



ANNAMALAI UNIVERSITY

A State University Accredited with 'A' Grade by NAAC



FACULTY OF ARTS

DEPARTMENT OF BUSINESS ADMINISTRATION

MBA

BUSINESS ANALYTICS

2 YEARS FULL-TIME PROGRAM
(CBCS)

REGULATIONS

2019

CURRICULUM & SYLLABUS



**REGULATIONS FOR THE TWO-YEAR POST GRADUATE PROGRAMMES UNDER
CHOICE BASED CREDIT SYSTEM (CBCS)**

These Regulations are common to all the students admitted to the Two-Year Master's Programmes in the Faculties of Arts, Science, Indian Languages, Education, Marine Sciences, and Fine Arts from the academic year 2019-2020 onwards.

1. Definitions and Nomenclature

University refers to Annamalai University.

Department means any of the academic departments and academic centres at the University.

Discipline refers to the specialization or branch of knowledge taught and researched in higher education. For example, Botany is a discipline in the Natural Sciences, while Economics is a discipline in Social Sciences.

Programme encompasses the combination of courses and/or requirements leading to a Degree. For example, M.A., M.Sc.

Course is an individual subject in a programme. Each course may consist of Lectures/Tutorials/Laboratory work/Seminar/Project work/Experiential learning/ Report writing/viva-voce etc. Each course has a course title and is identified by a course code.

Curriculum encompasses the totality of student experiences that occur during the educational process.

Syllabus is an academic document that contains the complete information about an academic programme and defines responsibilities and outcomes. This includes course information, course objectives, policies, evaluation, grading, learning resources and course calendar.

Academic Year refers to the annual period of sessions of the University that comprises two consecutive semesters.

Semester is a half-year term that lasts for a minimum duration of 90 days. Each academic year is divided into two semesters.

Choice Based Credit System A mode of learning in higher education that enables a student to have the freedom to select his/her own choice of elective courses across various disciplines for completing the Degree programme.

Core Course is mandatory and an essential requirement to qualify for the Degree.

Elective Course is a course that a student can choose from a range of alternatives.

Value-added Courses are optional courses that complement the students' knowledge and skills and enhance their employability.

Credit refers to the quantum of course work in terms of number of class hours in a semester required for a programme. The credit value reflects the content and duration of a particular course in the curriculum.

Credit Hour refers to the number of class hours per week required for a course in a semester. It is used to calculate the credit value of a particular course.

Programme Outcomes (POs) are statements that describe crucial and essential knowledge, skills and attitudes that students are expected to achieve and can reliably manifest at the end of a programme.

Programme Specific Outcomes (PSOs) are statements that list what the graduate of a specific programme should be able to do at the end of the programme.

Learning Objectives also known as **Course Objectives** are statements that define the expected goal of a course in terms of demonstrable skills or knowledge that will be acquired by a student as a result of instruction.

Course Outcomes (COs) are statements that describe what students should be able to achieve/demonstrate at the end of a course. They allow follow-up and measurement of Learning Objectives.

Grade Point Average (GPA) is the average of the grades acquired in various courses that a student has taken in a semester. The formula for computing GPA is given in section 11.

Cumulative Grade Point Average (CGPA) is a measure of overall cumulative performance of a student over all the semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters.

Letter Grade is an index of the performance of a student in a particular course. Grades are denoted by the letters S, A, B, C, D, E, RA, and W.

2. Programmes Offered and Eligibility Criteria

The Department of Business administration offers SEVEN two Year MBA Programmes and the eligibility criteria for each of these programmes are detailed below.

Faculty of Arts		
S.No.	Programme	Eligibility
1.	M.B.A. Business Analytics	The candidate who has undergone 10+2+3/4 pattern of study in any
2.	M.B.A. Dual Specialization	

3.	M.B.A. Financial Management	discipline with a minimum of 50% marks in Part- III. Admission is through TANCET.
4.	M.B.A. Human Resource Management	
5.	M.B.A. Infrastructure Management	
6.	M.B.A. International Business Management	
7.	M.B.A. Marketing Management	

In the case of SC/ST and Differently-abled candidates, a pass is the minimum qualification for all the above Programmes.

3. Reservation Policy

Admission to the various programmes will be strictly based on the reservation policy of the Government of Tamil Nadu.

4. Programme Duration

The Two Year Master's Programmes consist of two academic years.

Each academic year is divided into two semesters, the first being from July to November and the second from December to April.

Each semester will have 90 working days (18 weeks).

5. Programme Structure

The Two Year Master's Programme consists of Core Courses, Elective Courses (Departmental & Interdepartmental), and Project.

Core courses

These are a set of compulsory courses essential for each programme.

The core courses include both Theory (Core Theory) and Practical (Core Practical) courses.

Elective courses

Departmental Electives (DEs) are the Electives that students can choose from a range of Electives offered within the Department.

Interdepartmental Electives (IDEs) are Electives that students can choose from amongst the courses offered by other departments of the same faculty as well as by the departments of other faculties.

Students shall take a combination of both DEs and IDEs.

Experiential Learning

Experiential learning provides support Unities to students to connect principles of the discipline with real-life situations.

In-plant training/field trips/internships/industrial visits (as applicable) fall under this category.

Experiential learning is categorised as Core.

Project

Each student shall undertake a Project in the final semester.

The Head of the Department shall assign a Research Supervisor to the student.

The Research Supervisor shall assign a topic for research and monitor the progress of the student periodically.

Students who wish to undertake project work in recognised institutions/industry shall obtain prior permission from the University. The Research Supervisor will be from the host institute, while the Co-Supervisor shall be a faculty in the parent department.

Value added Courses (VACs)

Students may also opt to take Value added Courses beyond the minimum credits required for award of the Degree. VACs are outside the normal credit paradigm.

These courses impart employable and life skills. VACs are listed in the University website and in the Handbook on Interdepartmental Electives and VACs.

Each VAC carries 2 credits with 30 hours of instruction, of which 60% (18 hours) shall be Theory and 40% (12 hours) Practical.

Classes for a VAC are conducted beyond the regular class hours and preferably in the II and III Semesters.

Online Courses

The Heads of Departments shall facilitate enrolment of students in Massive Open Online Courses (MOOCs) platform such as SWAYAM to provide academic flexibility and enhance the academic career of students.

Students who successfully complete a course in the MOOCs platform shall be exempted from one elective course of the programme.

Credit Distribution

The credit distribution is organised as follows:

	Credits
Core Courses	65-75
Elective Courses	15
Project	6-8
Total (Minimum requirement for award of Degree)	90-95*

**Each Department shall fix the minimum required credits for award of the Degree within the prescribed range of 90-95 credits.*

Credit Assignment

Each course is assigned credits and credit hours on the following basis:

1 Credit is defined as -

1 Lecture period of one hour per week over a semester
1 Tutorial period of one hour per week over a semester

1 Practical/Project period of two or three hours (depending on the discipline) per week over a semester.

6. Attendance

Each faculty handling a course shall be responsible for the maintenance of *Attendance and Assessment Record* for candidates who have registered for the course.

The Record shall contain details of the students' attendance, marks obtained in the Continuous Internal Assessment (CIA) Tests, Assignments and Seminars. In addition the Record shall also contain the organisation of lesson plan of the Course Instructor.

The record shall be submitted to the Head of the Department once a month for monitoring the attendance and syllabus coverage.

At the end of the semester, the record shall be duly signed by the Course Instructor and the Head of the Department and placed in safe custody for any future verification.

The Course Instructor shall intimate to the Head of the Department at least seven calendar days before the last instruction day in the semester about the attendance particulars of all students.

Each student shall have a minimum of 75% attendance in all the courses of the particular semester failing which he or she will not be permitted to write the End-Semester Examination. The student has to redo the semester in the next year.

Relaxation of attendance requirement up to 10% may be granted for valid reasons such as illness, representing the University in extracurricular activities and participation in NCC/NSS/YRC/RRC.

7. Mentor-Mentee System

To help the students in planning their course of study and for general advice on the academic programme, the Head of the Department will attach certain number of students to a member of the faculty who shall function as a Mentor throughout their period of study.

The Mentors will guide their mentees with the curriculum, monitor their progress, and provide intellectual and emotional support.

The Mentors shall also help their mentees to choose appropriate electives and value-added courses, apply for scholarships, undertake projects, prepare for competitive examinations such as NET/SET, GATE etc., attend campus interviews and participate in extracurricular activities.

8. Examinations

The examination system of the University is designed to systematically test the student's progress in class, laboratory and field work through Continuous Internal Assessment (CIA) Tests and End-Semester Examination (ESE).

There will be two CIA Tests and one ESE in each semester.

The Question Papers will be framed to test different levels of learning based on Bloom's taxonomy viz. Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation/Creativity.

Continuous Internal Assessment Tests

The CIA Tests shall be a combination of a variety of tools such as class tests, assignments, seminars, and viva-voce that would be suitable to the course. This requires an element of openness.

The students are to be informed in advance about the assessment procedures.

The pattern of question paper will be decided by the respective faculty.

CIA Test-I will cover the syllabus of the first two Units while CIA Test-II will cover the last three Units.

CIA Tests will be for two to three hours duration depending on the quantum of syllabus.

A student cannot repeat the CIA Test-I and CIA Test-II. However, if for any valid reason, the student is unable to attend the test, the prerogative of arranging a special test lies with the teacher in consultation with the Head of the Department.

End Semester Examinations (ESE)

The ESE for the first/third semester will be conducted in November and for the second/fourth semester in May.

A candidate who does not pass the examination in any course(s) of the first, second and third semesters will be permitted to reappear in such course(s) that will be held in April and November in the subsequent semester/year.

The ESE will be of three hours duration and will cover the entire syllabus of the course.

9. Evaluation

Marks Distribution

Each course, both Theory and Practical as well as Project/Internship/Field work/In-plant training shall be evaluated for a maximum of 100 marks. For the theory courses, CIA Tests will carry 25% and the ESE 75% of the marks.

For the Practical courses, the CIA Tests will constitute 40% and the ESE 60% of the marks.

Assessment of CIA Tests

For the CIA Tests, the assessment will be done by the Course Instructor

For the Theory Courses, the break-up of marks shall be as follows:

	Marks
Test-I & Test-II	15
Seminar	05
Assignment	05
Total	25

For the Practical Courses (wherever applicable), the break-up of marks shall be as follows:

	Marks
Test-I	15
Test-II	15
Viva-voce and Record	10
Total	40

Assessment of End-Semester Examinations

Evaluation for the ESE is done by both External and Internal examiners (Double Evaluation).

In case of a discrepancy of more than 10% between the two examiners in awarding marks, third evaluation will be resorted to.

Assessment of Project/Dissertation

The Project Report/Dissertation shall be submitted as per the guidelines laid down by the University.

The Project Work/Dissertation shall carry a maximum of 100 marks.

CIA for Project will consist of a Review of literature survey, experimentation/field work, attendance etc.

The Project Report evaluation and viva-voce will be conducted by a committee constituted by the Head of the Department.

The Project Evaluation Committee will comprise the Head of the Department, Project Supervisor, and a senior faculty.

The marks shall be distributed as follows:

Continuous Internal Assessment (25 Marks)		End Semester Examination (75 Marks)	
Review-I 10	Review-II: 15	Project / Dissertation Evaluation	Viva-voce
		50	25

Assessment of Value-added Courses

Assessment of VACs shall be internal.

Two CIA Tests shall be conducted during the semester by the Department(s) offering VAC.

A committee consisting of the Head of the Department, faculty handling the course and a senior faculty member shall monitor the evaluation process.

The grades obtained in VACs will not be included for calculating the GPA.

Passing Minimum

A student is declared to have passed in each course if he/she secures not less than 40% marks in the ESE and not less than 50% marks in aggregate taking CIA and ESE marks together.

A candidate who has not secured a minimum of 50% of marks in a course (CIA + ESE) shall reappear for the course in the next semester/year.

10. Conferment of the Master's Degree

A candidate who has secured a minimum of 50% marks in all courses prescribed in the programme and earned the minimum required credits shall be considered to have passed the Master's Programme.

11. Marks and Grading

The performance of students in each course is evaluated in terms Grade Point (GP).

The sum total performance in each semester is rated by Grade Point Average (GPA) while Cumulative Grade Point Average (CGPA) indicates the Average Grade Point obtained for all the courses completed from the first semester to the current semester.

The GPA is calculated by the formula

$$GPA = \frac{\sum_{i=1}^n C_i G_i}{\sum_{i=1}^n C_i}$$

where, C_i is the Credit earned for the Course i in any semester;

G_i is the Grade Point obtained by the student for the Course i and

n is the number of Courses passed in that semester.

CGPA is the Weighted Average Grade Point of all the Courses passed starting from the first semester to the current semester.

$$CGPA = \frac{\sum_{i=1}^m \sum_{j=1}^n C_{ij} G_{ij}}{\sum_{i=1}^m \sum_{j=1}^n C_{ij}}$$

where, C_{ij} is the Credit earned for the Course i in any semester;

G_{ij} is the Grade Point obtained by the student for the Course i and

n is the number of Courses passed in that semester.

m is the number of semesters

Evaluation of the performance of the student will be rated as shown in the Table.

Letter Grade	Grade Points	Marks %
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S	10	90 and above
A	9	80-89
B	8	70-79
C	7	60-69
D	6	55-59
E	5	50-54
RA	0	Less than 50
W	0	Withdrawn from the examination

Classification of Results. The successful candidates are classified as follows:

For First Class with Distinction: Candidates who have passed all the courses prescribed in the Programme *in the first attempt* with a CGPA of 8.25 or above within the programme duration. Candidates who have withdrawn from the End Semester Examinations are still eligible for First Class with Distinction (*See Section 12 for details*).

For First Class: Candidates who have passed all the courses with a CGPA of 6.5 or above.

For Second Class: Candidates who have passed all the courses with a CGPA between 5.0 and less than 6.5.

Candidates who obtain highest marks in all examinations at the first appearance alone will be considered for University Rank.

Course-Wise Letter Grades

The percentage of marks obtained by a candidate in a course will be indicated in a letter grade.

A student is considered to have completed a course successfully and earned the credits if he/she secures an overall letter grade other than RA.

A course successfully completed cannot be repeated for the purpose of improving the Grade Point.

A letter grade RA indicates that the candidate shall reappear for that course. The RA Grade once awarded stays in the grade card of the student and is not deleted even when he/she completes the course successfully later. The grade acquired later by the student will be indicated in the grade sheet of the Odd/Even semester in which the candidate has appeared for clearance of the arrears.

If a student secures RA grade in the Project Work/Field Work/Practical Work/Dissertation, he/she shall improve it and resubmit if it involves only rewriting/ incorporating the clarifications suggested by the evaluators or he/she can re-register and carry out the same in the subsequent semesters for evaluation.

11.Provision for Withdrawal from the End Semester Examination

The letter grade W indicates that a candidate has withdrawn from the examination.

A candidate is permitted to withdraw from appearing in the ESE for one course or courses in ANY ONE of the semesters ONLY for exigencies deemed valid by the University authorities.

Permission for withdrawal from the examination shall be granted only once during the entire duration of the programme.

Application for withdrawal shall be considered only if the student has registered for the course(s), and fulfilled the requirements for attendance and CIA tests.

The application for withdrawal shall be made ten days prior to the commencement of the examination and duly approved by the Controller of Examinations. Notwithstanding the mandatory prerequisite of ten days notice, due consideration will be given under extraordinary circumstances. Withdrawal is not granted for arrear examinations of courses in previous semesters and for the final semester examinations.

Candidates who have been granted permission to withdraw from the examination shall reappear for the course(s) when the course(s) are offered next.

Withdrawal shall not be taken into account as an appearance for the examination when considering the eligibility of the candidate to qualify for First Class with Distinction.

12.Academic misconduct

Any action that results in an unfair academic advantage/interference with the functioning of the academic community constitutes academic misconduct. This includes but is not limited to cheating, plagiarism, altering academic documents, fabrication/falsification of data, submitting the work of another student, interfering with other students' work, removing/defacing library or computer resources, stealing other students' notes/assignments, and electronically interfering with other students'/University's intellectual property. Since many of these acts may be committed unintentionally due to lack of awareness, students shall be sensitised on issues of academic integrity and ethics.

13.Transitory Regulations

Wherever there has been a change of syllabi, examinations based on the existing syllabus will be conducted for two consecutive years after implementation of the new syllabus in order to enable the students to clear the arrears. Beyond that, the students will have to take up their examinations in equivalent subjects, as per the new syllabus, on the recommendation of the Head of the Department concerned.

14. Notwithstanding anything contained in the above pages as Rules and Regulations governing the Two Year Master's Programmes at Annamalai University, the Syndicate is vested with the powers to revise them from time to time on the recommendations of the Academic Council.

Pattern of question paper for end semester examinations
(Based on Revised Bloom's Taxonomy)

Year : I

Programme: _____: Two Year PG Programme

Semester: I / II

Course Code:

Course Name:

Time: 3 Hrs

Max.Marks: 100

Part-A (Level-K1/ Level-K2) Marks: (10x2=20)

(Answer ALL of the questions)

1. Define.....
2. Multiple Choices a. b. c. d.
3. Multiple Choices a. b. c. d.
4. Match the following i - a ii- b iii- c iv -d v -
5. Match the following i - a ii- b iii- c iv -d v -
6. Explain.....
7. Select.....
8. Describe.....
9. Classify....
10. Elucidate....

Part-B (Level-K3/ Level-K4)Marks: (8x5=40)

(Answer any EIGHT of the questions)

11. Prepare.....
12. Solve.....
13. Apply.....
14. Show.....
15. Categorize...
16. Analyze...
17. Distinguish....
18. Infer....
19. Compare....
20. Compute

Part-C (Level-K5)Marks: (3x10=30)

(Answer any THREE of the questions)

21. Discuss...
22. Summarize....
23. Evaluate.....
24. Disprove....

Part-D (Level-K6)*Marks: (1x10=10)

(Answer any ONE of the questions)

25. Design....
 26. Develop...
-

Year : II

Programme: ____: Two Year PG Programme

Semester: III / IV

Course Code:

Course Name:

Time: 3 Hrs

Max.Marks:100

Part-A (Level-K1/ Level-K2)Marks: (10x2=20)

(Answer ALL of the questions)

1. Define.....
2. Multiple Choices a. b. c. d.
3. Multiple Choices a. b. c. d.
4. Match the following i - a ii- b iii- c iv -d v -
5. Match the following i - a ii- b iii- c iv -d v -
6. Explain.....
7. Select.....
8. Describe.....
9. Classify....
10. Elucidate....

Part-B (Level-K3/ Level-K4)Marks: (6x5=30)

(Answer any SIX of the questions)

11. Apply.....
12. Show.....
13. Prepare
14. Make use of....
15. Categorize...
16. Analyze...
17. Distinguish....
18. Simplify.....

Part-C (Level-K5)Marks: (3x10=30)

(Answer any THREE of the questions)

19. Discuss...
20. Recommend with
21. Evaluate.....
22. Justify....
23. Optimize...

Part-D (Level-K6)*Marks: (2x10=20)

(Answer any TWO of the questions)

24. Design....
OR
25. Formulate ...

26. Case Study (Compulsory) ...

M.B.A (TWO YEAR) PROGRAMME							
[End Semester Examinations]							
Bloom's Taxonomy - Questions Conforming to Levels K1 to K6							
I Year (Two year PG)				II Year (Two Year PG)			
Level	Part	Questions & Marks	Total Marks	Level	Part	Questions & Marks	Total Marks
K1	A	5 x 2	10	K1	A	5 x 2	10
K2		5 x 2	10	K2		5 x 2	10
K3	B	4 x 5	20	K3	B	2 x 5	10
K4		4 x 5	20	K4		4 x 5	20
K5	C	3 x 10	30	K5	C	3 x 10	30
K6	D	1 x 10	10	K6	D	2 x 10	20
			100				100


ASSESSMENT PATTERN

Continuous Internal Evaluation (25 Marks)

Bloom's Category Marks (out of 25)	Test	Assignment	Seminar	Non CIA		
				Activities	Industrial Visit	Quiz
Knowledge	√					√
Comprehension	√	√	√		√	√
Apply		√	√	√		
Analyze	√					√
Evaluate	√					
Create	√		√	√		

End Semester Examination (75 Marks)

Bloom's Category Marks	Test (75 Marks)
Knowledge	
Comprehension	
Application	
Analysis	
Synthesis	
Evaluation	
Creation	


Annamalai University
Department of Business Administration
M.B.A. (Business Analytics)
(Two Year) Programme
 Programme Code: ABUS27
 Programme Structure

(For students admitted from the academic year 2019-2020)

Course Code	Course Title	Hours per week		P	C	Marks		
		L	T			CIA	ESE	Total
19BBAC101	Core 1: Management Concepts and Organizational Behavior	4		-	3	25	75	100
19BBAC102	Core 2: Introduction to Analytics	4		-	3	25	75	100
19BBAC103	Core 3: Accounting for Managers	4		-	3	25	75	100
19BBAC104	Core 4: Statistical Decision Making	4		-	3	25	75	100
19XXXXXXX	Elective 1: Interdepartmental Elective	3		-	3	25	75	100
19BBAC106	Core 5: E- Business Management	4		-	2	25	75	100
19BBAC107	Core 6: Introduction to R (Practical)	-		6	3	40	60	100
19BBAC108	Core 7: Spread Sheet Modelling	4		-	3	25	75	100
	Total	-		-	21			
19BBAC201	Core 8: Marketing & CRM	4		-	3	25	75	100
19BBAC202	Core 9: Business Strategy	4		-	3	25	75	100
19BBAC203	Core10: PYTHON (Practical)	-		6	3	40	60	100
19BBAC204	Core11: Time Series Forecasting	4		-	3	25	75	100
19XXXXXXX	Elective 2: Interdepartmental Elective	3		-	3	25	75	100
19BBAE206	Elective 1: Departmental Elective	4		-	4	25	75	100
19BBAE207	Elective 2: Departmental Elective	4		-	4	25	75	100
19BBAV208	Applied Project in Big Data Analysis	-			2	25	75	100
	Total	-		-	25			
	Value Added Course (VAC)	Carries Additional Credits						

19BBAC301	Core 12: Data Visualization (HADOOP/TABLEAU)	4		-	3	25	75	100
19BBAC302	Core13: e-Governance and Cyber Law	4		-	3	25	75	100
19SOSC303	Core14: Soft Skills	4		-	3	25	75	100
19BBAP304	Core15: SQL (Practical)	-		6	3	40	60	100
19XXXXXXX	Elective 3: Interdepartmental Elective	3		-	3	25	75	100
19BBAE306	Elective 3: Departmental Elective	4		-	4	25	75	100
19BBAE307	Elective 4: Departmental Elective	4		-	4	25	75	100
19BBAD308	Project Work (Intern with Analytics Firm)	-		8	4	40	60	100
	Total	-		-	27			
	Value Added Course (VAC)	Carries Additional Credits						
19BBAC401	Core16: Operations & Supply Chain Analytics	4		-	3	25	75	100
19BBAC402	Core17: HR Analytics	4		-	3	25	75	100
19BBAC403	Core18: Finance & Risk Analytics	4		-	3	25	75	100
19BBAC404	Core19: Marketing & Retail Analytics	4		-	3	25	75	100
19XXXXXXX	Elective 4: Interdepartmental Elective	3		-	3	25	75	100
19BBAE406	Elective 5: Departmental Elective	4		-	4	25	75	100
19BBAE407	Elective 6: Departmental Elective	4		-	4	25	75	100
19BBAV408	Comprehensive Viva-voce	-			2	40	60	100
19XXXXXXX	Constitution of India	3			*			
	Total	-			25			
	Total credit				98			
Online Course (SWAYAM/MOOC)								

* Non Credit Compulsory Course

L- Lectures; P- Practical; C- Credits; CIA- Continuous Internal Assessment; ESE- End-Semester Examination

Elective Courses
Departmental Electives (DE)

Course Code	Course Title	Hours per week			C	Marks		
		L	T	P		CIA	ESE	Total
19BBAE206	Data Science	4		0	4	25	75	100
19BBAE207	Business Intelligence - Big Data & Cloud Computing	4		0	4	25	75	100
19BBAE306	Predictive Analysis & Modelling	4		0	4	25	75	100
19BBAE307	Business Optimization	4		0	4	25	75	100
19BBAE406	Machine Learning	4		0	4	25	75	100
19BBAE407	Social Media and Web Analytics	4		0	4	25	75	100

PROGRAMME OUTCOMES

- PO1: Critical thinking
- PO2: Cultivating Cognitive skills required in the job market
- PO3: Effective Communication
- PO4: Familiarity with ICT to thrive in the information age
- PO5: Cultivating aptitude for research
- PO6: Respect for alternate view-points including those conflicting with one's own perspectives
- PO7: Ability to work individually and as members in a team
- PO8: Upholding ethical standards
- PO9: Acting local while thinking global
- PO10: Commitment to gender equality
- PO11: Commitment to Sustainable development
- PO12: Lifelong learning

Programme Specific Outcomes

Annamalai University is a pioneering institution among all state universities in providing Business Administration programme in Business Analytics with the following objectives:

- PSO1: To facilitate you develop proficiency in the key knowledge areas of business analytics
- PSO2: To deepen analytical skills and investigate data to establish new relationships and patterns
- PSO3: To provide practical hands-on experience with statistics programming languages and big data tools
- PSO4: To develop understanding in data science and master technology trends of Data Analytics, Big Data, Cloud computing and Machine Learning
- PSO5: To have proficiency in using tools and open source software to interpret data
- PSO6: To understand and explore problems in business and provide viable solutions using analytics
- PSO7: To interpret data as well as projects and tasks that are based on real-life case studies
- PSO8: To demonstrate use of teamwork, leadership skills, decision making in their future career

19BBAC101	Core - 1	L	T	P	C
Semester I	MANAGEMENT CONCEPTS AND ORGANISATIONAL BEHAVIOUR	4		-	2

Learning Objectives :

The objectives of this course is

- L01:** To provide foundational knowledge associated with managerial functions
- L02:** To enable students to effectively identify the recent management thoughts
- L03:** To help students understand the conceptual framework of management and organizational behavior.
- L04:** To explain how organizational change and culture affect working relationships within organizations.
- L05:** To provide foundational knowledge on leadership theory and styles.

Course Outcomes :

Upon completion of this course, the student will have the ability to

- C01:** Describe and assess the basic managerial functions and evaluate its impact on organizational development.
- C02:** Evaluate the appropriateness of various leadership styles and conflict management strategies used in organizations.
- C03:** Analyze individual and group behaviour, and understand the implications of organizational behaviour on the process of management.
- C04:** Demonstrate critical thinking skills on application of motivational theories
- C05:** Knowledge on organizational conflict and negotiations techniques in an organization and real life problems,
- C06:** Ability to work as member in a team and to develop competitive edge to work with large corporate

Unit-I: Management Thought

Definition of Management – Science or Art – Manager Vs Entrepreneur – types of managers – managerial roles and skills – Evolution of Management thought - Organisation Structure – Concept, Structure, Principles, Centralization, Decentralization, Span of Management.

Unit-II : Managerial Functions

Planning - concept, significance, types; Organizing - concept, principles, theories, types of organizations, authority, responsibility, power, delegation. Decentralization; Staffing; Directing; Coordinating; Control - nature, process, and techniques.

Unit-III : Organizational Behaviour

Organisational behaviour - concept and significance; Relationship between management and organisational behaviour; organizational culture, Attitudes; Perception; Learning; Personality and values; emotions and moods. Motivation: Process of motivation; Theories of motivation - need hierarchy theory, theory X and theory Y, two factor theory, Alderfer's ERG theory, Victor Vroom's expectancy theory.

Unit-IV : Leadership Concept

Leadership styles; Theories -trait theory, behavioral theory, Group dynamics -definition and importance, types of groups, group formation, group development, group composition, group performance factors; Approach to team development.

Unit-V: Organizational Conflict and Negotiations

Dynamics and management; Sources, patterns, levels, and types of conflict; Traditional and modern approaches to conflict; Functional and dysfunctional organizational conflicts; Resolution of conflict. Organizational Development: Concept; Need for change, resistance to change; Theories of planned change; organization change and stress management, Organizational diagnosis.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books

1. Suja R Nair. (2014). *Organizational behaviour*, Himalaya Publishing House.
2. Joseph M. Putti. (2014). *Management Principles*. Trinity Press.

Supplementary Readings

1. Robbins, Stephen P. (2009). *Organizational Behavior*. New Delhi: Prentice Hall.
2. Koontz, Harold, Cyril O'Donnell, and Heinz Weihrich. (2010). *Essentials of Management*, New Delhi : Tata McGraw- Hill.
3. Luthans, Fred. (2008). *Organizational Behaviour*. New York : McGraw Hill.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01													2								
C02															2						
C03																1					
C04					2														3		
C05						1			2										3		
C06				3																1	1

19BBAC102	Core - 2	L	T	P	C
Semester I	INTRODUCTION TO BUSINESS ANALYTICS	4		-	3

Learning Objectives :

The objectives of this course is

L01: To Study core statistical techniques; data retrieval, analysis and mining

L02: To effectively persuade in the project-oriented world of data-driven decisions.

L03: To understand the purpose of using business analysis tools within an organization

L04: To analyse a dataset for making a business decisions.

L05: To use R studio for data analysis.

Course Outcomes :

Upon completion of this course, the student will have the ability to

C01: Critically analyze the business problems and apply analytical knowledge in big data

C02: Recognize, understand and apply the language, theory and models of the field of business analytics

C03: Able to cultivating cognitive skills on the applications of business analytics.

C04: Commitment to sustainable development of data visualization and time series analysis related to various sectors.

C05: Provide leadership in application of using R statistics

C06: Cultivating cognitive skills acquired on forecasting methods

Unit - I: Introduction to Business Analytics and Big Data

Business Analytics – Definition - Need – Scope - A categorization of Analytical Methods – Analytics in action – Big data – Business analytics in practice – types of data – modifying data in excel – creating Distributions from data– measures of location

Unit - II: Application of Business Analytics

Machine Learning - Introduction and Concepts - Differentiating algorithmic and model based frameworks, Decision analytics. Descriptive analytics - Predictive analytics - Prescriptive analytics.

Unit - III: Decision support and Data Visualisation

DSS- Executive and enterprise support- Automated decision support - Web analytics- Data mining -Applied artificial intelligence - Visual analysis: Data concepts – Data Dashboards - Data exploration & visualization - Scorecards

Unit - IV : Time Series and Forecasting

Time series pattern – forecasting accuracy – moving averages and exponential smoothing - using regression analysis for forecasting – determining the best forecasting model to use - building good spreadsheet model – What-If analysis – some useful excel functions for modeling – auditing spreadsheet model – a simple maximization problem.

Unit - V : Data Analysis using R

R Studio: Introduction – R data types and objects, reading and writing data - Data structures in R - R programming fundamentals - Advantages and disadvantages of using R.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Majid Nabavi, David L.Olson. (2018). *Introduction to Business Analytics*. Business Expert Press.
2. Umesh R Hodeghatta and Umesha Nayak, (2017). *Business Analytics Using R - A Practical Approach*-Apress.

Supplementary Readings :

1. Jeffery D.Camm, James J. Cochran, Michael J. Fry, Jeffrey W. Ohlmann, David R. Anderson, (2015). *Essentials of Business Analytics*. Cengage Learning.
2. Sandhya Kuruganti,(2015). *Business Analytics: Applications To Consumer Marketing*. McGraw Hill.
3. Bernard Marr. (2015). *Big Data: Using Smart Big Data, Analytics and Metrics to Make Better Decisions and Improve Performance*. Wiley.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01	3												3							
C02														3						
C03		2											2							
C04										1								2		
C05																			2	
C06		2																		1

19BBAC103	Core - 3	L	T	P	C
Semester I	ACCOUNTING FOR MANAGERS	4		-	3

Learning Objectives :

The objectives of the course is

L01: To acquaint the students with the various concepts, techniques, methods, process of accounting data analysis and interpretation,

L02: To understand the concepts of decision making in the areas of Financial and Management Accounting.

L03: To provide foundational knowledge on fund flow analysis and ration analysis

L04: To enable students to effectively identify the techniques of Cost Accounting

L05: To provide the practice exposure on cost analysis

Course Outcomes :

After completion of this course, the student will have the ability to

C01: Have stronger understanding of the basic accounting and regulations of accounting format

C02: Analysis the financial statement with ethical standards.

C03: Understanding different financial items like ratio, capital budgeting, marginal costing etc.

C04: Evaluate and solve the accounting problems and it helps for financial decision making.

C05: Cultivating cognitive skills acquired on standard costing and variance analysis

C06: Commitment to sustainable development of budget and budgetary control system

Unit - I : Introduction to Management Accounting and Financial Accounting

Introduction – Principles – Concept – Accounting conventions – Management accounting – Its origin – Role – Function – Growth – Cost accounting – Financial accounting – Difference between various accounting – Financial Accounting – Journal – Ledger – Trail Balance – Trading – Profit and Loss account – Balance sheet. (Final Accounting Problems with adjustments). Accounting Standards (IND-AS) – Generally Accepted Accounting Principles (GAAP).

Unit - II : Financial Statement Analysis, Ratio Analysis, Fund and Cash Flow Analysis

Analysis and interpretation of financial statements – Analysis of Comparative Balance sheet – Common size statement (simple problems) – Ratio Analysis – Nature – Classification – Limitations – Interpretations of Ratios – Funds flow analysis – Concept – Merits and Demerits – Cash flow

analysis – Concept – Merits and Demerits (simple problems).

Unit - III : Methods and Techniques of Cost Accounting

Concept of cost – Elements of cost – Cost Accounting – Objectives – Cost Sheet (Problems) – Classification of cost – Cost Unit and Cost Centre – Methods of Costing _ Techniques of Costing.

Unit - IV : Marginal Costing, Budget and Budgetary Control

Marginal Costing – Concept – Advantages and Disadvantages – Break even analysis – Cost volume profit analysis – Budget and Budgetary control – Objectives – Type of budgets – Preparation of Sales, Cash, flexible and master budgets (simple problems).

Unit - V : Standard Costing and Variance Analysis

Standard Costing – Advantages of Standard Costing – Limitation of Standard Costing – Determination of Standard Costs – Revision of Standards – Standard Cost Card -Variance Analysis- Material Cost Variances – Sales Variances – Labour Variances (Simple Problems in Variances).

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Jain .S.P. and K.L.Narang. (2018). *Advanced Accounts*. Ludhiana : Kalyani Publishers.
2. Khan. M.Y. and P.K. Jain. (2017) *Management Accounting*. Tata McGraw Hill Publishers.

Supplementary Readings :

1. Narayanasamy.R, (2017). *Financial Accounting- A Managerial Perspective*. (Sixth Edition) PHI learning Private Limited.
2. Gupta.R.L and Radhaswamy M. (2017). *Advanced Accounts*. Vol I. New Delhi : Sulthan Chand & Sons,.
3. Maheswari, S.N., (2013). *Cost and Management Accounting*. New Delhi : Sultan Chand & Sons. Publisher.
4. Gunasekaran, E., (2012). *Accounting for Management*. Chennai : Lakshmi Publication.
5. Pandikumar, M.P, (2010). *Management Accounting*. New Delhi : Excel Books.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01	2												3							
C02								2							2					
C03																2				
C04																	3			
C05		1																1		
C06											2									

19BBAC104	Core - 4	L	T	P	C
Semester I	STATISTICAL DECISION MAKING	4		-	3

Learning Objectives:

The objectives of the course is

- L01:** To equip the students with the basic understanding of the research methodology
- L02:** To provide an insight into the application of modern analytical tools and techniques for the purpose of management decision making
- L03:** To provide hands on experience in SPSS software
- L04:** To understand and analyze the factor and cluster analysis
- L05:** To get idea on application of non-parametric tools.

Course Outcomes:

Upon completion of this course, the student will have the ability to

- C01:** Develop expertise in describing data, cultivating aptitude for research design, hypothesis testing and model building
- C02:** Increase their capability as a manager to think statistically using data
- C03:** Apply cognitive skills to support the data collection methods to solve the problems
- C04:** Provide experience in statistical methods in decision making process
- C05:** Cultivating cognitive skills acquired on using the parametric and non-parametric tools for various service sectors.
- C06:** Apply analytical knowledge in business statistics for sustainable development of an organisation

Unit - I : Introduction to Research

Research – Meaning – Types – Nature and scope of research – Problem formulation – Statement of research Objective –Importance of research in Management – Research process – Research designs

Unit - II : Data Collection Methods

Data Collection Methods of data collection – Observational and Survey methods – Field surveys – Sampling methods & techniques – Sample size

Unit - III : Research Tools

Sources of Data – Primary – Secondary data – Questionnaire Design; Attitude measurement techniques – Scaling Techniques - Simple Tabulation and Cross Tabulation– Frequencies –

Percentage – Charts

Unit - IV : Parametric Tools

Introduction to Statistics – Estimation of Population parameters – Point of Internal estimates of means and proportions – Correlation – Regression – Hypothesis testing –t test – F test – Two way ANOVA – Discriminant Analysis – Factor analysis - Cluster Analysis

Unit - V : Non-Parametric Tools

Scale Validation - Normality Test - Chi-square test – 1-sample Wilcoxon signed rank test. - Friedman test - Kruskal-Wallis test - Mann-Whitney test - Spearman Rank Correlation.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Pillai RSN. (2016). *Statistics*. Sultan Chand Company Ltd.
2. Kothari CR. (2015). *Research Methodology – Methods and Techniques*. New Age International Pvt. Ltd.

Supplementary Readings :

1. Beri G.C. (2010). *Business Statistics*. Tata McGraw Hill Publishers.
2. Cunningham James B. (2012). *Using SPSS*. Sage publishers.
3. Anil Kumar Mishra. (2015). *Handbook on SPSS for research work*. Himalaya publishers.
4. Rajathi A. (2010). *SPSS for you*. MJP publishers.
5. Agarwal. (2010). *Business Statistics*. Vrindha publications Pvt Ltd.

Outcome Mapping

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01					2									3							
C02															2						
C03		3																3			
C04																	3				
C05																			1		
C06												1				2					

19BBAC106	Core - 5	L	T	P	C
Semester I	E - BUSINESS MANAGEMENT	4		-	3

Learning Objectives :

The objectives of the course is

L01: To understand the practices and technology to start an online business.

L02: To know how to build and manage an e-business.

L03: To recognize the fundamental principles of e-Business and e-Commerce.

L04: To distinguish the role of management in the context of e-Business and e-Commerce

L05: To explain the added value, risks and barriers in the adoption of e-Business and e-commerce

Course Outcomes :

Upon completion of this course, the student will have the ability to

CO1: Cultivating cognitive skills acquired on the internet in the development of a virtual e-commerce site.

CO2: Critically thinking a various issue in electronic payment systems which held in various fields.

CO3: Apply analytical knowledge in the security protocols and the issues in internet security

CO4: Examine the various legal and ethical issues specific to E-Business for effective decisions

CO5: Capable to analyze problem using the applications of e-Commerce in global level.

CO6: Commitment to sustainable development of e-business activities with unparalleled ideas.

Unit - I: Introduction to e-Business

Overview of E-Business; Fundamentals, E-Business framework; E-Business application; Major requirements in E-Business; Emerging trends and technologies in E-Business; From ECommerce to E-Business.

Unit - II: Technology Infrastructure

Internet and World Wide Web, internet protocols - FTP, intranet and extranet, information publishing technology- basics of web server hardware and software.

Unit - III: Business Applications

Consumer oriented e-business – e-tailing and models - Marketing on web – advertising, e-mail

marketing, affiliated programs - e-CRM; online services, Business oriented e-business, e-governance, EDI on the internet.

Unit - IV : E-Business Payments and Security

E-payments - Characteristics of payment of systems, protocols, e-cash, e-cheque and Micro payment systems- internet security – cryptography – security protocols – network security.

Unit - V : Legal and Privacy Issues

Legal, Ethics and privacy issues – Protection needs and methodology – consumer protection, cyber laws, contracts and warranties, Taxation and encryption policies.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Rayudu C.S. (2015). *E-Commerce E-Business*. Himalaya Publishing House.
2. Ravi Kalakota. (2011). *Frontiers of Electronic Commerce*. Pearson Education.

Supplementary Readings :

1. Bharat Bhasker. (2009). *Electronic Commerce – Framework Technologies and Applications*. Tata McGraw Hill publishers.
2. Dave Chaffey. (2009). *E-Business and E-Commerce Management*. Pearson Education.
3. Ravi Kalakota, (2009). *Electronic Commerce – A Manager’s Guide*. Pearson Education.

Outcome Mapping:

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01		2											3							
C02		1												2						
C03														3						
C04								1									2			
C05									2									3		
C06											2									2

19BBAC107	Core - 6	L	T	P	C
Semester I	INTRODUCTION TO R	-		6	3

Learning Objectives:

The objectives of the course is

L01: To give an introduction to the software R and how to write elementary programs

L02: To demonstrate how statistical models are implemented and applied

L03: To write simple program scripts for data analysis

L04: To produce illustrative data plots and carry out statistical tests

L05: To get hands-on experience to work with Statistical graphs.

Course Outcomes :

By the end of this course students should be able to

CO1: Critically thinking on import, manage and structure data files for using business analytics.

CO2: Apply analytical knowledge with the R interface and language for different fields.

CO3: Provide leadership in analytics in existing datasets into R or create new ones

CO4: Cultivating cognitive skills acquired on existing data and performs all conventional statistical analysis tests

CO5: Capable to analyze problems using R knowledge on data management for sustainable development of the organisation.

CO6: Effectively solve business problems and make effective decision making using R Statistics.

Unit - I: Introduction to the R language

Introduction to the R language - SAS versus R - R, S, and S-plus - Obtaining and managing R - Objects - types of objects, classes, creating and accessing objects - Arithmetic and matrix operations - Introduction to functions.

Unit - II: Working with R

Working with R - Reading and writing data - R libraries - Functions and R programming - the If statement - looping: for, repeat, while - writing functions - function arguments and options - Basic R commands

Unit - III: Graphics

Graphics - Basic plotting - Manipulating the plotting window - Advanced plotting using lattice library - Saving plots.

Unit - IV : Standard statistical models in R

Standard statistical models in R - Model formulae and model options - Output and extraction from fitted models - Models considered: Linear regression: `lm()` , Logistic regression: `glm()` , Linear mixed models: `lme()`

Unit - V : Advanced R

Advanced R - Data management - importing, sub-setting, merging, new variables, missing data; Plotting – Loops and functions - Migration SAS to R – Plotting and Graphics in R – Writing R functions, optimizing R code– Bio-conductor, analysis of gene expression and genomics data. More on linear models – Multivariate analysis, Cluster analysis, dimension reduction methods (PCA).

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Raghav Bali Dipanjan Sarkar and Tushar Sharma. (2017). *Learning Social Media Analytics with R*. Packt Publishing Ltd.
2. Nina Zumel and John Mount. (2014). *Practical Data Science with R*. Manning Publications Company.

Supplementary Readings :

1. Peter Dalgaard, *Introductory Statistics with R (Paperback)*. New York (1st Edition) : Springer-Verlag Inc. (ISBN 0-387-95475-9).
2. W. N. Venables and B. D. Ripley. (2002), *Modern Applied Statistics with S*. (4th Edition) : Springer. (ISBN 0-387-95457-0).
3. Andreas Krause, Melvin Olson. (2005), *The Basics of S-PLUS*. (4th edition) : Springer-Verlag, New York (ISBN 0-387-26109-5).
4. *An Introduction to R*. Online manual at the R website @ <http://cran.rproject.org/manuals.html-2000>.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01	2													3						
C02														3						
C03																				2
C04		1													2					
C05										2				2						
C06																	3			

19BBAC108	Core - 7	L	T	P	C
Semester I	SPREADSHEET MODELING	4		-	3

Learning Objectives :

The objectives of the course is

L01: To cover all aspects of creating spreadsheet, performing calculations, formatting, some very widely used formulas

L02: To enable the students to create, build models and customize graphs,

L03: To develop advanced solutions on the worksheet in the areas of marketing, finance, statistics, production and human resource and to assemble the proper Excel tools.

L04: To become expertise on Spreadsheet Modeling in Statistics

L05: To understand the concepts of Spread Sheet Modeling In Production and Human Resource

Course Outcomes :

Upon completion of this course, the student will have the ability to

C01: Perform, recognize and formulate business problems in using Excel spreadsheets

C02: Evaluate or solve Excel spreadsheet models using professional software

C03: Apply analytical knowledge in the concepts and techniques of spread sheets to solve the real-world business situations and take effective decisions

C04: Critically thinking and compare the applications of Spread sheet modeling in real life situation

C05: Use cognitive skills to the application of t-test and ANOVA through spread sheet and develop competitive edge for a large corporate.

C06: Capable to analyze problems using spread sheet modeling in Finance, HR and Marketing fields.

Unit - I: Introduction to Spread sheet Modeling

Formulas/Formatting/Printing/Functions Cell references, Lookup tables, Linking disparate work books, Dynamic, linking, updating links, data validation, Goal seek, Pivottable, Sorting Charting and filtering and protecting spread sheets

Unit - II: Spread Sheet Modeling in Sales and Marketing:

New product decision making–Sales and marketing data analysis

Unit - III: Spreadsheet Modeling in Finance

Forecasting financial statements – NPV & IRR, Bond valuation, Stock valuation - Fundamentals,

Budgeting, Ratio analysis

Unit - IV : Spreadsheet Modeling in Statistics

Measures of central tendency, t test, ANOVA, Correlation, Regression and Time series

Unit - V : Spread Sheet Modeling In Production and Human Resource

ABC analysis, Economic Order Quantity, Production budget – Employee payroll decision making.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Kenneth R. Baker. (2015). *Optimization Modeling with Spreadsheets*. John Wiley & Sons.
2. Walkenbach. John. (2010). *Excel Bible*. (2nd edition). New Delhi: Wiley India Pvt Ltd.

Supplementary Readings :

1. MacDonald, Mathew. (2010). *Excel: The Missing Manual*. (2nd edition) Sebastopol: O'reilly.
2. Ragsdale. Cliff. T (2008). *Spread sheet Modelling and Decision Analysis*. (6th edition). New York: Thomson south– western publications.
3. Monahan. George E. (2000). *Management Decision Making : Spread Sheet, Modelling, Analysis*. London: (8th edition). Cambridge University.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01						3							3							
C02																	2			
C03		3															3			
C04							2											2		
C05																2				
C06				3														1		

19BBAC201	Core - 8	L	T	P	C
Semester II	MARKETING AND CRM	4		-	3

Learning Objectives :

The objectives of the course is

L01: acclimatize the participants about the environment of market, consumer behaviour

L02: To identify, understand, and apply basic marketing concepts to solving marketing challenges

L03: To train the students to develop a sound Integrated Marketing Communications plan

L04: To develop the ability to design the best marketing strategy by analyzing the factors influencing the consumer decision

L05: To understand the importance of CRM, its practices, techniques and application

Course Outcomes :

Upon completing this course, the student will be able to

C01: Acquire required skills in solving marketing related problems and challenges

C02: Analyse the relevance of Marketing concepts and theories in evaluating environmental changes on marketing planning, strategies and practices

C03: Determine strategies for developing new products and services that are consistent with evolving market needs

C04: Formulate marketing plan and employ digital tools to analyze the effectiveness of a marketing campaign

C05: Understand the implementation of CRM best practices and customer relationships

C06: Work professionally in CRM team and exhibit leadership skills

Unit - I Introduction of Marketing

Definition of Market, Types of Markets, Meaning and Definition of Marketing, Scope of Marketing, Importance of Marketing, Functions of Marketing, Difference between Marketing and Selling- Market Leader Strategies – Market follower Strategies – Market Challenger Strategies and Market Niche Strategies - Demand forecasting methods - Market Segmentation –Target Marketing – Product differentiation – Market Positioning Strategy.

Unit - II: Marketing Mix – Product & Price

Product – Classification of consumer goods and Industrial goods – Product lines – Product Life Cycle – New Product Development – Launching New Product – Product Innovation; Brand –

Types; Packaging – Labelling Trade Marks – Copyrights – Patents. Pricing Strategy – Methods of Setting Price.

Unit - III : Marketing Mix - Physical Distribution and Promotion

Marketing Channels – Direct Marketing – Industrial Marketing – Network Marketing – e-marketing– B2B – B2C – Distribution Network – Channel Management – Retailing – Wholesaling – Advertising – Publicity – Trade Promotion and Sales Promotion Methods.

Unit - IV : CRM in Marketing

One-to-one Relationship Marketing – Cross Selling & Up Selling – Customer Retention, Behaviour Prediction – Customer Profitability & Value Modeling, - Channel Optimization – Event-based marketing. – CRM and Customer Service – The Call Centre, Call Scripting – Customer Satisfaction Measurement.

Unit - V : Analytical CRM

Managing and sharing customer data - Customer information 2 databases - Ethics and legalities of data use - Data Warehousing and Data Mining concepts - Data analysis - Market Basket Analysis (MBA), Click stream Analysis, Personalization and Collaborative Filtering.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Karunakaran K. (2013). *Marketing Management*. (3rd edition). New Delhi: Himalaya Publishing House.
2. Raju JK and Hema patil. (2013). *Marketing Management*. Himalaya publishers.
3. Govinda Bhat K. (2016). *Customer Relationship Management*. Himalaya publishers.

Supplementary Readings :

1. Kotler, P. Keller. K. L. Koshy A. Jha. M. (2013). *Marketing Management: A South Asian Perspective*. (14th Ed.) New Delhi: Pearson Education.
2. Alok Kumar Rai. (2011). *Customer Relationship Management Concept & Cases*. New Delhi : Prentice Hall of India Private Limited.
3. Gupta G.B. and Rajan Nair. N. (2011). *Marketing Management*. New Delhi : Sultan Chand & Sons.
4. Ramaswamy V.S. and S. Namakumari (2009). *Marketing Management. Global Perspective Indian Context*, New Delhi : Macmillan.

5. Antony Lawrence. (2010). *Customer Relationship Management*. Himalaya Publishers.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01		3												3			2				
C02																		2			
C03		1														1					
C04				2																	
C05																		3			
C06							2													2	2

19BBAC202	Core - 9	L	T	P	C
Semester II	BUSINESS STRATEGY	4		-	3

Learning Objectives :

The objectives of the course is

L01: To describe the practical and integrative model of strategic management process that defines basic activities in strategic management

L02: To develop the ability in understanding business environment and formulation of strategies in the real business situation.

L03: To gain the knowledge and abilities in formulating strategies and strategic plans

L04: To demonstrate understanding of the concept of competitive advantage and its sources and the ability to recognize it in real-world scenarios

L05: To understand and think critically in relation to a particular problem, situation or strategic decision through real-world scenarios

Course Outcomes :

Upon completing this course, the student will be able to

C01: Recognize the different stages of industry evolution and recommend strategies appropriate to each stage

C02: Gain competence in crafting business strategies, evaluate action alternatives and make sound strategic decisions

C03: Assess and analyse business risks and improve ability to achieve effective outcomes

C04: Appraise the resources and capabilities of the firm in terms of their ability to confer sustainable competitive advantage

C05: Demonstrate the ability to think critically in relation to a particular problem and formulate strategies that leverage a firm's core competencies

C06: Recognize strategic decisions and make appropriate recommendations for ethical decision-making.

Unit - I : Basic concepts of strategy

Evolution of Strategy – Strategic Management – Importance - Benefits – Strategic content - Strategic Management Process – Dimensions and levels of strategy – Strategy Formulation – Strategic Planning – Strategic intent - Strategic Decision Making – Strategic Risks

Unit - II : Strategy Formulation – Competitive Strategy

Strategic vision – Corporate Mission - Five forces that shape strategy – Generic Strategies – Environmental Scanning – Industry Analysis – Competitive Analysis – Value chain Analysis – BCG and GE Matrix.

Unit - III : Strategy Formulation - Corporate Strategy (12 h)

Long-term objectives – Grand Strategies: Development, Diversification, Integration, Defensive, Joint Ventures & Strategic Alliances – Functional Strategies: Marketing Strategies – Production Strategies – HR Strategies – Financial Strategies – Product Strategies.

Unit - IV : Strategy Implementation (12 h)

Strategic Choice – 7S Framework – Strategy Implementation – Role of Organisational Structure, Leadership and Culture - Resource Allocation – Strategic Budgeting - Challenges of Strategy Implementation

Unit - V : Strategy Evaluation and control

Strategy Review – Strategy Evaluation and Control – Strategic Audit – Michael Porter's Competitive Advantage - Strategy for Entrepreneurial Ventures and Small business - Strategy for non-profit organizations.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Thompson A. Margaret A Peteraf. John E Gamble. A J Strickland and A K Jain (2013). *Crafting and Executing Strategy*. New Delhi : McGraw Hill.
2. Ghosh P.K. (2012). *Strategic Management Text & Cases*. New Delhi : Sultan Chand & Sons.

Supplementary Readings :

1. John A. Pearce. Richard Robinson and Amita Mital. (2012). *Strategic Management*, New Delhi : Tata McGraw Hill.
2. Hill Charles W.L. Gareth R. Jones. (2012). *Strategic Management Theory: An Integrated Approach*, (10th edition) New Delhi : Cengage Learning.
3. Francis Cherunilam. (2008). *Strategic Management*. Mumbai : Himalaya Publishing House.
4. Fred R. David. (2009). *Strategic Management*. New Delhi : PHI Learning.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01																2				
C02																	3			
C03																	2		2	
C04											1									
C05	3																			
C06								2									3			

19BBAC203	Core - 10	L	T	P	C
Semester II	PYTHON (PRACTICAL)	-		6	3

Learning Objectives :

The objectives of the course is

- L01:** To learn to use Python for data analysis
- L02:** To understand how to use lists, tuples, and dictionaries in Python programs
- L03:** To define the structure and components of a Python program
- L04:** To learn how to design and program Python applications
- L05:** To provide students with an understanding of the role computation can play in solving problems

Course Outcomes :

Upon completing this course, the student will be able to

- C01:** Capture data from internet and other sources
- C02:** Plot data using appropriate Python visualization libraries
- C03:** Create and execute Python programs
- C04:** Interpret Object Oriented Programming using Python
- C05:** Design and program Python applications
- C06:** Adapt and combine standard algorithms to solve problems

Unit - I: Introduction to Python

Knowledge, Machines, Languages, Types, Variables Operators and Branching -- Core elements of programs: Bindings, Strings, Input/Output, IDEs, Control Flow, Iteration, Guess and Check - Simple Programs: Approximate Solutions, Bisection Search, Floats and Fractions Newton - Raphson - Functions: Decomposition and Abstraction, Functions and Scope, Keyword Arguments, Specifications, Iteration vs Recursion, Inductive Reasoning, Towers of Hanoi, Fibonacci, Recursion on non-numerics, Files

Unit - II: Tuples and Lists

Tuples, Lists, List Operations, Mutation, Aliasing, Cloning - Dictionaries: Functions as Objects, Dictionaries, Example with a Dictionary, Fibonacci and Dictionaries, Global Variables - Debugging: Programming Challenges, Classes of Tests, Bugs, Debugging, Debugging Examples- Assertions and Exceptions, Assertions, Exceptions, Exception Examples

Unit - III: Classes and Inheritance

Object Oriented Programming, Class Instances, Methods Classes Examples , Why OOP, Hierarchies, Your Own Types – An Extended Example: Building a Class, Visualizing the Hierarchy, Adding another Class, Using Inherited Methods, Grade book Example, Generators

Unit - IV : Computational Complexity

Program Efficiency, Big Oh Notation, Complexity Classes Analyzing Complexity – Searching and Sorting Algorithms: Indirection, Linear Search, Bisection Search, Bogo and Bubble Sort, Selection Sort, Merge Sort

Unit - V : Optimization and Knapsack Problem

Computational models, Intro to optimization - Knapsack Problem, Greedy solutions – Decision Trees and Dynamic Programming: Decision tree solution to knapsack Dynamic programming and knapsack, Divide and conquer – Graphs: Graph problems, Shortest path, Depth first search, Breadth first search.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Reema Thareja. (10 June 2017). *Python Programming using problem solving Approach*. (First edition). Oxford University : Higher Education Oxford University Press; ISBN- 10: 0199480173
2. Siddhartha Chatterjee and Michal Krystyanczuk. (2017). *Python Social Media Analytics*, Packt Publishing Ltd.

Supplementary Readings :

1. Michael T Goodrich. Roberto Tamassia and Micheal S Goldwasser, (2016) *Data Structures and Algorithms in Python*. Wiley Publisher.
2. John Guttag. (2010). *Introduction to Computation and Programming using Python*, PHI Publisher, Revised and Expanded version (Referred by MIT).
3. Kenneth A Lambert. (6th February 2009). *Fundamentals of Python first Programmes*. (1st edition) Copyrighted material Course Technology Inc.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01				3									3								
C02				3																	
C03				2																	
C04				2																	
C05				3																	
C06				3												2	2				

19BBAC204	Core - 11	L	T	P	C
Semester II	TIME SERIES FORECASTING	4		-	3

Learning Objectives :

The objectives of the course is

- L01:** To understand various forecasting methods that includes obtaining the relevant data and carrying out the necessary computation
- L02:** To equip students with various forecasting techniques
- L03:** To gain knowledge on modern statistical methods for analyzing time series data
- L04:** To enable students to use data for solving business and transactional problems
- L05:** To understand and analyze complex multifactor data sets

Course Outcomes :

Upon completing this course, the student will be able to

- C01:** Understand the various forecasting techniques and its advantages
- C02:** Generate prediction equations to predict business behaviour based on critical inputs
- C03:** Appreciate the fundamental advantage and necessity of forecasting in various situations
- C04:** Apply knowledge to diagnose and solve problems in diverse situations
- C05:** Choose an appropriate forecasting method in a particular environment
- C06:** Improve forecast with better statistical models based on statistics

Unit - I : Introduction to Time Series Analysis

Utility of the Time Series , Components of Time Series - Long term trend or secular trend - Seasonal variations - Cyclic variations - Random variations, Methods of Measuring Trend - Free hand or graphic method - Semi-average method - Method of moving averages - Method of least squares.

Unit - II : Models and Forecast for Time Series Data

Additive model - multiplicative model, Editing of Time Series, Measurement of Seasonal Variation - Seasonal average method - Seasonal variation through moving averages - Chain or link relative

method -Ratio to trend method, Forecasting Methods Using Time Series - Mean forecast - Naive forecast - Linear trend forecast - Non-linear trend forecast - Forecasting with exponential smoothing.

Unit - III : Vector Auto Regression Model (VAR)

Estimation and Identification, - Variance decomposition and Impulse response functions, - Causality applying Granger Causality Tests and VAR model, -Forecasting using a VAR model.

Unit - IV : Stochastic Process

Stochastic process and its main characteristics - Stochastic process - Time series as a discrete stochastic process – Stationarity - Main characteristics of stochastic processes (means, auto co-variation and autocorrelation functions) - Stationary stochastic processes - Stationarity as the main characteristic of stochastic component of time series.

Unit - V : Linear Time Series

Moving Average Models, Autoregressive Models, Mixed Autoregressive and Moving Average Models, Homogeneous Non-Stationary Processes: ARIMA Models, Box-Jenkins Methodology, Specification of ARFMA Models, SARFMA, ARMAX Models.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. K.Krishnamoorthy. (November 6, 2015). *Handbook of Statistical Distributions with Applications*. (Second Edition).

Supplementary Readings :

1. Wayne A. Woodward. Henry L. Gray. Alan C Elliott. (October 26, 2011). *Applied Time Series Analyses*, CRC Press.
2. Jonathan D. Cryer. Kung-SikChan. (November 17, 2010). *Time Series Analysis: With Applications in R* (second edition) Springer Texts in Statistics.
3. Sally Lesik.(December 21, 2009). *Applied Statistical Inference with MINITAB®*

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01													2								
C02	3																3				
C03														3							
C04														3							
C05																		2			
C06					2								2								

19BBAE206	Departmental Elective	L	T	P	C
Semester II	DATA SCIENCE	4			4

Learning Objectives :

The objectives of the course is

L01: To know to derive meaning form huge volume of data and information

L02: To work through all stages of a data mining methodology.

L03: To enable students to effectively identify sources of data and process it for data mining

L04: To make students well versed in all data mining algorithms, methods of evaluation

L05: To develop competence in data mining applications

Course Outcomes :

Upon completing this course, the student will be able to

C01: Demonstrate an understanding of the importance of data mining and the principles of business intelligence

C02: Appreciate the merits and demerits of various data mining models, tools & techniques

C03: Design and develop Data warehouses

C04: Apply Data mining techniques to match business objectives and add value to business

C05: Define and apply metrics to measure the performance of various data mining algorithms

C06: Apply BI to solve practical problems, interpret and visualize the results and provide decision support

Unit - I: Introduction to Data Mining

Data mining, Text mining, Web mining, Spatial mining, Process mining, BI process- Private and Public intelligence, Strategic assessment of implementing

Unit - II: Data Warehousing

Data ware house – characteristics and view - OLTP and OLAP - Design and development of data warehouse, Meta data models, Extract/ Transform / Load (ETL) design.

Unit - III: Data Mining Tools, Methods and Techniques

Regression and correlation; Classification- Decision trees; clustering –Neural networks; Market basket analysis- Association rules-Genetic algorithms and link analysis, Support Vector Machine, Ant Colony Optimization

Unit - IV : Modern Information Technology & Its Business Opportunities

Business intelligence software, BI on web, Ethical and legal limits, Industrial espionage, modern techniques of crypto analysis, managing and organizing for an effective BI Team

Unit - V : BI and Data Mining Applications

Applications in various sectors – Retailing, CRM, Banking, Stock Pricing, Production, Crime, Genetics, Medical, Pharmaceutical field.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Anil Maheshwari. (2019). *Data Analytics Made Accessible*. Kindle edition.
2. Foster Provost & Tom Fawcett. (2013). *Data Science for Business: What You Need to Know*. Oreilly books.

Supplementary Readings :

1. Jiawei Han, Micheline Kamber and Jian Pei. (2012). *Data Mining: Concepts and Techniques*, (3rd ed.) Morgan Kaufmann Publishers.
2. Ian H.Witten, Eibe Frank and Mark A.Hall. (2011). *Data Mining: Practical Machine Learning Tools and Techniques* (3rd ed.). Morgan Kaufmann. (ISBN 978-0-12-374856-0).
3. Efraim Turban, Ramesh Sharda, Jay E. Aronson and David King, (2008). *Business Intelligence*, Pearson.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01															3					
C02													3							
C03																3				
C04													1		2					
C05														2						
C06		2												2						

19BBAE207	Departmental Elective	L	T	P	C
Semester II	BUSINESS INTELLIGENCE – BIG DATA & CLOUD COMPUTING	4			4

Learning Objectives :

The objectives of the course is

- L01:** To provide foundational knowledge associated with the Cloud Computing
- L02:** To acclimatize with different cloud programming platforms and tools
- L03:** To understand big data analysis tools and techniques
- L04:** To provide the knowledge based on the development of Cloud Service
- L05:** To learn the applications of Cloud Computing

Course Outcomes :

Upon completing this course, the student will be able to

- C01:** Understand the principles of Business Intelligence and Big data
- C02:** Identify problems, and explain, analyze, and evaluate various cloud computing solutions
- C03:** Explain and identify the techniques of big data analysis in cloud
- C04:** Choose appropriate technologies, algorithms, and approaches for the related issues
- C05:** Compare the applications of Collaborating using Cloud Service
- C06:** Apply Business Intelligence methods that support decision process in business operations

Unit - I: Understanding Cloud Computing

Cloud Computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Cloud Computing Matters – Advantages and Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

Unit - II: Developing Cloud Services

Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand Computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2 – Google App Engine – IBM Clouds

Unit - III : Cloud Computing For Everyone

Centralizing Email Communications – Collaborating on Schedules – Collaborating on To-Do Lists – Collaborating Contact Lists – Cloud Computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation

Unit - IV : Using Cloud Services

Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing - Collaborating on Databases – Storing and Sharing Files

Unit - V : Other Ways to Collaborate Online

Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Wilfried Grossmann and Stefanie Rinderle-Ma. (2015). *Fundamentals of Business Intelligence*, Springer.
2. Srinivasan A. and Suresh J. (2014). *Cloud Computing: A Practical Approach for Learning and Implementation*. Pearson Education.

Supplementary Readings :

1. Michael Miller. (August 2008). *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*. Que Publishing.
2. Haley Beard. (July 2008). *Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs*. Emereo Pty Limited.
3. John W. Rittinghouse. James F. Ransome. (2001). *Cloud Computing: Implementation, Management, and Security*.
4. Sangeeta Gautam. BM Cognos. (2012). *Business Intelligence v10: The Complete Guide*. IBM Press. Copyright.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01				2									1								
C02				2											2	2					
C03				2					3						2						
C04				2									1			2					
C05				2													2				
C06				2													2	3			

19BBAV208		L	T	P	C
Semester II	APPLIED PROJECT IN BIG DATA ANALYSIS				2

Course Objective :

Students should undergo an observational study to learn from either, small and medium business units or from online resources. They should get versatile exposure in big data analysis using various data available in the establishments or they may get exposure in doing analysis with data available from social media or online resources. They can make use of second semester evening hours and weekends to undergo the study. They are expected to submit a report of their study for evaluation.

Applied project evaluation in big data analysis will be done for 100 marks which includes Dissertation (75 marks) and Viva voce (25 marks) and the minimum requirement for passing the project is 50 marks. A periodical review will be carried out to assess the originality of the project.

Guidelines

The duration of the study is 40 hours.

The students have to select a small and medium business units or from online resources.

Students have to visit the enterprise during the evening hours or on leave days to complete the project if they select a business unit.

Important concepts related to business analytics have to be studied and the same have to be reported.

Students have to submit the report about the project they are involved in.

Students should get the attendance from the firm and attach the same in the report if they do study in business unit.

Students are allotted a guide in the department.

Frequent discussions have to be made with the guide for the completion of the project.

19BBAC301	Core - 12	L	T	P	C
Semester III	DATA VISUALIZATION (HADOOP / TABLEU)	4			3

Learning Objectives :

The objectives of the course is

L01: To provide the basics of data visualization techniques namely Hadoop and Tableau

L02: To get hands-on experience to work with Data Visualization techniques

L03: To understand the concepts related to Hadoop Ecosystem and Yarn

L04: To get exposure to Tableau user interface and data connection

L05: To attain knowledge on group and hierarchies in datasets

Course Outcomes :

After completing the course, students will be familiar with

C01: The basics of data visualization techniques namely Hadoop and Tableau

C02: Working with data visualization techniques

C03: Understanding the concepts related to Hadoop Ecosystem and Yarn

C04: Getting exposure to Tableau user interface and data connection

C05: Knowledge on groups and hierarchies in datasets

C06: Distributing, sharing and exporting worksheets and dashboards

Unit - I : Introduction to HADOOP

Big Data – Apache Hadoop & Hadoop Eco System – Moving Data in and out of Hadoop – Understanding inputs and outputs of Map Reduce - Data Serialization

Unit - II : HADOOP Architecture

Hadoop Architecture, Hadoop Storage: HDFS, Common Hadoop Shell commands , Anatomy of File Write and Read., Name Node, Secondary Name Node, and Data Node, Hadoop Map Reduce paradigm, Map and Reduce tasks, Job, Task trackers - Cluster Setup – SSH &Hadoop Configuration – HDFS Administering –Monitoring & Maintenance.

Unit - III : HADOOP Ecosystem AND Yarn

Hadoop ecosystem components - Schedulers - Fair and Capacity, Hadoop 2.0 New Features Name Node High Availability, HDFS Federation, MRv2, YARN, Running MRv1 in YARN

Unit - IV : Introduction to TABLEAU

Introduction to Tableau 8 - Tableau User Interface - Basic Tableau Design Flow - Basic

Visualization Design - Show Me! choosing Mark Types color - Size, and Shape Options - shaped Axis Charts-combination Charts - Measure Names - Measure Values - Data Connection - Connecting to Various Data Sources - Customizing Your View of the DataSets

Unit - V : GROUPS – HIERARCHIES

Groups – Hierarchies - Extracting Data - Data Blending - Top 10 Chart - Bar Chart, Line Chart - Area Chart - Text Table/Cross Tab - Scatter Plot/Bubble Chart - Bullet Chart, Box Plot- Tree Map - Pie Chart - World Cloud - Tableau maps - Geocoded Fields - Dashboard Actions - Distributing and Sharing Your Dashboards - Exporting Worksheets and Dashboards
Publishing to Tableau Server - Creating Tableau Server User Filters - Smartphones and Tablets with iOS and Android.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Boris lublinsky. Kevin t. Smith. Alexey Yakubovich. (2015). *Professional Hadoop Solutions*. Wiley. ISBN: 9788126551071.
2. Chris Eaton. Dirk deroos et al. (2012). *Understanding Big data*. McGraw Hill.

Supplementary Readings :

1. Tom White. (2012). *HADOOP: The definitive Guide*. O Reilly.
2. Stephen Few. (2010). *Information Dashboard Design: Displaying Data for At-a-glance Monitoring*.
3. Julie Steele. Noah Iliinsky. (2010). *Beautiful Visualization, Looking at Data Through the Eyes of Experts*.
4. Edward R.Tufte. (2008). *The Visual Display of Quantitative Information*.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01				1									3								
C02															2						
C03		2												2							
C04							2										1				
C05																			2		
C06																				2	

19BBAC302	Core - 13	L	T	P	C
Semester III	E-GOVERNANCE AND CYBER LAW	4			3

Learning Objectives :

The objectives of the course is

- LO1:** To introduce the cyber world and cyber law in general
- LO2:** To explain about the various facets of cyber crimes
- LO3:** To enhance the understanding of problems arising out of online transactions and provoke them to find solutions
- LO4:** To clarify the Intellectual Property issues in the cyber space and the growth and development of the law in this regard,
- LO5:** To educate about the regulation of cyber space at national and international level.

Course Outcomes :

After completing the course, students will be familiar with

- CO1:** Understanding concepts related to cyber world and cyber law in general
- CO2:** Develop competitive edge on various facets of cyber crimes
- CO3:** Problems arising out of online transactions and provoke them to find solutions
- CO4:** Intellectual property issues in the cyber space and the growth and development of the law
- CO5:** Regulation of cyber space at national and international level.
- CO6:** Upholding ethical standards in cyber laws and intellectual property issues

Unit - I : Introduction to Web Technology

Introduction, Computers and its Impact in Society, Overview of Computer and Web Technology, Need for Cyber Law, Cyber Jurisprudence at International and Indian Level – Introduction to e-governance, techniques, e-governance in India, Challenges faced, Indian theory of Public administration

Unit - II : International Cyber Law

Cyber Law - International Perspectives, UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime, Asia-Pacific Economic Cooperation (APEC), Organization for Economic Co-operation and Development (OECD), World Bank, Commonwealth of Nations

Unit - III : Cyber Crimes & Legal Framework

Concepts of Cyber Crimes & Legal Framework, Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000

Unit - IV : Dispute in Cyberspace

Dispute Resolution in Cyberspace 1. Concept of Jurisdiction 2. Indian Context of Jurisdiction and IT Act, 2000. 3. International Law and Jurisdictional Issues in Cyberspace. 4. Dispute Resolutions

Unit - V : Ethics and Business

Moral & ethical dilemmas. Ethics and Business: A sense of business ethics. Ethics and International Business: Ethics Issues beyond borders. “

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Satyanarayana.J. (2012). *E Government: The Science of the Possible*, PHI Learning Pvt. Ltd.
2. SudhirNaib. (2011). *The Information Technology Act, 2005: A Handbook*. New York : OUP.

Supplementary Readings :

1. Verma S. K. Mittal Raman. (2004). *Legal Dimensions of Cyber Space*. New Delhi : Indian Law Institute.
2. S. R. Bhansali. (2003). *Information Technology Act - 2000*. Jaipur : University Book House Pvt. Ltd.
3. Vasu Deva. (2003). *Cyber Crimes and Law Enforcement*. New Delhi : Commonwealth Publishers.

Outcome Mapping :

Course	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01													1							
C02																2				
C03	1																2			
C04				2										2						
C05																				3
C06								3										3		

19SOSC303	Core - 14	L	T	P	C
Semester III	SOFT SKILLS	4			3

Learning Objectives :

The objectives of the course is

- LO1:** To enable students to better understand themselves and the importance of soft skills in order to meet the professional expertise and its competitiveness with necessary skills
- LO2:** To improve their communication skills both in oral and written
- LO3:** To enhance the employability skills of the students like goal setting, career planning, etc
- LO4:** To understand the concepts of emotional intelligence, team building and team spirit at work place
- LO5:** To make familiar with the decision making skills of the students so as to take right decision at right time

Course Outcomes :

After completing this course the students will be familiar with

- CO1:** Better understanding on themselves and know the importance of soft skills in order to meet the professional expertise and its competitiveness with necessary skills
- CO2:** Communication skills both in oral and written
- CO3:** Employability skills of the students like goal setting, career planning, etc
- CO4:** Understanding the concepts of emotional intelligence, team building and team spirit at work place
- CO5:** Decision making skills of the students so as to take right decision at right time
- CO6:** Commitment to sustainable development using various skills

Unit - I: Soft Skill and Personality Development

Soft skills – Meaning and Importance, Self concept - Self awareness, Self development, Know Thyself – Power of positive attitude – Etiquette and Manners Listening – Types of Listening – Effective Listening – Barriers to Listening – Assertive communication

Unit - II : Communication Skills

Oral communication – Forms – Types of speeches - Public Speaking -- Presentation – Elements of effective presentation – Use of visual aids in presentation
Written communication – Strategies of writing – Business letters – form, structure & formats – Types of business letters – Memos – Agenda & Minutes
Non-verbal communication – Body language – Proxemics

Unit - III : Interpersonal Skills

Interpersonal skills – Relationship development and maintenance – Transactional Analysis
Conflict resolution skills – levels of conflict – handling conflict - Persuasion – Empathy – Managing emotions – Negotiation – types, stages & skills – Counselling skills

Unit - IV : Employability Skills

Goal setting – Career planning – Corporate skills – Group discussion – Interview skills – Types of Interview - Interview body language - E-mail writing – Job application – cover letter - Resume preparation

Unit - V : Work Skills

Decision making skills – Problem solving – Emotional Intelligence – Team building skills – team spirit – Time management – Stress management – resolving techniques.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Ghosh. B.N. (2012). *Managing Soft Skills for Personality Development*. (Edited volume.)
New Delhi : Tata McGraw Hill Education Pvt Ltd.
2. Bretag Tracey. Crossman Joanna and Bordia Sarbari. (2012). *Communication Skills*, New Delhi : Tata McGraw Hill Education Pvt Ltd.

Supplementary Readings :

1. Neera Jain and Shoma Mukherji. (2012), *Effective Business Communication*, New Delhi :
Tata McGraw Hill Education Pvt Ltd.
2. Rao. M.S. (2011). *Soft Skills - Enhancing Employability: Connecting Campus with Corporate*,
New Delhi : I.K International Publishing House Pvt. Ltd.

3. Ashraf Rizwi. M. (2010). *Effective Technical Communication*. New Delhi : Tata McGraw Hill Education Pvt Ltd.
4. Krishna Mohan and Meera Banerji. (2009). *Developing Communication Skills*. (2nd Edition). New Delhi : MacMillan Publishers India Ltd.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01																2					
C02			1													2					
C03														1							
C04							2													3	
C05																	2				
C06																					

19BBAC304	Core - 15	L	T	P	C
Semester III	SQL (PRACTICAL)			6	3

Learning Objectives :

The objectives of the course is

- L01:** To provide foundational knowledge on SQL
- L02:** To familiarize the students with all concepts of SQL, exception handling
- L03:** To understand the process of using and managing functions
- L04:** To get familiar with the process of using, creating and managing packages
- L05:** To practice various commands in SQL

Course Outcomes :

After completing this course the students will be familiar with

- C01:** Analyzing foundational knowledge on SQL
- C02:** Managing all concepts of SQL, exception handling
- C03:** Understanding the process of using and managing functions
- C04:** The process of using, creating and managing packages
- C05:** Practicing various commands in SQL
- C06:** Effective communication with computers in machine language

Unit - I : Introduction to PL/SQL

Fundamentals: Introduction to PL/SQL - Benefits of PL/SQL - Creating PL/SQL Blocks. Defining Variables and Data types: Using Variables in PL/SQL - Recognizing PL/SQL Lexical Units - Recognizing Data Types - Using Scalar Data Types - Writing PL/SQL Executable Statements - Nested Blocks and Variable Scope - Good Programming Practices. Using SQL in PL/SQL: Review of SQL DML - Retrieving Data in PL/SQL - Manipulating Data in PL/SQL - Using Transaction Control Statements

Unit - II : Program Structures to Control Execution Flow

Conditional Control: IF Statements - Conditional Control: CASE Statements - Iterative Control: Basic Loops - Iterative Control: WHILE and FOR Loops - Iterative Control: Nested Loops. Using Composite Datatypes: • User-Defined Records - • Indexing Tables of Records. Using Cursors and Parameters: Introduction to Explicit Cursors - Using Explicit Cursor Attributes - Cursor FOR Loops Cursors with Parameters - Using Cursors for UPDATE - Using Multiple Cursors

Unit - III : Exception Handling

Handling Exceptions - Trapping Oracle Server Exceptions - Trapping User-Defined Exceptions - Recognizing the Scope of Exceptions. Using and Managing Procedures: Creating Procedures - Using Parameters in Procedures - Passing Parameters

Unit - IV : Using and Managing Functions

Creating Functions - Using Functions in SQL Statements - Review of the Data Dictionary - Managing Procedures and Functions - Review of Object Privileges - Using Invoker's Rights and Autonomous Transactions. Using and Managing Packages: Creating Packages - Managing Package Concepts - Advanced Package Concepts. Getting the Best out of Packages: Persistent State of Package Variables - Using Oracle-Supplied Packages

Unit - V : Improving PL/SQL Performance

Using Dynamic SQL - Improving PL/SQL Performance. Using and Managing Triggers: Introduction To Triggers - Creating DML Triggers - Creating DDL and Database Event Triggers - Managing Triggers. Recognizing and Managing Dependencies: Introduction to Dependencies - Understanding Remote Dependencies. Using the PL/SQL Compiler: Using PL/SQL Initialization Parameters - Displaying Compiler Warning Messages - Using Conditional Compilation - Hiding Your Source Code.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Anthony DeBarros. (2018). *Practical SQL: A Beginner's Guide to Storytelling with Data*, No Starch Press.
2. Ben Forta. (2013). *SQL in 10 Minute- Sams Teach Yourself*. (4th Edition) Pearson Education Inc.

Supplementary Readings :

1. James R. Groff and Paul N. Weinberg. Andrew J. Opel. (2010). *SQL: The complete reference*. (Third Edition). McGraw Hill.
2. Alan Beaulieu. *Learning SQL*. (Second Edition). O'Reilly Media Inc.
3. Alex Kriegal and Boris M Trucknov. (2008). *SQL Bible*. (Second Edition). Wiley Publishing Inc.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01														3							
C02				1									1								
C03				2											2						
C04															2						
C05																			2		
C06			1														2				

19BBAE306	Departmental Elective	L	T	P	C
Semester III	PREDICTIVE ANALYSIS & MODELING	4			4

Learning Objectives :

The objectives of the course is

- L01:** To provide fundamental knowledge on predictive analysis and modeling
- L02:** To familiarize the students with the concepts of sampling multivariate design and analysis
- L03:** To get insights into sampling design, tools and techniques
- L04:** To understand the predictive analysis concepts like simple linear regression and logistics and multinomial regression
- L05:** To know the applications of predictive analysis in various functional areas

Course Outcomes :

After completing the course, students will be familiar with

- C01:** Fundamental knowledge on predictive analysis and modeling
- C02:** The concepts of sampling multivariate design and analysis
- C03:** Getting insights into sampling design, tools and techniques
- C04:** The predictive analysis concepts like simple linear regression and logistics and multinomial regression
- C05:** The applications of predictive analysis in various functional areas
- C06:** Cultivating aptitude in designing the framework of quantitative research

Unit - I : Conceptual foundations of research

Meaning of research and scope of research methodology, Identification of problem area, Formulation of research questions, Typology of Research Designs. Overview of quantitative research, Logic of Inquiry, Construction of theories, Conceptual framework in quantitative research. Introduction to Academic Writing, Structure of Academic Writing, Reading for Research, Academic Styles, Plagiarism, Publication, Online Resources – Specific Research Methodology

Unit - II : Sampling Design and Tools

Sampling: Process and Types sampling; probability and non-probability sampling, Validity: Internal and external validity, Threats to Validity: Threats to internal validity and external validity, balancing internal and external validity. Reliability: Factors influencing reliability.

Unit - III : Multivariate Designs and Analysis

Introduction to Multivariate methods and analysis, Discriminant Analysis Multiple, logistic and hierarchical regression Factor analysis, structural equation modeling (SEM), Meta analysis, Mediation Analysis, Canonical Analysis. Advantages of multivariate strategies

Unit - IV : Predictive analysis

Simple linear regression: Coefficient of determination, Significance tests, Residual analysis, Confidence and Prediction intervals Multiple linear regression: Coefficient of multiple coefficient of determination, Interpretation of regression coefficients, Categorical variables, heteroscedasticity, Multi-collinearity, outliers, Auto regression and Transformation of variables

Unit - V : Logistic and Multinomial Regression

Logistic and Multinomial Regression: Logistic function, Estimation of probability using logistic regression, Deviance, Wald Test, Hosmer Lemshow Test Forecasting: Moving average, Exponential smoothing, Trend, Cyclical and seasonality components, ARIMA (autoregressive integrated moving average). Application of predictive analytics in retail, direct marketing, health care, financial services, insurance, supply chain, etc.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Max Kuhn and Kjell Johnson. (2018). *Applied Predictive Modeling*. Springer Science & Business Media.
2. Uma Sekaran and Roger Bougie. (2012). *Research methods for Business*, (5th Edition). New Delhi : Wiley India.

Supplementary Readings :

1. William G Zikmund. Barry J Babin. Jon C.Carr. AtanuAdhikari. Mitch Griffin. (2012). *Business Research methods, A South Asian Perspective*. (8th Edition). New Delhi : Cengage Learning.
2. Donald R. Cooper. Pamela S. Schindler and J K Sharma. (2012). *Business Research methods*. (11th Edition.) New Delhi : Tata McGraw Hill.

3. Alan Bryman and Emma Bell. (2011). *Business Research methods*. (3rd Edition.) New Delhi : Oxford University Press.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01				2									1								
C02															1						
C03																				3	
C04																	2				
C05					2									1					3		
C06		1														2					

19BBAE307	Departmental Elective	L	T	P	C
Semester III	BUSINESS OPTIMIZATION	4			4

Learning Objectives :

The objectives of the course is

- L01:** To provide foundational knowledge associated with the domain of business optimization and analytics
- L02:** To get exposure to solution for business related problems with the help of linear programming models and methods
- L03:** To get hands on experience in optimization using Excel to solve business problems
- L04:** To familiarize the students with all concepts of optimization techniques
- L05:** To understand the simulation for analytics, and process mining

Course Outcomes :

After completing the course, students will be familiar with

- C01:** Foundational knowledge associated with the domain of business optimization and analytics
- C02:** Getting exposure to solution for business related problems with the help of linear programming models and methods
- C03:** Getting hands on experience in optimization using Excel to solve business problems
- C04:** All concepts of optimization techniques
- C05:** The simulation for analytics and process mining
- C06:** Optimizing business using critical thinking process with the help of different mathematical models

Unit - I: Modeling

Overview: processes, Big Data, Models. Productivity and efficiency. Classification of models. Sensitivity analysis. The seven-step modeling process. Spread sheet modeling. Excel's pivot function .

Unit - II: Linear Programming

Linear Programming, Introduction to Linear Programming (LP). Graphical representation. Basic assumptions. The simplex algorithm. Infeasibility and unboundedness. Production problem example. Production scheduling. Bond portfolio optimization. Extracting additional meaning

from LP models: shadow prices, sensitivity analysis.

Unit - III : Visualization

Visualization, Organization/sources of data, Importance of data quality. Dealing with missing or incomplete data, Data Classification.

Unit - IV : Decision modeling

Decision modeling, Optimization Use of Excel to solve business problems: e.g. marketing mix, capital budgeting, portfolio optimization, Goal programming; pareto optimality and trade-off curves; the Analytic Hierarchy Process (AHP)

Unit - V : Process Mining

Process Mining, Concept and content of workflow logs; discovering the underlying process; discovering exceptions. Process Mining (Course Notes). ProM - process mining toolkit.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Judith S. Hurwitz. Alan Nugent. Fern Halper and Marcia Kaufman. (2013). *Big Data For Dummies*. John Wiley & Sons.
2. Weske. Mathias. (2007). *Business Process management: Concepts Languages and Architectures*. Berlin: Springer-Verlag.

Supplementary Readings :

1. Kelton. W. David. et al. (2006). *Simulation with Arena*. (5th edition) McGraw-Hill Professional.
2. Winston. Wayne L. and S. Christian Albright. (2001). *Practical Management Science*. (3rd edition). Pacific Grove. CA: Duxbury. (W&A)
3. Vasant Dhar and Roger Stein. (1997). *Seven methods for transforming corporate data into business intelligence*. Upper Saddle River: Prentice Hall.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01														1							
C02																	2				
C03				2												2					
C04															2						
C05																		3			
C06	1																				3

19BBAV308	Project	L	T	P	C
Semester III	PROJECT (INTERN WITH ANALYTICS FIRM)			8	4

Project Training :

Summer project is an on-the-job training that inculcates practical knowledge and improves performance by giving an insight into business realities. As a part of the curriculum, the project is intended to input practical and conceptual knowledge to the students which is to be carried out for 45 days during May-June.

A committee is constituted for the overall Co-ordination of the students. The students undertake projects in various business analytics firms all over the country. Faculty members also render their help in finding project placements at various business analytics firms. Students will be allotted faculty guides and they are advised to undertake projects based on their individual area of specialization. The topics are selected by consulting with their project guides and company guides.

MBA project End Semester Evaluation will be done for 75 marks which includes Dissertation (50 marks) and Viva voce (25 marks) and the minimum requirement for passing the project is 38 marks. The internal assessment evaluation carries 25 marks that constitute two reviews (I review- 10 marks and II review-15 marks) and the minimum requirement for passing the internal evaluation is 12 marks. Overall the minimum passing requirement for the project is 50 marks.

A Project Evaluation Committee will be formed comprising the Head of the Department, Project Supervisor, and a senior faculty.

Project Related Activities :

Project discussions for students with their guides have to be made once in a week.

Students can make use of the computer lab facilities for execution of their project work and for preparation of their report.

Frequent workshops and review meetings will be conducted with trainers and experts of various disciplines.

A formal interim – project presentation will be held before their juniors. This presentation acts as a good ground of experience on the part of the presenters while a good beginning of insight for the juniors.

A mock viva-voce will be held before appearing for their main project viva-voce examination to gain an experience.

Best Project Contest will be conducted every year to provide a platform to exhibit the skills they have acquired during the summer project training.

Students are encouraged to participate in the National Level Project contest held at various institutions.

Students are also encouraged to work towards publishing a paper along with the help of their faculty guide to add a real value to their project work.

19BBAC401	Core - 16	L	T	P	C
Semester IV	OPERATIONS AND SUPPLY CHAIN ANALYTICS	4			3

Learning Objectives :

The objectives of the course is

- L01:** To provide foundational knowledge associated with the operations analytics
- L02:** To provide foundational knowledge associated with the supply chain analytics
- L03:** To describe the various tools and techniques for implementation of analytics based on the supply chain drivers such as location, logistics and inventory
- L04:** To describe the various techniques for analytics based on the Multi Attribute Decision Making (MADM) and risk
- L05:** To provide the applications of analytics in operations and supply chain

Course Outcomes :

After completing this course, the student will learn

- C01:** To recognize on the fundamental concepts of location and layout.
- C02:** To understand on the implementation of analytics in location and layout.
- C03:** To understand the inventory techniques for analytics.
- C04:** To analyze the inventory using aggregate production model
- C05:** To identify the different network models.
- C06:** To Analyze the role and applications of Descriptive Analytics in a Supply Chain

Unit - I : Warehousing Decisions

Warehousing Decisions, Mathematical Programming Models, P-Median Methods, Guided LP Approach, Balmer – Wolfe Method, Greedy Drop Heuristics, Dynamic Location Models, Space Determination and Layout Methods

Unit - II : Inventory Management

Inventory Management, Inventory aggregation Models, Dynamic Lot sizing Methods, Multi-Echelon Inventory models, Aggregate Inventory system and LIMIT, Transportation Network Models, Notion of Graphs, Minimal Spanning Tree,

Unit - III : Path Algorithms

Shortest Path Algorithms, Maximal Flow Problems, Multistage Transshipment and Transportation Problems, Set covering and Set Partitioning Problems, Traveling Salesman Algorithms, Advanced

Vehicle Routing Problem Heuristics, Scheduling Algorithms-Deficit function Approach and Linking Algorithms

Unit - IV : Data Envelopment Analysis

Analytic Hierarchy Process, Data Envelopment Analysis, Risk Analysis in Supply Chain, Measuring transit risks, supply risks, delivering risks

Unit - V : Application in SCM

Risk pooling strategies, Fuzzy Logic and Techniques-Application in SCM.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Khalid Zidan. (2016). *Supply Chain Management: Fundamentals. Strategy. Analytics & Planning for Supply Chain & Logistics Management*. CreateSpace Independent Publishing Platform.
2. Chan. Hing Kai. Subramanian. Nachiappan. Abdulrahman and Muhammad Dan-Asabe. (2016). *Supply Chain Management in the Big Data Era*. IGI Global.

Supplementary Readings :

1. GeradFeigin. (2011). *Supply Chain planning and analytics – The right product in the right place at the right time*. Business Expert Press.
2. Peter Bolstorff. Robert G. Rosenbaum. (2007). *Supply Chain Excellence: A Handbook for Dramatic Improvement Using the SCOR Model*. AMACOM Div American Mgmt Assn.
3. Robert Penn Burrows. Lora Cecere. Gregory P. Hackett. *The Market-Driven Supply Chain: A Revolutionary Model for Sales and Operations Planning in the New On-Demand Economy*. AMACOM Div American Mgmt Assn.

Outcome Mapping :

Course	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01					3								1								
C02														3							
C03		1															3				
C04																	3				
C05																		3			
C06												3				2					

19BBAC402	Core - 17	L	T	P	C
Semester IV	HUMAN RESOURCE ANALYTICS	4			3

Learning Objectives :

The objectives of the course is

- L01:** To understand the concepts, tools and techniques of HR Analytics that could be applied as resource management evidence based.
- L02:** To understand HR reports & to understand the decisions technologies.
- L03:** Recognize the fundamental strategic priorities of the business and learn how to provide enhanced decision support leveraging analytics.
- L04:** Develop a structured approach to apply judgment, and generate insight from data for enhanced decision making.

Course Outcomes :

After completing this course, the student will be able to

- C01:** Analyse appropriate internal and external human resource metrics benchmarks and indicators.
- C02:** Operate relational databases and make recommendations regarding the appropriate HRIS to meet organization's human resource needs.
- C03:** Employ appropriate software to record, maintain, retrieve and analyse human resources information (e.g., staffing, skills, performance ratings and compensation information).
- C04:** Apply quantitative and qualitative analysis to understand trends and indicators in human resource data; understand and apply various statistical analysis methods
- C05:** Manage information technology to enhance the efficiency and effectiveness of human resource functions within the organization.
- C06:** Analyse the Employee work history & Multi-rater reviews

Unit - I : Introduction to HR Analytics:

Basics of HR Analytics: Concept and Evolution of HR Analytics & data sources - HCM: 21Model. Use of workforce analytics to improve decision making. Analytics and Prediction. Introduction to HR Metrics and predictive analytics. Importance of HR Analytics. Data Analytic techniques using software packages. Future of Human Resource Analytics. HR Metrics and HR Analytics; Intuition versus analytical thinking.

Unit - II : Creating business understanding for HR initiatives:

Workforce segmentation and search for critical job roles; Statistical driver analysis – association and causation; Linking HR measures to business results; choosing the right measures for scorecards; Identifying and using key HR Metrics.

Unit - III : Forecasting budget numbers for HR costs:

Workforce planning including internal mobility and career pathing; training and development requirement forecasting and measuring the value and results of improvement initiatives; optimizing selection and promotion decisions

Unit - IV : Predictive modelling in HR:

Employee retention and turnover; workforce productivity and performance; scenario planning.

Unit - V : Communicating with data and visuals

Data requirements; identifying data needs and gathering data; HR data quality, validity and consistency; Using historical data; Data exploration; Data visualization; Association between variables; Insights from reports; Root cause analysis of HR issues.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Jac Fitz-Enz and John Mattox. (2014). *Predictive Analytics for Human Resources*. John Wiley & Sons.

Supplementary Readings :

1. Tracey Smith. (2013). *HR Analytics: The What, Why and How*, Numerical Insights LLC.
2. *The New HR Analytics: Predicting the Economic Value of Your Company's Human Capital Investments: Predicting the Economic Value of Your Company's Human Capital*

Investments Hardcover – Import. 1 Jun 2010.

3. Jac Fitz-Enz . (2009). *The New HR Analytics: Predicting the Economic Value of YouCompany's Human Capital Investments.* Amacom.
4. Gene Pease. (2009). Boyce Byerly and Jac Fitz-enz. *Human Capital Analytics: How to Harness the Potential of Your Organization's Greatest Asset.* John Wiley & Sons.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01					2								1							
C02														2						
C03		1															2			
C04																	2			
C05																		3		
C06											3					2				

19BBAC403	Core - 18	L	T	P	C
Semester IV	FINANCE AND RISK ANALYTICS	4			3

Learning Objectives :

The objectives of the course is

- L01:** To provide hands on experience in financial statement analysis.
- L02:** To expose to general tools of financial analysis, theoretical concepts, and practical valuation issues.
- L03:** To be comfortable with using firm's financial statements to develop understanding of their performance and to establish basis for making reasonable evaluation estimates.
- L04:** To identify the value-relevant information contained within financial statements;
- L05:** To understand the impact of financial reporting choices on the usefulness of reported earnings to predict future performance

Course Outcomes :

After completing this course, the student will be able to

- C01:** Describe and apply the basic techniques of financial statement analysis
- C02:** Understand the relationship between strategic business analysis, accounting analysis and financial analysis
- C03:** Identify and utilise value-relevant information contained within financial statements
- C04:** Recognize and explain the fundamental role of accounting numbers in the valuation of entities and the key financial claims on these entities assets (equity and debt securities)
- C05:** Understand the impact of financial reporting choices on the usefulness of reported earnings to predict future performance
- C06:** To introduces basic concepts of Investment

Unit - I: Introduction to financial analysis

Finance and accounting – meaning –Types of companies - Financial statement analysis – on the basis of materials used – on the basis of modus operandi – Comparing financial and non-financial listed companies performance through annual as a bench marking against competitor and industry.

Unit - II: Financial analysis through ratios

Accounting analysis – Factors influencing accounting quality – Steps in accounting analysis – Drivers of firms profitability and growth – Measuring overall profitability – Decomposing

profitability – Measuring earnings - Evaluating Investment management – Liquidity analysis and net trade cycle - Evaluating financial management & leverage analysis – Assessing sustainable growth rate of companies – Assessing historical pattern of key ratios among financial (CAMEL analysis) and non financial firms – Analysis of cash flow

Unit - III : Prospective and Credit analysis

Prospective analysis – Techniques - Elements of detailed forecast – Sensitivity analysis --Decision tree analysis of capital budgeting - Credit analysis – Market for credit –Credit analysis process – Factors driving debt rating – Kalpan – Urwitz model of debt rating – Prediction of distress and turnaround – MDA, PCA and RPA

Unit - IV : M & A and Equity analysis

Mergers and acquisition – Motivations for M & A – Valuation of M & A - Valuation of equity and debt – Primary and secondary market analysis - Assessing market value of equity with book value and index, P/B analysis, Price earnings ratio – PEG analysis – F Score – Risk and return of equity – Dividend pattern analysis.

Unit - V : Financial reporting

Financial reporting –Concepts – users, Objectives of financial reporting – Qualitative characteristics of information in financial reporting – basic problems of disclosure – Role of SEBI in IFRS – Statutory disclosures in IFRS – Corporate reporting practices in India-Challenges in financial reporting.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Raghurami Reddy Etukuru. (2014). *Enterprise Risk Analytics for Capital Markets: Proactive and Real-Time Risk*. iUniverse.
2. Victoria Lemieux. (2012). *Financial Analysis and Risk Management: Data Governance, Analytics and Life*, Springer Science & Business Media.

Supplementary Readings :

1. M Y Khan and P H Jain. (2009). *Management accounting*. (5th edition) McGraw hill.
2. Palepu Healy and Bernard. (2009). *Business analysis & valuation*. (2nd edition) South western college publication.
3. Raghu Palat. (2008). *Fundamental analysis for investors*.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01	1												1							
C02								2							2					
C03																2				
C04																	2			
C05		2																3		
C06											3									

19BBAC404	Core - 19	L	T	P	C
Semester IV	MARKETING AND RETAIL ANALYTICS	4			3

Learning Objectives :

The objectives of the course is

L01: To create an understanding of the use of analytics in Marketing and Retail Management.

L02: To use the predictive analysis in decision making.

L03: To Understand the types of positioning strategies followed by the companies.

L04: To analyze and contrast products and services.

L05: To understand the various segments for a product.

Course Outcomes :

After completing this course, the student will learn

C01: To understand the market place and the changing consumer needs.

C02: To identify various methods followed to build CRM practices.

C03: To recognize the various segments for a product.

C04: To identify the various positioning strategies followed by the companies.

C05: To compare and contrast products and services.

C06: To Understand the Role of Analytics in Retail sector

Unit - I : Introduction to Marketing

Understanding the marketplace and consumer needs, Designing a Customer Driven Marketing Strategy, Building Customer Relationships, Consumer Behaviour and Business Buyer Behaviour

Unit - II : Marketing Strategy

Market Segmentation and Product Positioning, Market Segmentation, Market Targeting, Target Market Strategies, Product Positioning and Differentiation, Choosing a Differentiation and Positioning Strategy.

Unit - III : Product and Service

Products and services, product and service classifications, consumer products, industrial products, product and service decisions, product and service attributes, product support services, services marketing – the nature and characteristics of a service

Unit - IV : Retail Analytics – I

Customer Analytics Overview; Quantifying Customer Value.Using Stata for Basic Customer Analysis.Predicting Response with RFM Analysis, Statistics Review, Predicting Response with Logistic Regression, Predicting Response with Neural Networks.Predicting Response with Decision Trees.

Unit - V : Retail Analytics – II

The digital evolution of retail marketing, Digital natives, Constant connectivity Social interaction, Predictive modeling, Keeping track, Data availability, Efficiency optimization.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Karunakaran. K. (2013) *Marketing Management*. (3rd edition) New Delhi: Himalaya Publishing House.
2. Kumar. A. Meenakshi. (2013). *Marketing Management*. (2nd edition) New Delhi: Vikas Publishing House Pvt Ltd.

Supplementary Readings :

1. Kotler. P. Keller. K. L. Koshy. A. Jha. M. (2013). *Marketing Management: A South Asian Perspective*. (14th edn) New Delhi: Pearson Education.
2. Ramaswamy. V. S. Namakumari. S. (2009). *Marketing Management Global Perspective. Indian Context*. (3rd edition) New Delhi: Macmillan India Limited.
3. Rajan. S. (2005). *Marketing Management. India: (4th edn)* New Delhi: Tata McGraw-Hill Education.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01		1												1						
C02		2													2					
C03															2					
C04								2									2			
C05									3									3		
C06											3									3

19BBAE406	Departmental Elective	L	T	P	C
Semester IV	MACHINE LEARNING	4			4

Learning Objectives :

The objectives of the course is

- L01:** To understand the basic theory underlying machine learning.
- L02:** To be able to formulate machine learning problems corresponding to different applications.
- L03:** To understand a range of machine learning algorithms along with their strengths and weaknesses.
- L04:** To be able to apply machine learning algorithms to solve problems of moderate complexity.
- L05:** To apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models.

Course Outcomes :

After completing this course, the student will be able to

- C01:** Appreciate the importance of visualization in the data analytics solution
- C02:** Apply structured thinking to unstructured problems
- C03:** Understand a very broad collection of machine learning algorithms and problems
- C04:** Learn algorithmic topics of machine learning and mathematically deep enough to introduce the required theory
- C05:** Develop an appreciation for what is involved in learning from data.

Unit - I : Introduction

Learning Problems – Perspectives and Issues – Concept Learning – Version Spaces and Candidate Eliminations – Inductive bias – Decision Tree learning – Representation – Algorithm – Heuristic Space Search.

Unit - II : Neural Networks and Genetic Algorithms

Neural Network Representation – Problems – Perceptrons – Multilayer Networks and Back Propagation Algorithms – Advanced Topics – Genetic Algorithms – Hypothesis Space Search – Genetic Programming – Models of Evaluation and Learning.

Unit - III : Bayesian and Computational Learning

Bayes Theorem – Concept Learning – Maximum Likelihood – Minimum Description Length Principle – Bayes Optimal Classifier – Gibbs Algorithm – Naïve Bayes Classifier – Bayesian Belief Network – EM Algorithm – Probability Learning – Sample Complexity – Finite and Infinite Hypothesis Spaces – Mistake Bound Model.

Unit - IV : Instant Based Learning

K- Nearest Neighbour Learning – Locally weighted Regression – Radial Bases Functions – Case Based Learning.

Unit - V : Advanced Learning

Learning Sets of Rules – Sequential Covering Algorithm – Learning Rule Set – First Order Rules – Sets of First Order Rules – Induction on Inverted Deduction – Inverting Resolution – Analytical Learning – Perfect Domain Theories – Explanation Base Learning – FOCL Algorithm – Reinforcement Learning – Task – Q-Learning – Temporal Difference Learning.

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Marco Gori. (2017). *Machine Learning: A Constraint-Based Approach*. Morgan Kaufmann.
2. Ethem Alpaydin. (2016). *Machine Learning: The New AI*. MIT Press.

Supplementary Readings :

1. Ryszard S. Michalski. Jaime G. Carbonell and Tom M. Mitchell. (2014). *Machine Learning: An Artificial Intelligence Approach*. Volume 1. Elsevier.
2. Stephen Marsland. (2009). *Machine Learning: An Algorithmic Perspective*. Taylor & Francis.
3. Tom M. Mitchell. (2009). *Machine Learning*. MGH.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)								
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
C01	1												1								
C02														2							
C03		2											2								
C04											3							3			
C05																			3		
C06		2																			3

19BBAE407	Departmental Elective	L	T	P	C
Semester IV	SOCIAL MEDIA & WEB ANALYTICS	4			4

Learning Objectives :

The objectives of the course is

LO1: To understand how big data principles implemented in Social media & Web

LO2: To understand the data processing for Social media & Web analytics

LO3: To describe the different metrics for Social media & Web analytics

LO4: To understand the application for Social media & Web analytics

LO5: To analyze the types of data for Social media & Web analytics.

Course Outcomes :

After completing this course, the student will learn

CO1: To recognize the fundamental concepts of Social media.

CO2: To recognize the fundamental concepts of Web.

CO3: To analyze data obtained from social media.

CO4: To explain the experimental methods in web data analytics.

CO5: To recognize the types of data for Social media & Web analytics.

CO6: To Utilize various Application Programming Interface (API) services to collect data from different social media sources

Unit - I : Introduction

History of Social media- Basics of Social Media and Business Models- Basics of Web Search Engines and Digital Advertising. Web& social media (websites, web apps , mobile apps & social media) .

Unit - II : Web analytics

Web analytics 2.0 framework (clickstream, multiple outcomes analysis, experimentation and testing, voice of customer, competitive intelligence, Insights) - Experimental methods in web data analytics - Air France Internet Marketing Case Study - Econometric modeling of search engine ads

Unit - III : Structured data Vs unstructured data

Data (Structured data, unstructured data, metadata, Big Data and Linked Data) -Lab testing and experiment design (selecting participants, within-subjects or between subjects study, counterbalancing, independent and dependent variable; A/B testing, multivariate testing, controlled experiments)

Unit - IV : Web metrics and web analytic

Web metrics and web analytics - PULSE metrics (Page views, Uptime, Latency, Seven-day active users) on business and technical issues; -HEART metrics (Happiness, Engagement, Adoption, Retention, and Task success) on user behaviour issues; -On-site web analytics, off-site web analytics, the goal-signal-metric process.

Unit - V : Social media analytics

Social media analytics - Social media analytics (what and why) - Social media KPIs (reach and engagement) - Performing social media analytics (business goal, KPIs, data gathering, analysis, measure and feedback) 6. Data analysis language and tools Cases and examples - User experience measurement cases - Web analytics cases 8. Group work and hands on practice - Usability study planning and testing; and data analysis using software tools (Google Analytics, Google Sites, R and Deducer).

Current Stream of Thoughts : The Faculty will impart the current developments in the subject during the semester to the students and this component will not be a part of Examinations.

Text Books :

1. Brian Clifton. (30 Mar 2012). *Advanced Web Metrics with Google Analytics*. (3rd Edition) John Wiley & Sons.
2. Jim Sterne. (16 April 2010). *Social Media Metrics: How to Measure and Optimize Your Marketing Investment*. John Wiley & Sons

Supplementary Readings :

1. AvinashKaushik. (27 Oct 2009) *Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity*. (Pap/Cdr edition). John Wiley & Sons.
2. Tom Tullis. Bill Albert. (28 April 2008). *Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics*. (1 edition) Morgan Kaufmann.
3. Avinash Kaushik. (2007). *Web Analytics: An Hour a Day*. John Wiley & Sons.

Outcome Mapping :

Course Outcomes	Programme Outcomes (PO)												Programme Specific Outcomes (PSO)							
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
C01		1											1							
C02		2												2						
C03														2						
C04								2									2			
C05									3									3		
C06											3									3

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Semester IV	COMPREHENSIVE VIVA-VOCE				2