	Management Science	Core	3	0	0	0	3	3	40	60	100
24MB02 CC13	Management Information System & Cyber Security	Core	3	0	0	0	3	3	40	60	100

24MB02 CC14	Business Research Methods	Core	3	0	0	0	3	3	40	60	100
24MB02 CC15	Entrepreneurship Development	Core	3	0	0	0	3	3	40	60	100
24MB02 CC16	Comprehensive Viva I	Core					4			100	100
Total			**24**	**0**	**0**	**0**	**28**	**24**	**320**	**580**	**900**

Table 6

Semester III Courses

Course Code	Course Title	Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 CC17	Big Data & Business Analytics	Core	3	0	0	0	3	3	40	60	100
24MB03 CC18	Indian Knowledge System & Indian Ethos	Core	3	0	0	0	3	3	40	60	100
	Functional Elective 1	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 2	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 3	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 4	FEC	4	0	0	0	4	4	40	60	100
24MB03 SI01	Summer Internship					4	4		40	60	100
Total			**18**	**0**	**0**	**4**	**26**	**18**	**280**	**420**	**700**

Table 7

Semester IV Courses

Course Code	Course Title	Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB04 CC19	Strategic Management	Core	3	0	0	0	3	3	40	60	100
	Functional Elective 1	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 2	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 3	FEC	4	0	0	0	4	4	40	60	100
	Functional Elective 4	FEC	4	0	0	0	4	4	40	60	100
24MB04 CC20	Comprehensive Viva II						4			100	100
24MB04 RP01	Research Project	P				4	4		40	60	100
Total			**18**	**0**	**0**	**4**	**27**	**18**	**240**	**460**	**700**

4.3 Elective Courses

Elective courses are to be conducted under the Lecture(L), Tutorial(T), and Practical(P) – LTP pattern. A student has to complete 4 elective courses in Semester III and 4 elective courses in Semester IV as part of their specialization in MBA.

4.3.1 Elective Option

A student should opt 2 Elective streams. From each stream, 2 Courses in 3rd Semester & 2 Courses in 4th Semester should be completed by a student.

Choice of Elective Area

A candidate is expected to select the functional domains based on the following criteria:

i) The choices shall be based on the preference, skills, and aptitude of the student.

ii) The availability of Faculty Members specialized in different functional domains in the affiliated colleges and the required infrastructure.

iii) Job market realities and opportunities in a functional area

The final decision pertaining to offering the specialization choice in the functional domains shall be made by the Director / Principal of the affiliated colleges.

The following domains of functional specializations are offered by the University in the third and fourth semesters.

Table 8
Functional Electives

Sl. No.	Functional Elective Domains (FE)
I	Finance
II	Marketing
III	Human Resources Management
IV	Operations Management
V	Business Analytics

Table 9

Functional Elective – Finance

Course Code	Course Title	Semester & Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 FE01	Security Analysis & Portfolio Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE02	Financial Derivatives & Risk Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE03	Banking & Financial Services	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE04	Corporate Taxation	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE05	Project Risk Evaluation & Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE06	Behavioural Finance	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE07	International Finance & Forex Management	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE08	Management of Financial Service	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE09	Rural Economy & Micro Finance	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE10	Strategic Financial Management	S4-FEC	4	0	0	0	4	4	40	60	100

Table 10

Functional Elective - Marketing

Course Code	Course Title	Semester & Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 FE11	Sales Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE12	Retail Business Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE13	Services Marketing	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE14	Digital & Social Media Marketing	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE15	Integrated Marketing Communication	S3-FEC	4	0	0	0	4	4	40	60	100

24MB04 FE16	Product & Brand Management	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE17	Marketing Analytics	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE18	Consumer Behaviour	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE19	Agriculture Business & Rural Marketing	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE20	Marketing Research	S4-FEC	4	0	0	0	4	4	40	60	100

Table 11

Functional Elective – Human Resources Management

Course Code	Course Title	Semester & Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 FE21	Training & Development	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE22	Performance & Talent Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE23	Organizational Change & Transformation	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE24	Compensation Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE25	Global Human Resource Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE26	Mentoring Coaching & Management Consulting	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE27	Industrial Relations & Labour Laws	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE28	Counseling Skills for Managers	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE29	Human Resources Information System	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE30	Leadership for Managerial Performance	S4-FEC	4	0	0	0	4	4	40	60	100

Table 12

Functional Elective – Operations Management

Course Code	Course Title	Semester & Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 FE31	Supply Chain Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE32	Total Quality Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE33	Project Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE34	World Class Manufacturing	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE35	Services Operations Management	S3-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE36	Industrial Safety & Occupational Health	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE37	Global Operations & Logistics Management	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE38	Maintenance Management	S4-FEC	4	0	0	0	4	4	40	60	100
24M04 FE39	Materials and Purchase Management	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE40	Advanced Operations Research	S4-FEC	4	0	0	0	4	4	40	60	100

Table13

Functional Elective – Business Analytics

Course Code	Course Title	Semester & Category	L	T	P	I/P	Credits	Sessions	Marks		
									CIE	ESE	Total
24MB03 FE41	Database and Data Mining Applications in Business	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE42	Python Programming for Business	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE43	Data Visualization Using Tableau	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE44	Introduction to Big Data & Cloud Computing	S3-FEC	4	0	0	0	4	4	40	60	100
24MB03 FE45	Artificial Intelligence in Business Applications	S3-FEC	4	0	0	0	4	4	40	60	100
24MB04FE46	Social media, Web and Text Analytics	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE47	Financial Modeling & Predictive Analytics	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE48	Strategic Business Analytics	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE49	Business Analytics using R	S4-FEC	4	0	0	0	4	4	40	60	100
24MB04 FE50	Industry 4.0 and Internet of Things	S4-FEC	4	0	0	0	4	4	40	60	100

4.4 Viva Voce

The MBA Programme has a comprehensive external viva-voce as part of the curriculum. Course viva-voce is considered as a full-credit course in semesters 2 and 4. A panel of not less than two (2) external examiners from the affiliated colleges shall conduct the course viva-voce. The guidelines for the course viva-voce and evaluation format are included in Annexure No. 2.

For Research Project (Semester IV), viva-voce shall be conducted by not less than two (2) external examiners from the affiliated colleges. The guidelines for the project viva is included in Annexure No. 4.

4.5 Summer Internship

All candidates are required to undertake an internship of 2 months duration during semester 2. For details of the Summer Internship guidelines, refer to Annexure No. 3.

4.6 Research Project

A research-based dissertation is compulsory for all candidates at the beginning of semester 4 during the months of April and May. The guidelines pertaining to the Research project are included in Annexure No. 4.

Table 14
COURSE SUMMARY

Semester	Course Details	Total Marks for Continuous Internal Evaluation (CIE)	Total Marks for End-Semester Evaluation	No. of Credits
I	Foundation Courses–7 Core Courses – 7	280	420	21
II	Core Courses – 8 Comprehensive Viva–1	320	580	28
III	CoreCourse–2 Elective Courses- 4 Internship – 1	280	420	26
IV	Core Course – 1 Elective Courses – 4 Research Project–1	240	460	27
Total Marks & Credits		**1120**	**1880**	**102**
Grand Total of Marks		**3000**		
Total Credits		**102**		

5. Teaching, Assessment, and Evaluation

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 combination of 3 components, viz. Lecture(L)+Tutorials(T)+Practical(P) i.e. LTP Pattern.

5.1 Teaching Methods

Since the MBA Programme is a professional course, the teaching methods shall be carefully designed at the institutional level. The teaching methods in the MBA programme ideally include the following components: (This is not comprehensive, and Faculty Members are free to design appropriate teaching methods.)

Table 15
Teaching Methods

Lectures in Interactive Mode (Video Lectures, Online Sessions)	Practical Illustrations & Simulations, Management Games
Case Studies	Role Plays
Quizzing	Class Seminars & Presentations

5.2 Grading System

Indirect Grading System

The grading system for affiliated non-autonomous MBA colleges was introduced in 2019. The present grading pattern is fine-tuned to scientifically set the grade points.

When the performance displayed by the examinees is first assessed in terms of marks and subsequently transformed into letter grades by using different modes, it is called, *'Indirect Grading.'* The grading system followed is that of an Indirect and Absolute Grading System on a ten-point scale for the MBA programme, i.e. the assessment of individual courses in the concerned examinations will be on the basis of marks, but the marks shall later be converted into Grades by a defined mechanism wherein the overall performance of the learners can be reflected after considering the credit points for any given course. However, the overall evaluation shall be designated in terms of Grade. The conversion of the marks to the grade will be performed in the university only. The grading pattern is presented in Table 16.

Table 16
Grade and Grade Points

Grades	Grade Point (GP)	% of Total Marks obtained in the course
S	10	90% and above
A+	9.0	85% and above but less than 90%
A	8.5	80% and above but less than 85%
B+	8.0	75% and above but less than 80%
B	7.5	70% and above but less than 75%
C +	7.0	65% and above but less than 70%
C	6.5	60% and above but less than 65%
D	6.0	55% and above but less than 60%
E	5.5	50% and above but less than 55%
F (Fail)	0	Below 50% (CIE + ESE) or Below 40% for ESE
Ab	0	Could not appear for the end semester examination but fulfills the eligibility criteria

Table 16 A
SGPA/CGPA and Grades

SGPA/CGPA Range	Grade
>9 and <=10	**S**
>8.5 and <=9	**A+**
>8 and <=8.5	**A**
>7.5 and <=8	**B+**
>7 and <=7.5	**B**
>6.5 and <=7	**C+**
>6 and <=6.5	**C**
>5.5 and <=6	**D**
5.5	**E**

Percentage of marks = SGPA/CGPA * 10

5.3 Assessment and Evaluation

The evaluation of students comprises continual evaluation at the institutional level and comprehensive evaluation by the University.

5.3.1 Continuous Internal Evaluation (CIE)

Continuous Evaluation or internal assessment shall be conducted throughout the semester. It shall be based on internal examinations and various components as decided by the Faculty Member who is handling the course. The following components are suggested for continuous evaluation. However, the Faculty Members are free to include any appropriate component with prior permission from the Head of the Department/ Director/ Principal.

Table 17

Components of Continuous Evaluation

Internal Examinations Written Examinations – Open Book Exams, Question & Answer Sessions–Online Exams – Spot Tests	Individual Assignments–Problem-Solving Group Assignments Class Seminars Case Study/Caselet Analysis and Presentation
Roleplays–Management Games–Story Telling	Software Exercises–Soft Assignments
Internal Viva-voce – Quizzes – Group Discussions–Interview with Industry Experts	Book Reviews–Article/Research Paper Reviews
Field Visits–Industrial Visits–Study Tour–Observation Study(with brief Reports)	Newspaper Reading

Continuous evaluation shall be completed in a transparent and justifiable manner. The purpose of continuous evaluation is to facilitate the learner/participant to achieve learning outcomes. Faculty Members in all affiliated colleges are required to conduct internal assessments strictly in compliance with the university-prescribed criteria. In case of underperformance by the candidates in any components due to various reasons, remedial measures shall be taken by the Faculty Member so that the student will be transformed by the time of award of continual assessment marks. Head of the Department / Director Principal of the Institution should

ensure that no candidate is getting intimidated during continual evaluation in all semesters. Any complaint/grievance by the students pertaining to internal assessment shall be submitted to the Grievance Committee in the college, and appropriate measures shall be taken by the Director/Principal for resolving the grievance. Faculty Members also can complain against the disobedience/mistrust / negative attitude etc. from the student's side to the Head of the Department / Director / Principal. All processes in this regard shall be completed before the publication of internal assessment marks. The Faculty Members, at the end of the semester, shall submit the continual evaluation marks in the prescribed format to the Director / Principal (Annexure 5). The Director /Principal shall publish the continual internal evaluation marks. The Faculty Members are required to keep in safe custody a record of internal assessment marks duly signed by the faculty member and countersigned by the Director/Principal. The Director/Principal shall publish the continual evaluation marks 5 days before the commencement of university examinations. After resolving the complaints/grievances, if any, the continual evaluation document shall be submitted to the University through uploading the file as required before the end of university examinations (Annexure 6). This is to facilitate uniformity in the internal evaluation process. There is no separate minimum mark for continual internal evaluation. The distribution of continual evaluation shall be as follows:

Table 18
Criteria for Continual Evaluation

Sl. No.	Components of Continual Evaluation	Marks	Percentage
1.	Test Papers (SubjecttoaMinimumof2tests including a model exam for each course)	18	45%
2.	Assignments – Other Components	16	40%
3.	Class Participation, Punctuality, Discipline	6	15%
Total		**40**	**100**

5.3.2. End Semester Evaluation (ESE)

A candidate is required to score a grade point of 5.5 with grade E for a pass in a course.

If a candidate fails to score 40% marks in the ESE or 50% of marks when ESE & CIE combined together will not get the minimum grade point for pass for a course (ie 5.5 grade point with grade E) . A minimum SGPA of 5.5 with Grade E is required for a pass in the semester.

The candidates who scores F grade Or Absent (Ab) for a course in the end semester examination shall be required to reappear for a supplementary examination for that particular course, which will be conducted along with the regular end-semester examination in the following academic year.
Immediately after the publication of the results of the regular examinations in the third and fourth semester, special supplementary examinations will be conducted for the candidates who scores F grade Or Absent (Ab). **Special Supplementary Examination shall be conducted for regular students only.**

Provisions for Revaluation with Scrutiny

For all the courses candidates can apply for revaluation with or without scrutiny. The online application for revaluation and scrutiny shall be submitted within 15 days of the publication of the results.

Calculation of Grade Points, SGPA & CGPA

Calculation of SGPA/CGPA: Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) are calculated as follows.

SGPA = $\Sigma(Ci \times GPi)/\Sigma Ci$, where ‘Ci’ is the credit assigned for a course and ‘GPi’ is the grade point for that course. Summation is done for all courses specified in the curriculum of that semester.
The failed and incomplete courses shall also be considered in the calculation.

CGPA = Σ(Ci×GPi)/ΣCi , where 'Ci' is the credit assigned for a course and 'GPi' is the grade point for that course. Summation is done for all courses specified in the curriculum up to that semester for which the 'CGPA' is needed. Here the failed courses shall also be accounted.

SGPA and CGPA shall be rounded off to the nearest two decimal points.

5.3.3 Semester Promotion

Candidates for the MBA Degree shall be eligible to undergo the courses of study in the next semester and appear for the examination of that semester, irrespective of the results of the examinations of the previous semester, provided they have completed all the requirements of attendance, payment of all fees due to the University and Institution, and registration for the examinations in the earlier semesters.

6. End-Semester Evaluation and Examinations

The End Semester Evaluation (ESE)is conducted by the affiliated University through the written examinations. The norms and guidelines towards the end semester evaluation, model of question papers, preparation of question bank, and valuations of answer scripts are delineated in this section.

6.1 Exam Calendar

The University shall prepare the examination calendar in consultation with the Directors and Principals of affiliated colleges every year. The tentative calendar with months of examinations is presented in Table 19.

Table 19
Time Period for End Semester Examinations

Semester	End Semester Examination Time Period
I	First Week of January
II	Second Week of July
III	First Week of December
IV	First Week of June

6.2 Viva-voce Calendar

Table 20

Time Period for Comprehensive Viva-voce

Semester	Comprehensive Viva-voce Time Period
II	July
IV	June

6.3 University Examinations

The rules and regulations for the end-of-semester University examinations are included in this section.

6.3.1 Question Bank & Question Paper Generation

A question bank for all theory courses exams is required to be prepared by the University, with the contribution from the faculty members of all affiliated colleges. The Directors and Principals of affiliated colleges are required to instruct their faculty members to prepare a model question bank for their respective allocated courses in all semesters. The internally prepared question bank can be used for conducting the continual internal evaluation (CIE) examinations, and the college can contribute the questions to the University question bank.

The University is required to appoint Subject Right Owners (SROs) for all courses included for end-of-semester examinations. The Subject Right Owners (SROs) shall upload the questions to the portal within the stipulated time period. SROs can collect the questions from all affiliated colleges and edit the same towards quality check, if required, to make it eligible for entry to the question bank portal. The SROs shall also prepare and check the blueprint of the question bank in terms of the percentage of marks from each module mentioned in the course syllabus. The SROs shall submit an undertaking to the Convenor of the Question Bank Committee with respect to compliance with the course-level requirements.

The University is required to appoint a committee for the question bank every year at the beginning of the Academic Year with the following members:

(i) A Convenor for the Question Bank Committee – The convenor should have a Ph.D. qualification with more than 10 years of teaching experience in MBA.
(ii) Five Members from the senior teachers who specialize in different functional areas – one each from Finance, Marketing, HRM, Operations, Business Analytics, and Sectoral Specializations. The five members should have a Ph.D. qualification with more than 7 years of teaching experience in MBA.
(iii) One External Expert from outside Mahatma Gandhi University as a consultant and observer
(iv) The Subject Right Owners (SROs) should have a minimum of 5 years of teaching experience in MBA.
(v) The Convenor, Senior Faculty Members and SROs should have MBA qualification with the mandatory years of experience in teaching MBA students.

A meeting of the question bank committee (online/offline) shall be conducted to check the quality of the questions in terms of Bloom's Taxonomy levels and other parameters of student evaluation. The senior faculty members of the question bank committee shall check the question bank for all courses in their functional area to ensure the quality of the same. The Convenor of the Question Bank Committee shall send the completion report to the Controller of Examinations before the commencement of the university exams.

6.3.2 University Evaluation

The following rules are to be strictly followed by the affiliated colleges for the timely completion of answer script valuation and publication of the results.

(i) **Continual Internal Evaluation (CIE) Marks** – The Directors / Principals of the affiliated MBA colleges shall strictly follow the norms stipulated for internal marks submission by the faculty members and the publication of the same for the students' information. The internal assessment marks of all courses shall be uploaded by the concerned faculty members to th euniversity portal after careful verification. The Examination Monitoring Cell (EMC) Convenor in the affiliated colleges shall verify the entries with the original internal assessment sheet published by the college and inform the Director / Principal. The Director / Principal of the institution should check the marks entered in the portal and forward the same to the University. A soft copy of the internal assessment sheet, duly signed by the Head of the Department and the Director / Principal with the name and college seal, shall be submitted to the concerned University section in PDF.

(ii) In the case of application-oriented courses, due weightage shall be given for practical components in continuous assessment.

(iii) **Valuation of Answer Scripts –** There shall be a single valuation of answer scripts of the end semester examinations by the additional examiners duly appointed by the University, followed by the chief valuation.

(iv) All other rules and regulations of the University are to be strictly followed for the evaluation of the answer scripts. The remuneration for preparing the scheme and answer key, remuneration for Additional and Chief Examiners and the Chairperson shall be governed by the University rules and regulations from time to time.

7. Academic Administration in Affiliated Colleges

7.1 Registration and Attendance Norms

- Every candidate should register for all subjects of the end-semester examinations of each semester. A candidate who does not register will not be permitted to attend the end-of-semester examinations. He/she shall not be permitted to attend next semester.
- No student shall be allowed to appear for the University examinations (written and viva-voce), if he/she has not secured 75% attendance for each course. In this regard, it is required to note that prior application and subsequent sanction of leave will not be considered as presence. Under any circumstances, the Director/ Principal shall be the final authority to decide upon the requests made by the candidate to condone the absence due to genuine reasons, such as a medical case. In such cases, the candidate has to undergo special/remedial sessions and complete all academic requirements in order to become eligible to appear in university exams.

7.2 Faculty Advisory System

- All candidates who are provisionally admitted to the MBA Programme, shall be assigned to a ***Faculty Advisor*** who shall advise him/her about academic courses,Teaching learning process, self-development, choice of specialisation, career focus, and other required aspects for the holistic development and transformation of the candidate into a management professional.

7.3 Course Plan

- In the beginning of every semester, all teachers are required to submit their course plan to the Head of the Department/Director/Principal. The course plans shall be prepared with utmost care after considering the semester duration, holidays, non-academic endeavours of the college, and other relevant aspects. The course plans should ideally include the following elements/sections (not comprehensive) shown in Table 27. A soft copy of all evaluated course plans is to be provided to all participants before the commencement of classwork during all semesters.

Table 21

Components of the Course Plan

1.	Title of the Course, Semester, Course Code, Level of intended knowledge, Course Facilitator
2.	Brief Description of the Course
3.	Course Objectives
4.	Course Outcomes–Related Program Outcomes–CO-PO Matrix
5.	Session Plan with provision for Backlogs and Additional Sessions with Dates
6.	Assignment Plan with date of Submission and Statement of Evaluation
7.	Pedagogy for the Course–Elements
8.	Learning Resources
9.	Instructions to the Participants
10.	End Report Format– To be submitted to the Director/Principal after the completion of the course

7.4 Academic Review

- The academic progress and teaching learning process shall be reviewed by the Director / Principal during Class Committee Meetings. (Refer Class Committee section). The Representatives of Students in Class Committee shall inform HOD / Director/Principal about the progress in teaching learning and also the problems that may occur during the conduct of the course.
- Alldocument spertaining to Academics shall be maintained by the Head of the Department, under the supervision of the Director/Principal. The documents shall be produced on demand during inspection by the University.

- All academic-related works, including continual evaluation and remedial measures, shall be completed before the last working day in a particular semester.

7.5 General Instructions

- Academics and Academic Administrations shall be entrusted fully to the Director/ Principal and the Faculty Council. The Faculty Council consists of the Director / Principal and all Faculty Members. Periodic meetings of the Faculty Council are to be convened by the Director / Principal, and proper minutes shall be maintained. The Secretary of the Faculty Council (a full-time faculty member) shall prepare the

minutes. The Management Representative may also attend the meeting periodically and ensure effective administration of the professional course in management.

- Grievance Committee, as per statutory requirements, is to be constituted in all affiliated colleges. The complaints from the students and Faculty Members are to be resolved through deliberations. The online portal for submission of grievances shall be available on the website of the college. The Director / Principal of the affiliated college shall initiate grievance redressal procedures and resolve the complaints raised by the students, faculty members, and staff members.
- Library Hours are to be compulsorily allocated in the regular timetable of the Institution. The teachers are expected to motivate the participants and ensure quality library reference by the students throughout the MBA Programme.
- Internet connectivity and Wi-Fi facilities are to be provided to students as per AICTE norms.
- It is the responsibility of the Management to ensure that a conducive environment exists for the effective teaching and learning process. All issues pertaining to the administration of the college are to be deliberated and resolved in Governing Body Meetings and Advisory Board Meetings.
- All mandatory requirements stipulated by the All-India Council for Technical Education (AICTE) and the Government and its agencies are to be strictly implemented by the affiliated MBA Colleges. The Director / Principal shall constitute all statutory committees based on the norms stipulated by AICTE/UGC/ Affiliated University. The meetings of the statutory committees shall be conducted periodically, with minutes.

7.6 Class Committee Functions

The Director / Principal shall constitute and notify a Class Committee for each batch at the beginning of every semester. This Committee shall be in existence through out for the concerned semester. The structure of the Class Committee shall be as follows:

- Chairperson-Director/Principal of the affiliated college
- HOD/Class Coordinator
- Faculty Member

- Four (4) students out of which two shall be ladies – Two (2) students should be designated as Chief Coordinators and the other two Assistant Coordinators.

There should be at least two meetings of the class committee every semester. It shall be the responsibility of the Head of Department / Director / Principal to convene Class Committee meetings and discuss academic and co-curricular matters. The functions of Class Committee are the following:

- To review periodically the progress and conduct of students in the class.
- To ensure syllabus coverage within the stipulated time
- To discuss any academic problems/matters related to any course in any semester.
- Maintain strict vigil Against Ragging.
- Any other relevant issues related to the conduct of the MBA Programme at the Institution

The Minutes of Class Committee Meetings are to be maintained in safe custody by the Head of the Department / Academic Head, duly signed by the HOD and the Director / Principal.

7.7 Examination Monitoring Cell

The Director / Principal shall constitute an Examination Monitoring Cell (EMC) at the college level at the beginning of every academic year for the conduct and supervision of all examinations, especially the internal examinations. The Exam Monitoring Cell shall be headed by a Faculty Member, with a minimum of 2 years' experience in teaching MBA as Convener, and the Cell shall consist of a minimum of two Faculty Members, including the Convener, and one member shall be a lady. A clerical staff member having computer skills shall be assigned to assist the Examination Monitoring Cell.

The following are the responsibilities of the Examination Monitoring Cell:

1. Schedule and conduct all internal examinations – EMC has to notify all internal examinations as per the schedule decided by the faculty council from time to time. The internal exam schedule has to be notified in advance, duly signed by the EMC Convener and the Director/ Principal.

2. To coordinate various forms of students' applications related to examinations to the University.
3. To make all arrangements for the examinations.
4. To Act as the Examination Squad to keep a vigil on all internal and University Examinations – EMC Members have to act as a Squad for preventing malpractices in internal examinations. Any form of malpractice has to be reported to the Director / Principal immediately, and appropriate disciplinary action shall be initiated.
5. To receive any complaints from students regarding issues like out-of-syllabus questions, printing mistakes, etc., of the end semester examinations. Cell shall investigate these complaints and, if necessary, forward the same to the university with specific comments.
6. To receive complaints from students regarding internal examinations, award of marks, and any allegation of victimization. The Cell shall enquire about such incidents and give a report to the Director/ Principal for necessary action.
7. To coordinate the timely submission of Summer Internship / Research Project Reports to the University as soft copies.
8. To function as a wing of the University Office of Controller of Examinations at the Institution, to coordinate the evaluation of internal examination answer scripts and the publication of marks under the supervision of the Director / Principal.
9. EMC Convenor shall function as Assistant Superintendent of Examinations under the supervision of the Chief Superintendent (Director / Principal). The Chief Superintendent can delegate authority to the Assistant Superintendent in his/her absence during the examinations through written communication.

Mahatma Gandhi University, Kerala
മഹാത്മാഗാന്ധി സർവ്വകലാശാല, കേരളം
महात्मा गांधी विश्वविद्यालय, केरल

GROUP DISCUSSION & PERSONAL INTERVIEW SCORESHEET - RANKLIST

Name of the College:

Admission Number	Name of the Candidate	Entrance Examination	Group Discussion	Personal Interview	Category	Provisionally Admitted /Rejected	Total Score	Rank
		80	10	10			100	
Head of the Department		*Certified that all entries are verified with no errors*				Director/Principal		

Mahatma Gandhi University, Kerala
മഹാത്മാഗാന്ധി സർവ്വകലാശാല, കേരളം
महात्मा गांधी विश्वविद्यालय, केरल

COMPREHENSIVE COURSE VIVA-EVALUATION
SHEET S2/S4
Name of the College

PRN	Name of the Candidate	Subject Knowledge	Communication Skills	Total marks
		75	25	100

ExternalExamner1

ExternalExaminer2

Certified that all entries are verified with no errors
Counter Signed by Chairperson

MASTER OF BUSINESS ADMINISTRATION – FULLTIME
SUMMER INTERNSHIP & INDUSTRY ANALYSIS (SIIA}

During the second semester, all students will have to undertake an internship with industrial analysis. The Summer Internship carries 100 marks with 4 credits. This internship and analysis of industry is expected to provide the participants with elements of experiential learning pertaining to managerial functions. The following are the objectives of the Summer Internship and Industry Analysis:

1. To provide practical insight to MBA students in managerial functions and processes.
2. To provide short-term training on managerial skills and application of management concepts
3. To analyse an industry by using standard procedure and understand the status of the business

SUMMER INTERNSHIP

The Summer Internship is envisaged to provide the participants with practical knowledge in managerial functions and processes. The purpose is to expose the MBA participants to the business world and make them understand how various managerial functions are performed in an organisation. The students are expected to gain practical insights into the application of various management concepts in an organisation.

- The students will have to undergo a Summer Internship in any reputed organisation where they can get practical experience in various functional areas of Management. The affiliated colleges will have to ensure that the students undergo a summer internship in an organization worth doing an internship in management. The organisations from either the manufacturing or services sectors may be selected by the students for an internship and subsequent industry analysis. PSUs, Organisations in Co-operative Sector, SMEs, Private and Public Limited firms may be selected for the project. The students can pursue their internship across India or abroad within the stipulated time period.

- The students may give more importance to the functional areas where they plan to specialize in the second year during the Summer Internship.

INDUSTRY ANALYSIS

The Industry Analysis is to be carried out preferably in the same industry where the selected organization does its business. Industry Analysis is a market assessment tool used by businesses and analysts to understand the competitive dynamics of an industry. The profile of the industry has to be carefully analysed by the participants so that the current position and future trends can be ascertained. An Industry Analysis Report must be prepared and submitted by the students in the prescribed format by strictly following the guidelines. The suggested chapters / sections in the Summer Internship and Industry Analysis Report are presented in Table 1.

Table1

Sl. No.	CHAPTERS
01.	**Introduction–An Overview of the Industry** Brief History of the Industry Business Process of the Industry Market Demand and Supply–Contribution to GDP – Revenue Generation Level and Type of Competition–Firms Operating in the Industry Prospects and Challenges in the Industry Key Drivers of the Industry Stalwarts in the Industry
02.	**Industry Analysis**–Porter's 5 Forces Model/SWOT Analysis/ Environment Scanning (PEST Analysis)/Camels' Analysis (For Banking)
03.	**Internship Outcome** Observations by the Candidate about the Organisation Specific Learning Outcome
04.	**Findings**–Summary of Findings–Critical Observations by the Candidate about Industry and Organisation
Bibliography **Annexures**	

❖ The Summer Internship is to be scheduled during April-May every year for a period of 60 days.

GUIDELINES FOR REPORT SUBMISSION AND EVALUATION

- The candidates shall submit periodic working reports through email to the Faculty Guide in the Institution and the External Guide, if any in the Industry/Organisation. Periodic reviews and discussions are compulsory and Faculty Guides are required to submit brief periodic reports to the HOD / Director / Principal. The HOD / Class Coordinator shall submit a Report to the Director / Principal, specifically showing whether the learning outcome through the Summer Internship and Industry Analysis is satisfactory / not satisfactory.
- The Summer Internship Report shall be typed in “Cambria” font by using 12 font size with 1.5 spacing. All chapter headings shall be in font size 14 in bold.All main headings shall be in font size 12 in bold, and all sub-headings are to be in 12 font size. The cover page of the Report shall be in white with colour / black & white printing with the college emblem.
- **Summer Internship Internal Evaluation & Report Submission**

➢ The candidates are required to submit a *soft copy* of the draft report of the Summer Internship to the Faculty Guide before the cut-off date.

➢ Faculty Guides, after corrections and required changes, shall direct the candidates to submit the Report in the prescribed format as a single PDF File with all certificates enclosed.

➢ The internal marks (out of 40)are to be awarded through a brief presentation of the internship report by the candidate before a panel of not less than two examiners appointed by the Director / Principal.

➢ The Director / Principal shall verify all Reports submitted by registered candidates and forward the soft copies (in PDF) of the same to the Chairperson of the Board of Examiners along with the internal mark list, duly signed by the HOD / Class Coordinator and the Director / Principal.

➢ The candidates are also required to take one hard copy of the Summer Internship Report with Project completion certificates from the Organisation and the College. The hard copy of the Report has to be signed by the Faculty Guide and the Director/ Principal.

- **Summer Internship Report Evaluation**

➢ The Chairperson of the Board of Examiners shall distribute the soft copies to senior external examiners for valuation during the CV Camp of S3 MBA.

➢ The external examiners shall complete the valuation of the summer internship reports allotted to them and submit the mark lists in the prescribed formats to the Chairperson of the Board of Examiners in S3 MBA.

➢ The Chairperson shall countersign all mark lists and forward the same to the University.

- The evaluation of the Summer Internship Report shall be based on the criteria given in the evaluation format.

Mahatma Gandhi University, Kerala

SUMMER INTERNSHIP & INDUSTRY ANALYSIS - MBA

Name of the College:

Reg. No.	Name of the Candidate	Overview of the Industry	Industry Analysis	Internship Report	Overall Learning Outcome	Project Presentation & Communication Skills (Internal)	Total Marks
		20	30	5	5	40	100

Director / Principal	Additional Examiner	Countersigned by Chairperson

SUMMER INTERNSHIP & INDUSTRY ANALYSIS - MBA

Name of the College:

PRN	Name of the Candidate	Overview of the Industry	Industry Analysis	Internship Report	Overall Learning Outcome	Project Presentation & Communication Skills (Internal)	Total Marks
		20	30	5	5	40	100

Director/Principal	Additional Examiner	Counter signed by Chairperson

SUMMER INTERNSHIP - Internal Valuation

Name of the College

PRN	Name of the Candidate	Internship Presentation	Communication Skills	Total marks
		30	10	40

ExternalExamner1

External Examiner 2

Counter Signed by Chairperson

Certified that all entries are verified with no errors

Director/Principal

MASTER OF BUSINESS ADMINISTRATION – FULLTIME
RESEARCH PROJECT

At the end of the fourth semester, all students will have to undertake a Research Project. The research project is a problem-centered study in management where the students are expected to follow the basic process of research. A specific managerial problem from any industry/firm shall be selected by the candidate in consultation with the Faculty Guide. The candidate can select any area of specialisation for the research project. The following are the objectives of the Research Project:

1. To provide basic insights into the process of research in management.
2. To provide practical experience in identifying a managerial problem in any industry and carrying out a study
3. To provide basic knowledge in data collection, processing, analysis, and report writing using appropriate methodology.

The suggested chapters/sections in the Research Report are represented in Table 1.

Table 1

Sl. No.	CHAPTERS
01.	Introduction–Statement of the Problem Background of Study Statement of the Problem Relevance & Scope of the Study Objectives of the Study
02.	Review of Literature An Overview of Earlier Studies Uniqueness of Research Study
03.	Methodology of the Study Research Approach and Design Sources of Data Sampling Design–Reliability & Content Validity Data Analysis Tools Report Structure Limitations of the Study
04.	Data Analysis, Interpretation and Inference
05.	Findings of the Study
06.	Conclusions
Bibliography **Annexures**	

- The Research Project has to be carried out for a period of 2 months during April and May every year. This period is inclusive of problem formulation, discussions, survey, data analysis, and report writing.

GUIDELINES FOR REPORT SUBMISSION AND EVALUATION

- The candidates shall submit periodic working reports through e-mail to the Faculty Supervisors in the Institution. Periodic reviews and discussions are compulsory, and Faculty Supervisors are required to submit a brief report to the Director / Principal. The Head of the Department / Class Coordinator shall submit a report to the Director / Principal, specifically showing whether the learning outcome through the Research Report is satisfactory / not satisfactory.
- The Research Report shall be typed in “Cambria” font by using 12 font size with 1.5 spacing. All chapter headings shall be in font size 14 in bold. All main headings shall be in font size 12 in bold, and all sub-headings are to be in 12 font size. The cover page of the Report shall be in white with colour / black & white printing with the college emblem.
- Research Project Report Submission

- The candidates are required to submit a *soft copy* of the draft report of the Research to the Faculty Supervisor before the cut-off date.
- Faculty Supervisors, after corrections and suggested changes, shall direct the candidates to submit the Report in the prescribed format as a single PDF file with all certificates enclosed.
- The internal marks (out of 40) are to be awarded through a brief presentation of the research report by the candidate before a panel of not less than two examiners appointed by the Director / Principal.
- The Director / Principal shall verify all Reports submitted by registered candidates and forward the same to the Chairman of the Board of Examiners for S4MBA appointed by the University.
- The candidates are also required to take one hard copy of the Research Report with Project completion certificates from the College. The hard

copy of the Report has to be signed by the Faculty Guide and the Principal / Director.

- The evaluation of the Research Report and Presentation shall be based on the criteria given in the evaluation format.
- Evaluation of Research Report and internal presentation carries 60 and 40 marks respectively, and the candidates are required to score an overall passing minimum of fifty percent (50%).
- An unsatisfactory research report by the candidate after corrective measures and reminders shall be summarily rejected by the Director / Principal, and the candidate has to repeat the project in the subsequent months after the declaration of the final semester results. In such cases, on successful completion of the research project, the Director / Principal of the affiliated college can forward the project report to the University for special evaluation by a faculty member recommended by the Chairperson appointed for the S4 MBA.

RESEARCH DISSERTATION EVALUATION SHEET **Name of the College:**

Reg. No.	Name of the Candidate	Problem Formulation & Objectives	Literature Review	Methodology & Tools	Research Report	Project Presentation & Communication Skills (Internal Evaluation)	Total Marks
		15	5	30	10	40	100
Additional Examiner		Director / Principal				Countersigned by Chairperson	

RESEARCH DISSERTATION EVALUATION SHEET

Name of the College:

PRN	Name of the Candidate	Problem Formulation &Objectives	Literature Review	Methodology Tools	Research Report	Project Presentation & Communication Skills (Internal Evaluation)	Total Marks
		15	5	30	10	40	100
Additional Examiner		Director/Principal				Counter signed by Chairperson	

RESEARCH PROJECT - Internal Valuation

Name of the College

PRN	Name of the Candidate	Project Presentation	Communication Skills	Total marks
		30	10	40

ExternalExamner1

External Examiner 2

Counter Signed by Chairperson

Certified that all entries are verified with no errors

Director/Principal

CONTINUAL EVALUATION RECORD - MBA

Name of the College:

PRN	Name of the Candidate	Internal Test1	Model Exam	Assignments & Other Components	Class Participation, Punctuality, Discipline	Overall Remark by Faculty Advisor- Satisfactory/ Not Satisfactory	Total
		8	10	16	6		40

Faculty Member	Certified that all entries are verified with no errors	Director/Principal

CONTINUAL EVALUATION RECORD - S1/S2/S3/S4 MBA

Name of the College:

PRN	Name of the Candidate	MB010101	MB010102	MB010103	MB010104	MB010105	MB010106	MB010107	Remarks, if any
		40	40	40	40	40	40	40	

Head of the Department	*Certified that all entries are verified with no errors and the Document is published for students' information*	**Director/ Principal**

ANSWER SCRIPTS SUBMISSION – First Evaluation

Name of the College:

Semester	Course Code	Name of the Course	No. of Registered Candidates	No. of Valued Answer Scripts	Name of the Additional Examiner	Signature	Remarks
		Certified that the first evaluation of the Answer Scripts are completed in our Centre as per the norms of the University Regulations				Counter signed by Chairperson	
		Signature & Seal of Director/ Principal- Chief Superintendent with College Seal					

Course Code	Course Title	Semester & Level of Knowledge	Type of Course & No. of Credits
24MB03FE41	**DATABASE AND DATA MINING APPLICATIONS IN BUSINESS**	**S3 Working**	**Elective Course & 4**

Course Objective	
1.	To familiarize participants with the core concepts and implementation techniques of database systems and their data mining applications in the business context.
2.	To bridge technical data handling with decision-oriented business insights using modern platforms and models.

Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1.	**Introduction to Database Systems** 1.1 Data, information, Fields, Records, Files. Data Dictionary, Database, Database system, Working of a Simple Centralised Database System 1.2 Traditional File Systems vs. Modern Database Management Systems 1.3 Advantages of using DBMS, Applications of traditional Database 1.4 Properties of Database, Types of Database Users	4+ 2
2.	**Unit 2: Business Data Management Overview** 2.1 Principles, Tools and Platforms / (Database Management Systems): Database concepts, Basic components of DBMS, Sources of data, Logging, Cleaning data, Data representation 2.2 Data models – (hierarchical, network, XML), and Stores, NoSQL database, Design for performance / Quality parameters 2.3 Documents and information retrieval related tools – (Postgres, OLTP, OLAP, Hadoop, MapReduce)	4 + 2
3.	**SQL Fundamentals – Basics and Definition** 3.1 Query languages – SQL for data creation, retrieval and manipulation 3.2 Database transactions, Concurrency control, Atomicity, Recovery, Security, Backup and recovery 3.3 Database administration – Client-server architecture based RDBMS	4 + 2
4.	**Data Mining** 4.1 Concepts and Applications, Data Mining Stages, Data Warehousing (DWH) and On-Line Analytical Processing (OLAP) 4.2 Introduction to Model Building – Classification Models: Introduction to Classification and Prediction 4.3 Association Rules Mining: Concepts, Apriori and FP-Growth	4 + 2

	Algorithm	
5.	**Advanced Database Systems** 5.1 Multimedia databases, Geographical Information System 5.2 Image databases, Spatial and Temporal Databases, Data Warehouse 5.3 Distributed Databases, Big Data Technologies	4 + 2

Suggested Readings:

1. Silberschatz, A., Korth, H. F., & Sudarshan, S. (2019). *Database System Concepts* (7th ed.). McGraw-Hill.

2. Elmasri, R., & Navathe, S. B. (2015). *Fundamentals of Database Systems* (7th ed.). Pearson.

3. Han, J., Kamber, M., & Pei, J. (2022). *Data Mining: Concepts and Techniques* (4th ed.). Morgan Kaufmann.

4. Connolly, T., & Begg, C. (2015). *Database Systems: A Practical Approach to Design, Implementation and Management* (6th ed.). Pearson.

5. Provost, F., & Fawcett, T. (2013). *Data Science for Business*. O'Reilly Media.

6. Vercellis, C. (2009). *Business Intelligence: Data Mining and Optimization for Decision Making*. Wiley.

7. White, T. (2015). *Hadoop: The Definitive Guide* (4th ed.). O'Reilly Media.

Learning Outcomes
1. Define and explain the fundamental elements of database systems and their working.
2. Apply SQL queries to create, manipulate, and manage data in databases.
3. Demonstrate understanding of data models, NoSQL databases, and tools like OLAP and Hadoop.

Course Code	Course Title	Semester & Level of Knowledge	Type of Course& No. of Credits
24MB03FE42	**PYTHON PROGRAMMING FOR BUSINESS**	**S3 Working**	**Elective Course & 4**

Course Objective		
1.	To introduce students to the foundational concepts of Python programming and its relevance in solving real-world business problems.	
2.	To enable students to apply Python data structures and libraries such as NumPy and Pandas to collect, organize, and manipulate business data.	
3.	To empower students to utilize Python's data visualization libraries to construct visualizations and assess business data for effective decision-making.	
Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1.	**INTRODUCTION TO PYTHON PROGRAMMING** 1.1 Need for Programming in Business 1.2 Overview of Programming Languages 1.3 History and Features of Python 1.4 Python Installation and Interactive Modes 1.5 Keywords, Variables, and Identifiers 1.6 Data Types in Python: Numbers, Sequences, Sets, Mappings, and None 1.7 Mutable vs Immutable Data Types 1.8 Python Syntax, Indentation, and Coding Style	4+ 2
2.	**CONTROL FLOW AND DATA COLLECTIONS** 2.1 Control Flow Statements: Conditional: if, if-else, nested if, Loops: for, while, nested loops, Loop Control: break, continue, pass 2.2 Types of Loops: Entry-Controlled vs Exit-Controlled, Counter-Controlled vs Condition-Controlled 2.3 Data Collections – Lists and Tuples, Creating Lists and Tuples, Operations and Methods, Tuple Unpacking	4 + 2
3.	**DICTIONARIES, SETS, FUNCTIONS, AND MODULES** 3.1 Dictionaries:Creating and Accessing Dictionaries, Dictionary Operations and Methods 3.2 Sets and Their Operations 3.3 Functions: Defining and Calling Functions,	4 + 2

	Types of Arguments: Positional, Keyword, Default, Variable-length, Return Statement, Recursion and Anonymous Functions (lambda), Scope: Local and Global Variables 3.4 Introduction to Modules and Importing Modules, Creating and Using Modules	
4.	**OPERATORS AND TYPE CONVERSION** 4.1 Operators in Python:Arithmetic, Assignment, Relational (Comparison), Logical. Identity, Membership Operators, Expression Evaluation and Operator Precedence 4.2 Type Conversion: Implicit and Explicit Conversion 4.3 Practical Examples Related to Business Calculations	4 + 2
5.	**INTRODUCTION TO NUMPY, PANDAS, AND DATA VISUALIZATION** 5.1 NumPy Arrays: Creating Arrays, Array Operations, Indexing, and Slicing 5.2 Introduction to Pandas: Series and DataFrames, Basic Operations and Business Examples 5.3 Data Visualization: Matplotlib Basics: pyplot, Graph Types, Plot Customization, Introduction to Seaborn with Simple Examples	4 + 2

Suggested Readings:

1. Severance, C. R. (2016). *Python for everybody: Exploring data in Python 3*. CreateSpace Independent Publishing Platform.
2. Morgan, P., & AI Sciences LLC. (2016). *Data analysis from scratch with Python*. AI Sciences LLC.
3. Satyanarayana, C., Mani, M. R., & Jagadesh, B. N. (2018). *Python programming*. Universities Press (India) Private Ltd.
4. Lambert, K. A., Juneja, B. L., Arunachalam, M., & Balakrishnan, G. (2018). *Problem solving and Python programming*. Cengage Learning India Pvt. Ltd.
5. Downey, A. B. (2016). *Think Python: How to think like a computer scientist* (2nd ed.). Shroff/O'Reilly Publishers. http://greenteapress.com/wp/thinkpython/

6. Sedgewick, R., Wayne, K., & Dondero, R. (2016). *Introduction to programming in Python: An interdisciplinary approach*. Pearson India Education Services Pvt. Ltd.
7. Budd, T. A. (2015). *Exploring Python*. McGraw Hill Education (India) Private Ltd.
8. Lambert, K. A. (2014). *Fundamentals of Python: First programs*. Cengage Learning.
9. Halterman, R. L. (2019). *Fundamentals of Python programming*. https://runestone.academy/ns/books/published/fopp/index.html.
10. Van Rossum, G. (2018). *Python 3.7.0 tutorial*. Python Software Foundation. https://docs.python.org/3.7/tutorial/
11. TutorialsPoint. (2025). *Python 3 tutorial*. TutorialsPoint. https://www.tutorialspoint.com/python3/.
12. Kaefer, F., & Kaefer, P. (2020). *Introduction to Python programming for business and social science applications*. SAGE Publications, Inc.

Learning Outcomes
1. The participants will be able to apply basic Python programming constructs such as control structures, functions, and modules to solve structured business problems.
2. The participants will be able to analyze and manipulate business datasets using Python collections, NumPy arrays, and Pandas DataFrames.
3. The participants will be able to create appropriate data visualizations using Matplotlib and Seaborn to communicate insights for business decision-making.

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB03FE43	**DATA VISUALISATION USING TABLEAU**	**S3 Working**	**Elective Course & 4**
Course Objective			
1.	To familiarize the participants with the basics of Data Visualization using Tableau		

2.	Learn to navigate the Tableau interface, connect to external data sources	
3.	Apply filters, groups, sets, and hierarchies to structure data and use various calculations, including LOD expressions, for analysis.	
4.	Design insightful visualizations using charts, reference lines, parameters, and calculated fields	
Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1	**TABLEAU INTERFACE AND NAVIGATION** 1.1 Connect to external data:-Tableau terminology, Tableau interface/paradigm, Create and save data connections, Create a live connection to a data source, Explain the differences between using live connections versus extracts 1.2 Joins: Different joins, union and data blending 1.3 Data types:- Manage data properties, Rename a data field, Assign an alias to a data value, Assign a geographic role to a data field, Change data type for a data field (number, date, string, boolean, etc.), Change default properties for a data field (number format, aggregation,colour, date format, etc.)	2+2
2	**ORGANISING, FILTERING & SORTING DATA** 2.1 Organise data and apply filters, Filter data, Sort data, Build groups, Build hierarchies, Build sets, Add a filter to the view. 2.2 Filters in Tableau Dimension Filter Date Filter Measure Filter Visual filter Interactive Filter Data Source Filter Context Filter.	3+4

3	**VISUAL ANALYTICS** 3.1 Applying Analytics to the Worksheet, Sets, Parameters, Group, Calculated Fields, Date Functions, Text Functions, Bins and Histogram, Sort Reference and Trend Lines, Table Calculations, Pareto Chart Waterfall Chart. 3.2 Spatial visualisations of non-geographic data, Using titles, captions and tooltips, Editing axes, Mark labels and annotations.	3+4
4	**CALCULATIONS** 4.1 Manipulating string and date calculations, Create quick table calculations, Introduction to Level of Detail (LODs) Fixed LOD Include LOD Exclude LOD, Use LOD calculations; types of LOD calculations, Use Ad-hoc calculations 4.2 Work with aggregation options, Build logic statements, Build arithmetic calculations, Build grand totals and sub-totals, Use calculations in join clauses, Create a calculated field (e.g. string, date, simple arithmetic), Add a parameter, Practice works using real data	3+4
5	**DASHBOARD DESIGN AND PRESENTATIONS** 5.1 Introduction to dashboard, formatting dashboard, actions, inserting web page, picture, worksheet 5.2 Format view for presentation, Use colour, Use bolding, Use shapes, Change size of marks, Select fonts, Create and modify a dashboard, Create a dashboard layout, Add interactive or explanatory elements, 5.3 Modify existing dashboard layout for mobile devices, Create a story using dashboards or views, Share a twbx as a PDF, Share a twbx as an image.	2+3

Suggested Readings:

1. Tableau 10 for Beginners: Step-by-Step Guide to Developing Visualizations in Tableau 10. Author: Chandraish Sinha (Indian BI expert)
2. Visual Analytics with Tableau by Alexander Loth
3. Practical Tableau: 100 Tips, Tutorials, and Strategies by Ryan Sleeper

4. Tableau Your Data!: Fast & Easy Visual Analysis by Daniel G. Murray
5. Learning Tableau by Joshua N. Milligan

Learning outcomes:
1. Demonstrate proficiency in connecting Tableau to various data sources
2. Apply sorting, filtering, grouping, and calculation techniques to organize and analyze data for meaningful insights.
3. Design and interpret a variety of data visualizations using advanced analytics tools.
4. Create, format, and publish interactive dashboards and stories suitable for different audiences.

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB03FE44	**INTRODUCTION TO BIG DATA AND CLOUD COMPUTING**	**S3 Working**	**Elective Course & 4**

Course Objective	
1.	Understand the strategic importance of Big Data and Cloud Computing in modern businesses.
2.	Gain foundational knowledge of data analytics techniques and tools.
3.	Learn key concepts of cloud infrastructure, deployment models, and data governance.
4.	Explore the role of innovation, AI, and IoT in driving data-driven business transformation.

Module No.	Title & Contents	No. of Sessions LT (Indicative)
1	**FOUNDATIONS OF THE DATA-DRIVEN ENTERPRISE** 1.1 The Digital Economy and Data as an Asset: data literacy 1.2 Understanding Big Data: Volume, Velocity Variety o - (structured, semi-structured, unstructured), - Veracity (quality) 1.3 Introduction to Cloud Computing: - key service models: Infrastructure as a Service (IaaS) -, Platform as a Service (PaaS)- Software as a Service (SaaS) (e.g., CRM applications).- strategic implications of deployment models: Public Cloud, Private Cloud, Hybrid Cloud, and Multi-Cloud strategies. 1.4 Business Impact & Case Studies: - real-world examples of how various industries (e.g., retail, healthcare, finance) have been disrupted and revolutionized by adopting Big Data and Cloud Computing	3+2
2	**BUSINESS INTELLIGENCE AND ANALYTICS WITH BIG DATA** 2.1 Types of Data Analytics: - Descriptive Analytics - Diagnostic Analytics - Predictive Analytics - Prescriptive Analytics . 2.2 Conceptual Overview of Big Data Technologies: - Hadoop Ecosystem (e.g., HDFS for distributed storage, MapReduce for processing)- Apache Spark -different types of NoSQL Databases 2.3 Data Visualization and Storytelling: - Briefly mention tools like Tableau or Power BI for context. 2.4 Real-time Analytics and Streaming Data: - analyzing data- in fraud detection 2.5 Business Applications and Case Studies: - business problems solved through Big Data analytics - customer churn prediction - optimizing marketing campaigns - supply chain efficiency.	5+2

3	**CLOUD & DATA GOVERNANCE, SECURITY, AND STRATEGY** **3**.1 Cloud Adoption Strategies: -migrating to the cloud - "lift-and-shift," - re-platforming, and re-architecting applications. - Cloud Cost Optimization (FinOps). - Multi-Cloud environments. 3.2 Cloud Governance and Management: -Identity and Access Management (IAM), resource tagging, budgeting, - ensuring compliance - DevOps and MLOps 3.3 Fundamental Cloud Security: - Shared Responsibility Model - data encryption (at rest and in transit), network security, threat detection, - incident response planning within cloud environments. 3.4 Risk Management in Cloud and Big Data Environments: - potential risks associated with data breaches- system outages - regulatory non-compliance, and vendor dependencies.	4+2
4	**DRIVING INNOVATION WITH DATA & CLOUD** 4.1 AI and Machine Learning in Business: Artificial Intelligence (AI) and Machine Learning (ML) - powered by Big Data- Explore practical business applications of AI/ML 4.2 Internet of Things (IoT) for Business Insights: - IoT data for insights - Briefly introduce Edge Computing for faster data - Data Democratization: 4.3 Emerging Business Models: - combination of Big Data and Cloud Computing - new business models and revenue streams, driving digital transformation across industries.	3+3
5	**STRATEGIC LEADERSHIP AND FUTURE DIRECTIONS** 5.1 Developing a Data & Cloud Strategy: - align Big Data and Cloud initiatives with overall business objectives-strategic roadmap for implementation. 5.2 Leading Organizational Change: - organizational structures, required skill sets, and the importance of change management to successfully integrate Big Data and Cloud into an enterprise. 5.3 Ethical and Societal Considerations: Examine the broader ethical implications of Big Data and AI, such as data privacy 5.4 Future Trends and Opportunities: - Data Fabric, Serverless Computing,- Strategic Capstone Project/Case Study.	3+3

Suggested Readings:

1. Sharda, Ramesh, Dursun Delen, and Efraim Turban. Business Intelligence, Analytics, and Data Science: A Managerial Perspective. (4th Edition).
2. Stein, Meredith, Steven Mezzio, and Vincent Campitelli. Cloud Governance: Basics and Practice. 2022.
3. Yao, Mariya, Adelyn Zhou, and Marlene Jia. Applied Artificial Intelligence: A Handbook for Business Leaders.
4. Marr, Bernard. Data Strategy: How to Profit from a World of Big Data, Analytics and the Internet of Things.
5. Marr, Bernard. Big Data in Practice: How 45 Successful Companies Used Big Data Analytics to Deliver Extraordinary Results.

Learning Outcomes
1. Demonstrate an understanding of Big Data characteristics and cloud computing service models.
2. Analyze business scenarios using appropriate data analytics techniques.
3. Evaluate cloud deployment strategies, governance, and security frameworks.
4. Apply data-driven insights to support innovation and strategic decision-making.

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB03FE45	**ARTIFICIAL INTELLIGENCE IN BUSINESS APPLICATIONS**	**S3 Working**	**Elective Course & 4**
Course Objective			
1	To identify and logically organize the knowledge components of Artificial Intelligence (AI) and Machine Learning (ML) in order to develop a step-by-step strategy for solving real-world business problems.		
2	To enable students to understand the core concepts, historical evolution, and foundational methodologies of Artificial Intelligence, including knowledge representation, inference mechanisms, and basic search strategies.		
3	To apply supervised, unsupervised, and reinforcement learning algorithms on		

	structured datasets for building predictive and classification models relevant to business scenarios.	
4	To acquire advanced data analysis and optimization skills using AI-based algorithmic approaches, including heuristic and metaheuristic techniques, for enhanced decision-making.	
5	To select appropriate logical and functional models and create practical AI-based solutions for complex business use cases, by integrating suitable techniques and tools in AI and ML.	
Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1.	**INTRODUCTION TO AI AND PROGRAMMING TOOLS** 1.1. Analytics Landscape Complexity of Analytics What Is Artificial Intelligence? 1.2. Embedding AI into Business Processes Basic Concepts of Artificial Intelligence Brain Science and Problem Solving The History of AI Benefits of AI Data Pyramid Property of Autonomy The AI Revolution Business Innovation with Big Data and Artificial Intelligence 1.3. AI and Predictive Analytics Overlapping of Artificial Intelligence with Other Fields Ethics and Privacy Issues Application Areas AI and Society 1.4. Knowledge-Based Systems Knowledge Based Reasoning: Agents, Facets of Knowledge.	3+2
2.	**LOGIC AND INFERENCES** 2.1 Formal Logic, Propositional and First Order Logic, Resolution in Propositional and First Order Logic, Deductive Retrieval, Backward Chaining, Second order Logic 2.2 Knowledge Representation: Conceptual Dependency, Frames, Semantic nets. 2.3 Reasoning Systems for Categories, Reasoning with Default Information. 2.4 Propositional Logic & Predicate logic - Syntax., Semantics , Computability and Complexity, Applications and Limitations. 2.5 Logic for Problem solving, Logic Programming with PROLOG, PROLOG Systems and Implementations, Execution Control and Procedural Elements, Constraint	4+2

	Logic Programming, Simple Examples	
3.	**PROBLEM SOLVING, SEARCH AND GAME TECHNIQUES** 3.1 Problem solving with AI, Study and analysis of various searching algorithms, Local Search in Continuous Spaces, Searching with Nondeterministic Actions 3.2 General Problem Solver, Gelernter's Geometry Theorem, STRIPS, ABSTRIPS, 3.3 Search - Overview, Problem representation State-space representation, Problem-reduction representation, Uninformed Search - Blind state-space search, Breadth-First Search, Uniform-cost search, Depth-First Search, Iterative Deepening, 3.4 Heuristic Search, Greedy Search , A★-Search ,IDA★-Search. Games with Opponents- Minimax Search, Alpha-Beta-Pruning Nondeterministic Games. 3.5 Heuristic Evaluation Functions Game trees, optimal search for an optimal solution. Conditions for optimality: Admissibility and consistency, Optimality of A* 3.6 Optimisation Problems: Hill-climbing search Simulated annealing, Local beam search, Recursive Best First Search, Pruning the CLOSED and OPEN Lists	4+3
4.	**MACHINE LEARNING AND DATA MINING** 4.1. Introduction - What is machine learning?, Supervised vs. unsupervised learning , Reinforcement Learning 4.2. Machine Learning Workflow, Learning Algorithms, Linear Regression k-Nearest Neighbour , Decision Trees, 4.3. Feature Construction and Data Reduction ,Random Forest, k-Means Algorithm, Gradient Boosting, 4.4. Analysing Big Data Different Deep Learning Models, Auto encoders, Data Analysis, The Perceptron, a Linear Classifier, The Learning Rule, Optimisation and Outlook 4.5. The Nearest Neighbour Method, Two Classes, Many Classes, Approximation, Case-Based Reasoning, Decision Tree Learning 4.6. Entropy as a Metric for Information Content, Learning of Appendicitis Diagnosis, Cross-Validation and Over fitting, Learning of Bayesian Networks 4.7. Learning the Network Structure, The Naive Bayes Classifier, Clustering ,Hierarchical Clustering, Data Mining in Practice	4+2

5	**NATURAL LANGUAGE PROCESSING & NEURAL NETWORKS** 5.1. Introduction to Natural Language Processing Stages in NLP NLP Models 5.2. Morphological Processing - Syntax and Semantics, Text Analytics, Sentiment Analysis, Syntactic Analysis (Parsing), Semantic interpretation 5.3. Discourse and pragmatic Processing Text Classification Implementation aspects of Syntactic Analysis (Parsing) Application of NLP in Machine Translation Information Retrieval and Big Data Information Retrieval 5.4. Learning: Supervised Unsupervised and Reinforcement learning Use Cases of NLP Applications of NLP in Business Customer Service Reputation Monitoring 5.5. Market Intelligence Sentiment Technology in Business Artificial Neural Networks – Concept Feed forward and Feedback ANNs Error Back Propagation Boltzmann Machine 5.6. Deep Neural Network and Tools, Hopfield Networks Application to a Pattern Recognition Example Neural Associative Memory Linear Networks with Minimal Errors Applications of Neural Network	4+2

Suggested Readings:

1. Russell, Stuart & Norvig, Peter – *Artificial Intelligence: A Modern Approach*, Third Edition, Pearson, 2016.
2. Bhuvan Unhelkar and Tad Gonsalves - *Artificial Intelligence for Business Optimization - Research and Applications*, CRC Press, Taylor & Francis, 2021.
3. Paul Roetzer - *Marketing Artificial Intelligence – AI, Marketing, and the Future of Business*, BenBella Books, Inc., 2022.

4. Sandeep Kumar Panda, Vaibhav Mishra, R. Balamurali and Ahmed A. Elngar - *Artificial Intelligence and Machine Learning in Business Management - Concepts, Challenges, and Case Studies*, CRC Press, Taylor &Francis, 2022.

5. Bernard Marr, Matt Ward - *Artificial Intelligence in Practice*, Wiley, 2019.

6. Rajendra Akerkar - *Artificial Intelligence for Business*, Springer, 2019.

7. Doug Rose - *Artificial Intelligence for Business*, Pearson FT Press, 2020.

8. Raj Venkatesan and Jim Lecinski - *The AI Marketing Canvas*, Stanford Business Books, 2021.

9. Livia Rainsberger - *AI – The New Intelligence in Sales*, Springer, 2022.

10. Bahaaeddin A. M. Alareeni, and Islam Elgedawy - *Artificial Intelligence and Finance*, Springer, 2023

Learning Outcomes
1. Students will recall and explain the evolution of industrial revolutions and the core concepts and technologies driving Industry 4.0.
2. Students will demonstrate a conceptual understanding of how IOT systems function and describe real-world applications in everyday life.
3. Students will analyse how IoT is being integrated into key industries such as retail, logistics, and healthcare to improve operations and customer experience.
4. Assess the impact of IoT on digital transformation strategies and evaluate its advantages and implementation challenges.
5. Students will critically evaluate emerging IoT trends and discuss the ethical, privacy, and workforce-related implications using business cases.

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB04FE46	**SOCIAL MEDIA, WEB AND TEXT ANALYTICS**	**S4 Working**	**Elective Course & 4**
Course Objective			
1.	To explain the evolution and role of social media platforms in shaping digital consumer behavior and business communication strategies.		
2.	To interpret key web and text analytics metrics, and demonstrate the use of tools such as Google Analytics and text analysis platforms for evaluating website performance and deriving insights from unstructured data		
3.	To analyse social media campaign performance using key metrics and tools such as UTM tracking and sentiment analysis.		
4.	To develop simple dashboards and present insights through data visualization using tools like MS Excel/Google Sheets		
5.	To evaluate emerging trends, ethical challenges, and digital strategy frameworks in the use of social media and web analytics.		

Module No.	Title & Contents	No. of Sessions LT (Indicative)
1.	**INTRODUCTION TO SOCIAL MEDIA IN BUSINESS** 1.1 Role and evolution of social media in business) 1.2 Major platforms – Facebook, Instagram, X (Twitter), LinkedIn, YouTube 1.3 Digital customer journey and consumer behavior 1.4 Elements of a basic social media strategy	4 + 2
2.	**WEB AND TEXT ANALYTICS ESSENTIALS** 2.1 What is web analytics – Importance in digital marketing 2.2 Key metrics: sessions, pageviews, bounce rate, conversions 2.3 Google Analytics: Basic dashboard and report walkthrough 2.4 Interpreting traffic sources and user behavior 2.5 Introduction to text analytics & Natural Language Processing (NLP), Sentiment analysis deep dive (social listening tools: Brandwatch, Talkwalker)	4 + 2
3.	**SOCIAL MEDIA METRICS AND TRACKING** 3.1 Metrics: Reach, impressions, engagement, click-throughs 3.2 Campaign performance: Organic vs Paid 3.3 UTM tagging and link tracking basics 3.4 Sentiment analysis and feedback tracking	4 + 2
4.	**ANALYTICS TOOLS AND REPORTING** 4.1 Tools: Meta Business Suite, Google Analytics, Canva 4.2 Creating dashboards and reports in Excel/Google Sheets 4.3 Data visualization and storytelling with social media data 4.4 Case studies: Swiggy, Zomato, small D2C brands	4 + 2
5.	**STRATEGY, TRENDS AND ETHICS IN SOCIAL MEDIA ANALYTICS** 5.1 Trends: Influencer marketing, personalization, short videos 5.2 Designing a basic social media campaign (group activity) 5.3 Ethical and privacy concerns in social media data	4 + 2

	use 5.4 Digital reputation management	

Suggested Readings:

1. Web Analytics 2.0 : The Art of Online Accountability and Science of Customer Centricity by Avinash Kuashik

2. Web Analytics : An Hour a Day by Avinash Kuashik

3. Web Analytics Action Hero: Using Analysis to Gain Insight and Optimize Your Business by Brent Dykes

4. Practical Web Analytics for User Experience by Michael Beasley

5. Social Media Marketing Step by Step: The Guides to Instagram and Facebook Marketing – Bryan Bren

6. Social Media Analytics Strategy: Using data to optimize Business Performance–Alex Goncalves

7. Effective Advertising and Social Media : Strategy and Analytics– Gerard Tellis

8. Measuring the User Experience: Collecting, Analysing and Presenting Usability Metrics by Tom Tullis, Bill Albert, Morgan Kaufmann

9. Social Media Metrics: How to Measure and Optimize Your Marketing Investment by Jim Sterne, John Wiley & Sons

10. Advanced Web Metrics with Google Analytics by Brian Clifton, John Wiley & Sons

11. Marshall Sponder & Gohar Khan – *Digital Analytics for Marketing*

12. Matthew Ganis & Avinash Kohirkar – *Social Media Analytics: Techniques and Insights*

13. Justin Cutroni – *Google Analytics* (O'Reilly)

14. Öhman, E. (2023). Introduction to text analytics. SAGE Publications

15. Miner, G., Elder, J., Fast, A., Hill, T., Nisbet, R., & Delen, D. (2012). *Practical text mining and statistical analysis for non-structured text data applications*. Academic Press.

16. Online Resources: Google Analytics Academy, Meta Blueprint, HubSpot Academy

Learning Outcomes
1. Students will describe the strategic role of social media platforms and consumer behavior in a business context.
2. Students will apply web and text analytics concepts and tools to measure website and user performance, and to extract insights from unstructured textual data such as customer feedback and social media content
3. Students will assess the effectiveness of social media campaigns using relevant metrics and tracking techniques.
4. Students will create basic reports and dashboards to visualize insights from social and web analytics data.
5. Students will critically evaluate ethical considerations and current trends in digital marketing analytics.

Course Code	**Course Title**	**Semester &Level of Knowledge**	**Type of Course & No. of Credits**
24MB04FE47	**FINANCIAL MODELING AND PREDICTIVE ANALYTICS**	**S4 Working**	**Elective Course & 4**

Course Objective	
1.	To provide a comprehensive understanding of financial modeling concepts and techniques.
2.	To develop hands-on skills in building financial models using spreadsheet tools and programming
3.	To equip students with predictive analytical tools for financial decision-making.
4.	To expose learners to real-life financial datasets and forecasting methods.
5.	To enhance data-driven financial decision-making capabilities using statistical and machine learning models.

Module No.	**Title &Contents**	**No. of Sessions LT (Indicative)**

1	**INTRODUCTION TO FINANCIAL MODELING** 1.1 Concept and Importance of Financial Modeling 1.2 Types of Financial Models: Discounted Cash Flow (DCF), Leveraged Buyout (LBO), Merger Models 1.3 Key Principles of Model Design and Structure 1.4 Excel Basics and Tools for Financial Modeling 1.5 Time Value of Money and Financial Functions in Excel	5+2
2	**DATA ANALYSIS AND VISUALIZATION FOR FINANCE** 2.1 Introduction to Financial Data Sources (Bloomberg, Yahoo Finance, NSE/BSE) 2.2 Data Cleaning, Transformation, and Exploration 2.3 Use of Excel, Power BI/Tableau for Visualization 2.4 Descriptive Analytics: Measures of Central Tendency and Dispersion 2.5 Correlation and Covariance in Financial Analysis	4+2
3	**FORECASTING AND PREDICTIVE MODELING** 3.1 Introduction to Predictive Analytics in Finance 3.2 Time Series Analysis: Trend, Seasonality, Cyclic Patterns 3.3 Regression Techniques for Prediction (Linear, Multiple)	4+2
4	**ADVANCED PREDICTIVE MODELS AND RISK ANALYTICS** 4.1 Logistic Regression and Classification Models 4.2 Decision Trees and Random Forests 4.3 Credit Risk Modeling 4.4 Monte Carlo Simulation for Risk Assessment 4.5 Scenario and Sensitivity Analysis	3+2
5	**APPLICATIONS AND CASE STUDIES IN FINANCIAL MODELING** 5.1 Portfolio Optimization and Asset Allocation 5.2 Valuation Models: Real Options, Relative Valuation 5.3 Case Study: Fintech Applications of Predictive Analytics	3+3

	5.4 Ethics in Financial Modeling and Analytics 5.5 Capstone Project: Developing a Comprehensive Financial Model	

Suggested Readings:

1. Benninga, S. (2014). *Financial Modeling* (4th ed.). MIT Press.
2. Day, A. (2012). *Mastering Financial Modeling in Microsoft Excel*. FT Press.
3. Chandan Sengupta (2010). *Financial Analysis and Modeling Using Excel and VBA*. Wiley.
4. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An Introduction to Statistical Learning*. Springer.
5. Koller, T., Goedhart, M., & Wessels, D. (2020). *Valuation: Measuring and Managing the Value of Companies*. McKinsey & Company, Wiley.
6. Albright, C. S., & Winston, W. L. (2015). *Business Analytics: Data Analysis & Decision Making*. Cengage Learning.

Learning Outcomes
1. Gain proficiency in Excel modeling
2. Learn to perform financial analysis techniques like forecasting, budgeting, and valuation
3. Learn to design and build comprehensive financial models

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB04FE48	**STRATEGIC BUSINESS ANALYTICS**	**S4 Working**	**Elective Course & 4**
Course Objective			
1	Understand the strategic role of analytics in driving business goals and competitive advantage.		

2	Apply models like optimization and simulation for strategic decision-making and resource planning.	
3	Explore emerging trends, ethical issues, and AI/ML applications in strategic analytics.	
Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1	**INTRODUCTION TO STRATEGIC BUSINESS ANALYTICS** 1.1 Role of Analytics in Strategic Management 1.2 Competing on Analytics – Characteristics of Leaders 1.3 Building Enterprise Analytical Capabilities 1.4 Strategic Alignment of Analytics and Business Goals	**4+3**
2	**STRATEGIC DECISION MODELS AND PRESCRIPTIVE ANALYTICS** 2.1 Strategic Decision Modelling Frameworks 2.2 Optimization Models in Strategic Resource Allocation 2.3 Simulation for Strategic Risk and Uncertainty 2.4 Decision Trees and Rule-Based Models for Strategic Planning	**4+3**
3	**ANALYTICS FOR COMPETITIVE ADVANTAGE AND STRATEGY EXECUTION** 3.1 Analytics as a Source of Competitive Advantage 3.2 Analytics in Functional Strategies 3.3 Value Chain Optimization and Innovation 3.4 Analytical Scorecards and Strategic KPIs	**4+3**
4	**ANALYTICAL DECISION-MAKING AND STRATEGIC IMPLEMENTATION** 4.1 Analytical Models for Strategic Decision-Making 4.2 Scenario Planning and What-if Analysis 4.3 Optimization Models in Strategy 4.4 Developing a Data-Driven Strategic Framework	**4+3**
5	**EMERGING TRENDS AND FUTURE OF STRATEGIC BUSINESS ANALYTICS** 5.1 Emerging Trends in Strategic Analytics 5.2 Ethics and Governance in Strategic Analytics 5.3 AI/ML Applications in Strategic Decision-Making 5.4 Strategic Road mapping and Digital Maturity	**4+3**

Learning Outcome
1. Analyze business environments and pinpoint opportunities where analytics can create a sustainable competitive advantage.
2. Develop and implement prescriptive analytics models—such as optimization, simulation, and decision tree frameworks—to support high impact strategic decisions.
3. Evaluate emerging analytics technologies and their ethical implications to craft a data driven roadmap for digital transformation and governance.

Suggested Readings:

1. Evans, J. R. – Business Analytics(Pearson, 2nd or 3rd Edition)

2. Sharda, R., Delen, D., & Turban, E. – Business Intelligence, Analytics, and Data Science (4th ed.)

3. Davenport, T. H., & Harris, J. G. (2007). Competing on Analytics: The New Science of Winning. Harvard Business Review Press.

Course Code	**Course Title**	**Semester & Level of Knowledge**	**Type of Course & No. of Credits**
24MB04FE49	**BUSINESS ANALYTICS USING R**	**S4 Working**	**Elective Course & 4**

Course Objective		
1.	To familiarize the participants with the basics of Business Analytics using R programming.	
2.	Understand the Basics of R and Data Handling.	
3.	Perform Data Manipulation, Cleaning, and Analysis using R.	
4.	Utilize graphical functions and visualization libraries in R to explore and present data.	
Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**

1	**BASICS OF R** 1.1 Scope of Business Analytics, Data Sourcing and Acquisition, Data Cleaning, Data Integration, Data Security and Accessibility. 1.2 R Environment, Downloading and Installing R, Using Command Line in R, Help Functionality, Introduction to RStudio. 1.3 File Operations in R – Reading from and Writing to a File, Writing Your First Code in R, Importing Data from Spreadsheets and Text Files, Data Cleaning.	2+3
2	**DATA TYPES AND DATA SUMMARIZATION IN R** 2.1 Data types in R and their appropriate uses, program structure in R, flow control: *for* loop, *if* condition, *while* loop, and *repeat* loop, debugging tools. 2.2 Concatenation of data, combining variables, cbind(), rbind(), sapply(), apply(), tapply() functions, built-in functions in R like seq(), cbind(), rbind(), merge(). 2.3 Understanding various subsetting methods, summarizing data using functions like str(), class(), length(), nrow(), ncol(), and using functions like head(), tail() for data inspection. Summarizing data and performing SQL joins in R.	3+4
3	**DATA STRUCTURES** 3.1 Introduction to Data Structures in R – Vectors, Lists, Scalars, Data Frames, Matrices, Arrays, and Factors. 3.2 Use of Data Structures in Different Conditions, Advantages of Using a Particular Approach.	2+4

4	**DESCRIPTIVE AND INFERENTIAL STATISTICS USING R** 4.1 Hypothesis Testing, Correlation, and Regression. 4.2 Connect to RDBMS from R Using ODBC, Basic SQL Queries in R.	3+4
5	**DATA VISUALISATION** 5.1 Concept of Data Visualisation, Popular Data Visualisation Tools, Exploratory Data Analysis (EDA), Data Cleaning, Data Inspection. 5.2 Use of Functions like: grepl(), grep(), sub(), summarise(), llist(). 5.3 Using Graphical Functions in R for Data Visualisation – Line Plots, Bar Plots, Bar Plots for Population, Pie Charts. 5.4 Tableplot, Histogram, Plotting with Base Graphics, Plotting with Lattice Graphics, Plotting and Colouring in R.	2+3

Suggested Readings:

1. R Programming for Business Analytics by Dr. Sunita Narang & Gunjan Rani
2. R for Data Science by Hadley Wickham & Garrett Grolemund
3. The Art of R Programming by Norman Matloff
4. R Programming: A Complete Text in Data Analytics by R. Panneerselvam

Learning outcomes:
1. Explain the fundamental concepts of Business Analytics and describe the role of R.
2. Set up and navigate the R environment, write basic R scripts,
3. Perform data import, cleaning, manipulation, and summarization tasks
4. Conduct basic statistical analyses including hypothesis testing.

Course Code	Course Title	Semester & Level of Knowledge	Type of Course & No. of Credits
24MB04FE50	**INDUSTRY 4.0 AND INTERNET OF THINGS (IOT)**	**S4 Working**	**Elective Course & 4**

Course Objective	
1	To describe the evolution of industrial revolutions and explain the concept of Industry 4.0 and its enabling technologies.
2	To identify and interpret the basic components, functioning, and practical applications of Internet of Things (IoT) systems.
3	To analyze the role of IoT in transforming business operations across sectors like retail, healthcare, and logistics.
4	To evaluate the strategic benefits and challenges of integrating IoT in digital transformation initiatives.
5	To examine the emerging trends, ethical implications, and real-world business cases to develop a future-ready perspective on IoT adoption.

Module No.	**Title & Contents**	**No. of Sessions LT (Indicative)**
1.	**INTRODUCTION TO INDUSTRY 4.0** 1.5 Evolution of Industrial Revolutions (1.0 to 4.0) 1.6 Concept and significance of Industry 4.0 1.7 Key enabling technologies: IoT, AI, Big Data, Robotics (basic overview) 1.8 Business and supply chain implications of Industry 4.0	4 + 2
2.	**INTERNET OF THINGS (IoT) – BASICS** 2.1 What is IoT – Concept and functioning 2.2 IoT components: sensors, connectivity, data exchange 2.3 Applications: smart homes, wearables, connected vehicles 2.4 Demo or video walkthrough of an IoT system	4 + 2
3.	**BUSINESS APPLICATIONS OF IoT** 3.1 IoT in Retail: smart shelves, customer behavior tracking 3.2 IoT in Logistics & Supply Chain: RFID, real-time tracking 3.3 IoT in Healthcare: remote monitoring, smart devices 3.4 Group activity: Brainstorm IoT solutions for business	4 + 2
4.	**DIGITAL TRANSFORMATIONENABLED BY IoT** 4.1 IoT as an enabler of digital transformation 4.2 Data-driven decision-making using IoT 4.3 Benefits: automation, efficiency, personalization 4.4 Challenges: cost, security, data integration	4 + 2

5.	**TRENDS, ETHICS AND BUSINESS CASES** 5.1 Emerging trends: Smart cities, predictive maintenance, edge computing 5.2 Risks: privacy, cybersecurity, job displacement 5.3 Case studies: Tata Steel, Mahindra, Nest, Amazon Go 5.4 Final group discussion/presentation: Future-ready IoT-based business ideas	4 + 2

Suggested Readings:

1. Alasdair Gilchrist – *Industry 4.0: The Industrial Internet of Things*, Apress, 2016
2. Arshdeep Bahga& Vijay Madisetti – *Internet of Things: A Hands-On Approach*, 2015
3. Jan Holler et al. – *From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence*, Academic Press, 2014
4. Eric Schaeffer – *Industry X.0: Realizing Digital Value in Industrial Sectors*, Penguin, 2017
5. Srinivasan & Anuradha – *Internet of Things*, Oxford University Press
6. Anand Tamboli – *IoT and the Future of Business*
7. Cisco IoT Whitepapers and Industry Reports
8. NASSCOM and Deloitte Reports on Industry 4.0 in India
9. Blogs and case studies from IBM, GE, Tata Consultancy Services, Amazon Go
10. McKinsey Digital – *The Internet of Things: Mapping the Value Beyond the Hype*

Learning Outcomes
1. Students will recall and explain the evolution of industrial revolutions and the core concepts and technologies driving Industry 4.0.
2. Students will demonstrate a conceptual understanding of how IOT systems function and describe real-world applications in everyday life.
3. Students will analyse how IoT is being integrated into key industries such as retail, logistics, and healthcare to improve operations and customer experience.
4. Assess the impact of IoT on digital transformation strategies and evaluate its advantages and implementation challenges.
5. Students will critically evaluate emerging IoT trends and discuss the ethical, privacy, and workforce-related implications using business cases.