# MBA (BUSINESS ANALYTICS)

## Curriculum and Syllabus
## Regulations 2021

### (Based on Choice Based Credit System (CBCS))

## Effective from the Academic year
## 2021-2022

## Department of MBA

## School of Management Studies & Commerce

## Vision and Mission of the Department

**Vision**

To be a Centre of Excellence in Management Studies and Commerce, imparting and developing Managerial leadership and entrepreneurial skills to students and provide managers for the global market.

**Mission**

- To provide an affordable opportunity for diverse group of students and other stakeholders to learn by synergizing education, research, innovation and outreach efforts.
- To inculcate self-discipline, values, ethics and devotion to duty among the students to make them good citizens, leaders, professionals & entrepreneurs.
- To develop the future business leaders through imparting high quality of analytical ability & decision-making capability.
- To offer exposure to global business standards and inculcate strategic management aspiration.

## Program Educational Objectives (PEOs)

PEO 1: To provide best quality of education and prepare the students to meet global standards and competitive environment

PEO 2: To inculcate team spirit and leadership capabilities among students to develop business leaders attain organizational development

PEO 3: To impart ethical and moral values to create better citizens and society

PEO 4: To develop entrepreneurial skills to think strategically and encourage them to become entrepreneurs

PEO 5: To motivate students to participate in community development and undertake Industry research projects

## Program Outcomes (POs)

PO 1: Apply knowledge of management theories and practices to solve business problems.

PO 2: Foster Analytical and critical thinking abilities for data-based decision making.

PO 3: Ability to develop Value based Leadership ability.

PO 4: Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of Business

PO 5: Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.

PO 6: Create, select and apply appropriate modern tools & techniques for analyzing, interpreting and solving business complexities.

PO 7: Develop an aptitude for creativity, innovation and entrepreneurship.

PO 8: Adapt life-long learning and professional development to enrich knowledge and competencies

**Program Specific Outcomes (PSOs)**

PSO 1: Apply analytics principles to integrated business activities to articulate and deliver customer-oriented quality outcomes within legal and ethical frameworks.

PSO 2: Develop operations to source and utilize appropriate analytics to support the implementation of business strategies and manage resources to improve business operations.

PSO 3: Utilize state-of-the-art analytics practices to implement strategic and operational concepts and techniques that underpin business for domestic and international markets.

# List of Board of Studies (BOS) Members along with their designation/role

| S.NO | NAME & ADDRESS | DESIGNATION |
|------|----------------|-------------|
| 1. | **Dr. P. R. Ramakrishnan**<br>Dean<br>School of Management Studies & Commerce VISTAS | Chairperson |
| 2. | **Dr. R. Magesh**<br><br>Professor and Head<br>Department of Management Studies<br>Anna University | External Expert |
| 3. | **Ms. Sindhuja Santhosh**<br>Head, Customer Success Team<br>Zoho Books, Zoho Corporation<br>Chennai | Industry Expert |
| 4. | **Ms. Anitharaj Johnes George**<br>Senior Talent<br>Acquisition Analyst SPI global<br>Pondicherry | Alumni |
| 5. | **Dr. S. Preetha**<br>School of Management Studies, VISTAS | Professor |
| 6. | **Dr. S. Vasantha**<br>School of Management Studies, VISTAS | Professor |
| 7. | **Dr. G. Rajini**<br>School of Management Studies, VISTAS | Professor |
| 8. | **Dr. P. Shalini**<br>School of Management Studies, VISTAS | Professor |
| 9. | **Dr. P. G. Thirumagal**<br>School of Management Studies, VISTAS | Professor |
| 10. | **Dr. A. Mohammed Faisal**<br>School of Management Studies, VISTAS | Assistant Professor |

**VELS INSTITUTE OF SCIENCE, TECHNOLOGY AND ADVANCED STUDIES (VISTAS), CHENNAI**

**CHOICE BASED CREDIT SYSTEM (CBCS)**

**MBA (BUSINESS ANALYTICS) – REGULATIONS 2021**

**(Applicable to all the candidates admitted from the academic year 2021-22 onwards)**

## 1. DURATION OF THE PROGRAMME

1.1. Two years (Four semesters)

1.2. Each academic year shall be divided into two semesters. The odd semesters shall consist of the period from July to November of each year and the even semesters from January to May of each year.

1.3 There shall be not less than 90 working days for each semester.

## 2. ELIGIBILITY FOR ADMISSION

2.1. The details of Eligibility for Admission

Passed Bachelor Degree of minimum 3 years duration.

Obtained at least 50% marks (45% marks in case of candidates belonging to reserved category) in the qualifying examination.

## 3. MEDIUM OF INSTRUCTION

The medium of instruction for all PG programme is English.

## 4. CREDIT REQUIRMENTS AND ELIGIBILITY FOR AWARD OF DEGREE

A Candidate shall be eligible for the award of Degree only if he/she has undergone the prescribed course of study in VISTAS for a period of not less than TWO academic years and passed the examinations of all the prescribed courses of FOUR Semesters earning a minimum of 102 credits as per the distribution given in the course structure.

## 5. COURSE

Each course / subject is to be designed under lectures / tutorials / laboratory or field work / seminar / practical training / Assignments / Term paper or Report writing etc., to meet effective teaching and learning needs.

## 6. COURSE OF STUDY AND CREDITS

The Course Components and Credit Distribution shall consist of:

The total number of subjects of study shall be 33 out of which 22 shall be compulsory subjects, 7 will be Electives, MOOC, Mini Project, Internship after Second semester and Project Work in the Final Semester with a Viva-voce altogether.

Candidates shall take 10 subjects (6 Core Theory + 4 Practical) in the First semester, 10 subjects (7 Core Theory + 2 Practical) along with summer internship in the Second Semester, 10 subjects

(7 Elective Theory+ 3 Practical) in the Third Semester and 2 subjects (1 Core Theory + 1 Practical) and a Project Work in the Fourth Semester.

Internship: The students have to undergo an internship for thirty days in between second and third semester. The maximum marks for Internship will be 100. The Internship will be evaluated through Viva voce Exam by the guide and an External expert.

Project: The students will do a Project work for Four months in the Fourth Semester. The Maximum marks for Project Work will be 300. The project Work will be evaluated through Viva voce Exam by the guide and an External expert. The components of Project Work will be 100 marks for Dissertation and 200 marks for Viva voce.

To offer Elective Subjects to the students, a Minimum enrolment in the Elective Subjects shall be TEN.

For each course, credit is assigned based on the following:

| Contact hour per week | | CREDITS |
|---|---|---|
| 1 Lecture hour | - | 1 Credit |
| 1 Tutorial hour | - | 1 Credit |
| 2 Practical hours | - | 1 Credit |

(Laboratory / Seminar / Project Work / etc.)

## 7. REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER

7.1. **Eligibility:** Students shall be eligible to go to subsequent semester only if they earn sufficient attendance as prescribed therefor by the Board of Management from time to time.

7.2. **Attendance:** All Students must earn 75% and above of attendance for appearing for the University Examination. (Theory/Practical)

7.3. **Condonation of shortage of attendance:** If a Student fails to earn the minimum attendance (Percentage stipulated), the HODs shall condone the shortage of attendance on medical grounds up to a maximum limit of 10% (i.e. between 65% and above and less than 75%) after paying the prescribed fee towards the condonation of shortage of attendance. The students with attendance of less than 65 and more than 50% shall be condoned by VC on the recommendation of HODs on genuine grounds, will be permitted to appear for the regular examination on payment of the prescribed condonation fee.

7.4. **Detained students for want of attendance:** Students who have earned less than 50% of attendance shall be permitted to proceed to the next semester and to complete the Program of study. Such Students shall have to repeat the semester, which they have missed by rejoining after completion of final semester of the course, by paying the fee for the break of study as prescribed by the University from time to time.

7.5. **Transfer of Students and Credits:** The strength of the credits system is that it permits inter Institutional transfer of students. By providing mobility, it enables individual students to develop their

capabilities fully by permitting them to move from one Institution to another in accordance with their aptitude and abilities.

7.5.1. Transfer of Students is permitted from one Institution to another Institution for the same program with same nomenclature, provided, there is a vacancy in the respective program of Study in the Institution where the transfer is requested.

7.5.2. The marks obtained in the courses will be converted into appropriate grades as per the University norms.

7.5.3. The transfer students are not eligible for Ranking, Prizes and Medals.

7.5.4. Students who want to go to foreign Universities upto two semesters or Project Work with the prior approval of the Departmental / University Committee are allowed to transfer of their credits. Marks obtain in the courses will be converted into Grades as per the University norms and the students are eligible to get CGPA and Classification.

## 8. EXAMINATION AND EVALUATION

### 8.1. EXAMINATION:

i) There shall be examinations at the end of each semester, for odd semesters in the month of October / November, for even semesters in April / May. A candidate who does not pass the examination in any course(s) shall be permitted to appear in such failed courses in the subsequent examinations to be held in October / November or April / May.

ii) A candidate should get registered for the first semester examination. If registration is not possible owing to shortage of attendance beyond condonation limit / regulations prescribed OR belated joining OR on medical grounds, the candidates are permitted to move to the next semester. Such candidates shall re-do the missed semester after completion of the programme.

iii) The results of all the examinations will be published through University Website. In the case of passed out candidates, their arrear results, will be published through University Website.

8.2 **To Register for all subjects**: Students shall be permitted to proceed from the First Semester up to Final Semester irrespective of their failure in any of the Semester Examination, except for the shortage of attendance programs. For this purpose, Students shall register for all the arrear subjects of earlier semesters along with the current (subsequent) Semester Subjects.

8.3. Marks for Continuous Internal Assessment (CIA) Examinations and End Semester Examinations (ESE)

8.3.1 There shall be no passing minimum for Continuous Internal Assessment (CIA) Examinations.

8.3.2 For End Semester examination, passing minimum shall be 50% (Fifty Percentage) of the maximum marks prescribed for the Course/Practical/Project and Viva-Voce.

8.3.3 In the aggregate (CIA and ESE) the passing minimum shall be of 50%.

8.3.4. He / She shall be declared to have passed the whole examination, if he/she passes in all the courses wherever prescribed in the curriculum by earning 102 CREDITS

**9. Question Paper Pattern** for End Semester Examination

**Duration: 3 Hours Max. Marks: 100**

| | | |
|---|---|---|
| Part A | : 8 out of 10 questions | (8 X 5 = 40) |
| Part B | : 4out of 6 questions | (4 X 10 = 40) |
| Part C | :1 Case Study or Problem is Compulsory | (1 X 20= 20) |

Total Marks for each subject 100 Marks

University Exam 60 Marks

Internal Assessment 40 Mark

**10. SUPPLEMENTARY EXAMINATION:** Supplementary Examinations are conducted for the students who appeared in the final semester examinations. Eligible criteria for appearing in the Supplementary Examinations are as follows:

10.1. Eligibility: A Student who is having a maximum of two arrear papers is eligible to appear for the Supplementary Examination.

10.2. Non-eligibility for those completed the program: Students who have completed their Program duration but having arrears are not eligible to appear for Supplementary Examinations.


**11. RETOTALLING, REVALUATION AND PHOTOCOPY OF THE ANSWER SCRIPTS:**

11.1. Re-totaling: All PG Students who appeared for their Semester Examinations are eligible for applying for re-totaling of their answer scripts.

11.2. Revaluation: All current batch Students who have appeared for their Semester Examinations are eligible for Revaluation of their answer scripts. Passed out candidates are not eligible for Revaluation.

11.3. Photocopy of the answer scripts: Students who have applied for revaluation can download their answer scripts from the University Website after fifteen days from the date of publication of the results.

**12. The examination and evaluation for MOOCs** will be as per the requirements of the regulatory bodies and will be specified at the beginning of the Semester and notified by the university NPTEL-SWAYAM Coordinator (SPOC).

**13. CLASSIFICATION OF SUCCESSFUL STUDENTS**

13.1. CORE SUBJECTS, PRACTICAL, ELECTIVES COURSES AND PROJECT: Successful Students passing the Examinations and securing the marks

a) CGPA 9.00 to 10.00 shall be declared to have passed the examination in **First class with Outstanding**.

b) CGPA 7.50 to 8.99 shall be declared to have passed the examination in **First class with distinction**.

c)  CGPA 6.00 to 7.49 shall be declared to have passed the examination in **First Class**.

**d)** CGPA 5.00 to 5.99 in the aggregate shall be declared to have passed the examination in the **SECOND** Class.

**14. MARKS AND GRADES:** The following table shows the marks, grade points, letter grades and classification to indicate the performance of the student:

14.1. **Computation of Grade Point Average (GPA)** in a Semester, Cumulative Grade Point Average (CGPA) and Classification

GPA for a Semester: $= \sum i C_i G_i \div \sum i C_i$ That is, GPA is the sum of the multiplication of grade points by the credits of the courses divided by the sum of the credits of the courses in a semester.

Where, Ci= Credits earned for course i in any semester,

Gi = Grade Points obtained for course i in any semester

n = Semester in which such courses were credited.

CGPA for the entire programme: $= \sum n \sum i C_{ni} G_{ni} \div \sum n \sum i C_{ni}$ That is, CGPA is the sum of the multiplication of grade points by the credits of the entire programme divided by the sum of the credits of the courses of the entire programme

| Grade Conversion Table - PG | | | |
|---|---|---|---|
| 90 - 100 | 10 | O | Outstanding |
| 85 - 89 | 9 | A+ | Excellent |
| 80 - 84 | 8 | A | Very Good |
| 75 - 79 | 7.5 | B+ | Good |
| 70 - 74 | 7 | B | Above Average |
| 60 - 69 | 6 | C | Average |
| 50 - 59 | 5 | D | Minimum for pass |
| 0 - 49 | 0 | RA | Reappear |
| | | AAA | Absent |
| | | | |

| Overall Performance - PG | | |
|---|---|---|
| CGPA | GRADE | CLASS |
| 5.00 - 5.99 | D | Second Class |
| 6.00 - 6.99 | C | First Class |
| 7.00 - 7.49 | B | |

| | | |
|---|---|---|
| 7.50 – 7.99 | B+ | |
| 8.00 - 8.49 | A | First Class with Distinction* |
| 8.50 – 8.99 | A+ | |
| 9.00 - 10.00 | O | First Class - Outstanding* |

### 14.2. Letter Grade and Class CGPA

The students who have passed in the first appearance and within the prescribed semester of the PG Programme (Major and Elective courses only) are eligible.

### 15. RANKING

• Students who pass all the examinations prescribed for the Program in the FIRST APPEARANCE ITSELF ALONE are eligible for Ranking / Distinction.

• In the case of Students who pass all the examinations prescribed for the Program with a break in the First Appearance are only eligible for Classification.

• Students qualifying during the extended period shall not be eligible for RANKING.

### 16. MAXIMUM PERIOD FOR COMPLETION OF THE PROGRAMS TO QUALIFY FOR A DEGREE

16.1. A Student who for whatever reasons is not able to complete the programs within the normal period (N) or the Minimum duration prescribed for the programme, may be allowed two years period beyond the normal period to clear the backlog to be qualified for the degree. (Time Span = N + 2 years for the completion of programme)

16.2. In exceptional cases like major accidents and child birth an extension of one year considered beyond maximum span of time (Time Span= N + 2 + 1 years for the completion of programme).

### 17. REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

The University may from time-to-time revise, amend or change the Regulations, Curriculum, Syllabus and Scheme of examinations through the Academic Council with the approval of the Board of Management.

**Overall credit distribution / Course Components with credits**

| S.No | Semester | Total number of Subjects | Core / Elective / Lab / Internship / Project Work | Credit Distribution | | Total Credits | Total Credits for the Semester |
|---|---|---|---|---|---|---|---|
| | | | | Credits | No. of Subjects | | |
| 1 | I | 10 | 6 Core | 4 | 6 | 24 | 28 |
| | | | 4 Practical | 1 | 4 | 4 | |
| 2 | II | 10 | 7 Core Theory | 4 | 7 | 28 | 36 |
| | | | 2 Practical | 1 | 2 | 2 | |
| | | | 1 Internship | 6 | 1 | 6 | |
| 3 | III | 10 | 7 Elective Theory | 3 | 7 | 21 | 24 |
| | | | 3 Practical | 1 | 3 | 3 | |
| 4 | IV | 3 | 1 Core | 3 | 1 | 3 | 14 |
| | | | 1 Practical | 1 | 1 | 1 | |
| | | | 1 Project | 10 | 1 | 10 | |
| | | | | | | **Total** | **102** |

# MBA (BUSINESS ANALYTICS) – REGULATIONS 2021

## SEMESTER I

| Code | Course | Hour / Week | | | C | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | CA | SEE | Total |
| 21CMBN11 | Management Principles & Organisational Behaviour | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN12 | Business Statistics | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN13 | Managerial Economics | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN14 | Financial Reporting, Statements & Analysis | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN15 | Legal & Business Environment | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN16 | Business Communication & Soft Skills | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21PMBN11 | Database Management System & SQL | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN12 | Data Visualization using R and Watson Studio (IBM) | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN13 | Mini Project | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN14 | Community Development Project / MOOC/ Outbound Experiential Learning Programme | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| | | 22 | 2 | 8 | 28 | | | |

## SEMESTER II

| Code | Course | Hour / Week | | | C | Maximum Marks | | |
|---|---|---|---|---|---|---|---|---|
| | | L | T | P | | CA | SEE | Total |
| 21CMBN21 | Operations Management | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN22 | Human Resources Management | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN23 | Research Methodology | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN24 | Marketing Management | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN25 | Quantitative Techniques | 3 | 1 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN26 | Business Intelligence | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21CMBN27 | Data Cleaning, Normalisation & Data Mining | 4 | 0 | 0 | 4 | 40 | 60 | 100 |
| 21PMBN21 | Spreadsheet Modelling | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN22 | Data Visualization using Python (IBM) | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21IMBN21 | Internship | 0 | 0 | 12 | 6 | 40 | 60 | 100 |
| | | 27 | 1 | 16 | 36 | | | |

## SEMESTER III

| Code | Course | Hour / Week | | | C | Maximum Marks | | |
|------|--------|---|---|---|---|-----|-----|-------|
| | | L | T | P | | CA | SEE | Total |
| 21EMBN…. | Elective I | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective II | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective III | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective IV | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective V | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective VI | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21EMBN…. | Elective VII | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21PMBN31 | Predictive Modeling using IBM SPSS Modeler (IBM) | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN32 | Descriptive Analytics using IBM Cognos (IBM) | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| 21PMBN33 | Foundation course in Big data and Hadoop | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| | | 21 | 0 | 6 | 24 | | | |

## SEMESTER IV

| Code | Course | Hour / Week | | | C | Maximum Marks | | |
|------|--------|---|---|---|---|-----|-----|-------|
| | | L | T | P | | CA | SEE | Total |
| 21CMBN41 | Universal Human Values | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 21RMBN41 | Project Work | 0 | 0 | 20 | 10 | 100 | 200 | 300 |
| 21PMBN41 | Text Analytics (IBM) | 0 | 0 | 2 | 1 | 40 | 60 | 100 |
| | | 3 | 0 | 22 | 14 | | | |

**TOTAL CREDITS: 102**

# LIST OF COURSES

## CORE COURSES

| Semester | Code | Course | Hour / Week | | | Credits |
|---|---|---|---|---|---|---|
| | | | Lecture | Tutorial | Practical | |
| I | 21CMBN11 | Management Principles & Organisational Behaviour | 4 | 0 | 0 | 4 |
| I | 21CMBN12 | Business Statistics | 3 | 1 | 0 | 4 |
| I | 21CMBN13 | Managerial Economics | 4 | 0 | 0 | 4 |
| I | 21CMBN14 | Financial Reporting, Statements & Analysis | 3 | 1 | 0 | 4 |
| I | 21CMBN15 | Legal & Business Environment | 4 | 0 | 0 | 4 |
| I | 21CMBN16 | Business Communication & Soft Skills | 4 | 0 | 0 | 4 |
| II | 21CMBN21 | Operations Management | 4 | 0 | 0 | 4 |
| II | 21CMBN22 | Human Resources Management | 4 | 0 | 0 | 4 |
| II | 21CMBN23 | Research Methodology | 4 | 0 | 0 | 4 |
| II | 21CMBN24 | Marketing Management | 4 | 0 | 0 | 4 |
| II | 21CMBN25 | Quantitative Techniques | 3 | 1 | 0 | 4 |
| II | 21CMBN26 | Business Intelligence | 4 | 0 | 0 | 4 |
| II | 21CMBN27 | Data Cleaning, Normalisation & Data Mining | 4 | 0 | 0 | 4 |
| IV | 21CMBN41 | Universal Human Values | 3 | 0 | 0 | 3 |

## ELECTIVE COURSES

| Semester | Code | Course | Hour / Week | | | Credits |
|---|---|---|---|---|---|---|
| | | | Lecture | Tutorial | Practical | |
| III | 21EMBN…. | Elective I | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective II | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective III | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective IV | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective V | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective VI | 3 | 0 | 0 | 3 |
| III | 21EMBN…. | Elective VII | 3 | 0 | 0 | 3 |

## ELECTIVE COURSES

| FUNCTIONAL AREA | SUBJECT CODE | COURSES |
|---|---|---|
| Analytics | 21EMBN01 | Advanced Research Methods and Predictive Analysis |
| | 21EMBN02 | Business Optimization and Big Data Analytics |
| | 21EMBN03 | Data Science using R Programming |
| | 21EMBN04 | Supply Chain Analytics |
| | 21EMBN05 | HR Analytics |
| | 21EMBN06 | Marketing and Retail Analytics |
| | 21EMBN07 | Social and Web Analytics |
| | 21EMBN08 | Healthcare Analytics |
| | 21EMBN09 | Pricing Analytics for Revenue Management |
| | 21EMBN10 | Data Visualization for Managers |
| | 21EMBN11 | Stochastic Modeling |
| | 21EMBN12 | Simulation Modeling |
| | 21EMBN13 | Data Mining for Business decisions |
| | 21EMBN14 | Time Series Analysis |
| Management | 21EMBN15 | Operations Research Applications |
| | 21EMBN16 | Quality Toolkit for Managers |
| | 21EMBN17 | Economic Analysis and Decision Making |
| | 21EMBN18 | Business Forecasting |
| | 21EMBN19 | Business Strategy |
| | 21EMBN20 | E-Commerce and Digital Markets |
| | 21EMBN21 | E-Business |
| Management Information System | 21EMBN22 | SAP FICO |
| | 21EMBN23 | SAP SD |
| | 21EMBN24 | SAP MM |
| | 21EMBN25 | SAP HCM |
| | 21EMBN26 | Managing Software Projects |
| | 21EMBN27 | Digital Innovation and Transformation |
| | 21EMBN28 | Modeling Techniques and IT for Operations Management |
| | 21EMBN29 | Data Security |
| | 21EMBN30 | Cloud Computing |
| | 21EMBN31 | IT Consulting |
| Entrepreneurship | 21EMBN32 | Environmental Studies |
| | 21EMBN33 | Indian Ethos and Business Ethics |
| | 21EMBN34 | Ethical and Legal Aspects of Analytics |
| | 21EMBN35 | E-Governance & Cyber Law |

## PRACTICAL COURSES

| Semester | Code | Course | Hour / Week | | | Credits |
|---|---|---|---|---|---|---|
| | | | Lecture | Tutorial | Practical | |
| I | 21PMBN11 | Database Management System & SQL | 0 | 0 | 2 | 1 |
| I | 21PMBN12 | Data Visualization using R and Watson Studio (IBM) | 0 | 0 | 2 | 1 |
| I | 21PMBN13 | Mini Project | 0 | 0 | 2 | 1 |
| I | 21PMBN14 | MOOC | 0 | 0 | 2 | 1 |
| II | 21PMBN21 | Spreadsheet Modelling | 0 | 0 | 2 | 1 |
| II | 21PMBN22 | Data Visualization using Python (IBM) | 0 | 0 | 2 | 1 |
| II | 21IMBN21 | Internship | 0 | 0 | 12 | 6 |
| III | 21PMBN31 | Predictive Modeling using IBM SPSS Modeler (IBM) | 0 | 0 | 2 | 1 |
| III | 21PMBN32 | Descriptive Analytics using IBM Cognos (IBM) | 0 | 0 | 2 | 1 |
| III | 21PMBN33 | Foundation course in Big data and Hadoop | 0 | 0 | 2 | 1 |
| IV | 21RMBN41 | Project Work | 0 | 0 | 20 | 10 |
| IV | 21PMBN41 | Text Analytics (IBM) | 0 | 0 | 2 | 1 |

# SEMESTER I

**21CMBN11**      **MANAGEMENT PRINCIPLES AND ORGANIZATIONAL BEHAVIOUR**      **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To describe the fundamentals of Management, significance, scope of management, levels of manager, functions of a manger and basics of organizational behavior.
- To discuss the development of management thought
- To examine and analyze the behavior of individuals and groups in organizations by understanding the concepts of learning, attitudes & perceptions.
- To understand about the organizational structure, its types, decentralization and delegation of the authority.

**UNIT  I          INTRODUCTION TO MANAGEMENT                    12**

Introduction to Management and Organizational Behavior: Concept of Management, Applying Management theory in practice, Evolution of management thought, Management process and Functions – Managerial Roles – OB Model – Contributing disciplines of OB – MBO

**UNIT  II          INDIVIDUAL  PROCESS IN ORGANIZATIONS                    12**

Individual Processes in Organizations: Foundations for Individual Behavior – Learning - Attitudes and Job satisfaction – Personality and values – Perception - Motivation and Organizational performance. Contemporary theories of motivation.

**UNIT  III          INTERPERSONAL PROCESS  IN ORGANIZATIONS                    12**

Interpersonal process in Organizations: -Communication Process -Methods – Barriers -Grapevine. Transactional Analysis. Group Dynamics: Typology of Groups -Conflicts in groups - Leadership Models and Concepts – leadership theories – Decision making and negotiation - Power and Politics.

**UNIT  IV          ORGANISATIONAL PROCESS                    12**

Organizational Process and Characteristics: Dimensions of Organization structure – Authority, Responsibility, and Accountability – Delegation – Centralization, Decentralization – Line and Staff Relationship.

**UNIT  V          ORGANIZATIONAL DEVELOPMENT                    12**

Organizational Development: Resistance to Change - Organizational change - Organizational development – Stress management – Business ethics and corporate social Responsibility.

**TOTAL: 60 HOURS**

## COURSE OUTCOMES:

## At the end of the course, the students will be able to:

CO – 1       : Assess the fundamentals of organizational behavior and OB Model

CO – 2          : Analyze the behavior of individuals and groups in organizations

CO – 3 : Describe the concept of leadership, communication, power and conflict resolution

CO – 4 : Demonstrate the dynamics of organizational change.

CO – 5 : Identify the major issues in business ethics and corporate social responsibility.

**TEXT BOOKS:**

1. Harold Koontz & Heinz Weihrich, "Essentials of Management", TMH, 10th Edition, 2007.

**REFERENCE BOOKS:**

1. Michael A. Hitt, J. Stewart Black, and Lyman W. Porter, Management, Pearson, 11th Edition, 2011.

2. Koontz &Weirich, Essentials of Management, Tata McGraw Hill Publishing Company, New Delhi. Stoner, Freeman & Gilbert, Management, PHI, 6th Edition.

3. Robbins.S.P. Fundamentals of Management, Pearson, 2003. Robbins.S. Organisational Behaviour, X edn., Prentice-Hall, India.

**WEB SOURCES:**

1. https://us.sagepub.com/en-us/nam/principles-and-practices-of-management-and-organizational-behaviour/book251882#:~:text=Principles%20and%20Practices%20of%20Management%20and%20Organizational%20Behaviour%20provides%20a,performance%20in%20the%20global%20era.

2. https://courses.lumenlearning.com/wmopen-organizationalbehavior/chapter/management-theory-and-organizational-behavior/

3. https://online.nwmissouri.edu/articles/mba/why-managers-understand-organizational-behavior.aspx

| 21CMBN12 | BUSINESS STATISTICS | 3 1 0 4 |
|---|---|---|

**COURSE OBJECTIVE: ( Employability)**

- To impart knowledge of basic statistical tools & techniques with emphasis on their application in Business decision process and Management.
- To focus on more practical than theoretical.
- To do statistical analysis informs the judgment of the ultimate decision-maker—rather than replaces it—some key conceptual underpinnings of statistical analysis will be covered to insure the understandability of its proper usage.

**UNIT I          INTRODUCTION                                      12**

Introduction to Statistics - Collection of Data - Measures of Central Tendency & Dispersion in Frequency Distribution

**UNIT II          PROBABILITY THEORY                          12**

Probability Theory – Addition, Multiplication & Baye's Theorem, Test for Normality.

**UNIT III          CORRELATION                                      12**

Correlation-Karl Pearson's and Rank Correlation, Regression (linear)

**UNIT IV          HYPOTHESIS TESTING                          12**

Hypothesis Testing –Test for Single Mean& Two Mean– Chi-Square test, F test – ANOVA.

**UNIT V          TESTS                                                      12**

Index Nos - Unweighted and Weighted-Test of Consistency, Time Series Analysis-     Measurement of Secular Trend-Seasonal Variations

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Explain and evaluate various measures of central tendency and measures of dispersion.

CO – 2      : Estimate probabilities by applying probability theory

CO – 3      : Calculate correlation, regression and rank correlation

CO – 4      : Construct hypotheses and test them by applying statistical tools.

CO – 5      : Apply Time Series Analysis in Market Prediction Rates

**TEXT BOOKS:**

1. R.S.N. Pillai, V. Bagavathi," Statistics", S.Chand Limited, 7th Ed,2008
2. N.D. Vohra, "Business Statistics", Tata McGraw-Hill Education, 2nd Ed,2013
3. G. V. Shenoy, Uma K. Srivastava, S. C. Sharma," Business Statistics", New Age International,2nd Ed, 2005
4. Beri, "Business Statistics" Tata McGraw Hill,2nd Ed,2009

**REFERENCE BOOKS:**

1. Keller. G,"Statistics for Management", Cengage Learning, 1st Ed, 2009.

2. J. K Sharma, "Business Statistics", Pearson, 2nd Ed, 2010.

3. Arora PN &others," Complete Statistical Methods", S. Chand, 3rd Ed, 2010

**WEBSITES:**

1. https://www.statisticshowto.com/business-statistics/

2. https://machinelearningmastery.com/statistical-hypothesis-tests/

**WEB SOURCES:**

1. https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/ IntroductoryBusiness Statistics-OP.pdf

2. https://statisticsbyjim.com/basics/probability-distributions/

**21CMBN13**                    **MANAGERIAL ECONOMICS**                    **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- The study the concept of Managerial Economics by applying a series of basic economics principles.

- To gain knowledge on issues related to optimal pricing strategies, demand forecasting, and optimal financing, appropriate hiring decisions, and investment decisions, among others, can be successfully tackled with managerial economics tools.

- To analyse how to incorporate a global perspective to their managerial economics box of tools.

**UNIT  I          INTRODUCTION                                        12**

Introduction to Managerial Economics – Nature and scope of macroeconomics -Incremental principle – equimarginal principle – some decision rules – The risk and uncertainty theory – optimization techniques – Baumol's sales maximization – least-cost combination.

**UNIT  II          DEMAND DECISIONS                                    12**

Demand Decisions – Demand analysis – elasticity of demand – demand forecasting – types & methods of demand forecasting – trend projection method – least square method of demand forecasting limitations & uses

**UNIT  III          OUTPUT DECISIONS                                    12**

Input-Output Decisions - Production function – Cost and managerial decision making – Cobb-Douglas production functions – Law of variable proportion – short run cost output – long run cost output – economies and dimensions of scale of production.

**UNIT  IV          PRICE-OUTPUT DECISIONS                            12**

Price-Output Decisions - Market Environment of Price Output Decisions by the Firm and the Industry – Pricing under perfect competition – digopoly pricing strategies and tactics – pricing – pricing in life-cycle of a product -Profit-Maximization & Competitive Markets-Price-Searchers, Cartels, Oligopoly-Advanced Pricing and Auctions.

**UNIT  V          ECONOMIC THEORY                                    12**

The Firm in Theory and Practice - Economic Theory of the Firm – The Behavioral Theory of the Firm - Managerial Theories of the Firm – Profit concepts & analysis – Game Theory and Asymmetric Information.

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1       : Define the basic elements of <mark>managerial economics</mark> aspects of the firm.

CO – 2       : Discuss the <mark>demand analysis decisions methods</mark> as to forecasting.

CO – 3       : Apply the <mark>managerial decision</mark> functions of the firm.

CO – 4       : Examine and elaborate the <mark>basic theories related to business practices.</mark>

CO – 5       : Appraise on the decision as to environment and given

**TEXT BOOKS:**

1. Dean Joel, Managerial Economics, PHI, New Delhi, 1976, First Edition
2. Douglas Evan J, Managerial Economics, Theory, Practice & Problems; PHF, New Delhi; 1983, First Edition

**REFERENCE BOOKS:**

1. K.K. Seo, Managerial Economics, Richard D. Irwin Inc. 1988
2. I.C. Dhingra, Essentials of Managerial Economics - Theory, Applications and Cases Sultan Chand, New Delhi, 2003

**WEB SOURCES:**

1. https://www.cheggindia.com/career-guidance/managerial-economics-principals-types-and-scope/
2. https://theinvestorsbook.com/managerial-economics.html
3. https://www.analyticssteps.com/blogs/what-managerial-economics-definition-types-nature-principles-scope

**21CMBN14        FINANCIAL REPORTING, STATEMENTS & ANALYSIS        3 1 0 4**

**COURSE OBJECTIVE: (Employability)**

- To think in a new and more creative way when analyzing or forecasting financial information.

- To introduce new tools common to financial statement analysis and how to use them in practical applications.

- To understand how financial statement information can help solve business problems and increase the ability to read and understand financial statements and related information.

**UNIT I        INTRODUCTION        12**

Introduction to Management Accounting-Need and Importance — Accounting concepts & conventions – Accounting Standards - Overview of IFRS and GAAP. Mechanics of Accounting: Double entry system of accounting, journalizing of transactions; ledger posting and trial balance, preparation of final accounts, Profit & Loss Account, Balance Sheet.

**UNIT II        ANALYSIS OF FINANCIAL STATEMENTS        12**

Analysis of financial statement: Ratio Analysis- solvency ratios, profitability ratios, activity ratios, liquidity ratios, market capitalization ratios; Common Size Statement; Comparative Balance Sheet and Trend Analysis of manufacturing, service & banking organizations.

**UNIT III        FUNDS FLOW AND CASH FLOW ANALYSIS        12**

Fund Flow Analysis: Meaning – uses – Preparation of Fund Flow Statement. Cash Flow Analysis (as per Accounting Standard 3): Meaning – uses – Preparation of Cash Flow Statement.

**UNIT IV        CAPITAL BUDGETING AND MARGINAL COSTING        12**

Capital budgeting – meaning –steps – different types of investment decisions - Different methods – Payback, Net Present Value, Internal rate of return, Profitability index, Average rate of return – Capital rationing Marginal costing – Cost Volume Profit analysis – Break Even analysis – Applications of marginal costing

**UNIT V        BUDGETING AND FINANCIAL REPORTING        12**

Budgeting – Different types of budgeting – Cash budget – Flexible budget. 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

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1        : State the importance of common accounting standards

CO – 2        : Estimate Budgeting and Financial Reporting

CO – 3 : Prepare financial statements through ratio analysis.

CO – 4 : Analyze financial reports of financial instruments, mutual funds,

CO – 5 : Analyze cash flow and fund flow statement

**TEXT BOOKS:**

1. R.S.N.Pillai&Bagavathi – Management Accounting, Chand & Co. Ltd., New Delhi, 6$^{TH}$ edition 2002.

2. T.S.Reddy&Y.Hari Prasad Reddy – Financial and Management Accounting, Margham publications, 12$^{TH}$ edition 2004.

**REFERENCE BOOKS:**

1. M.Y.Khan&P.K.Jain – Management Accounting, Tata McGraw Hill publishing company Ltd., 10th edition 2004.

2. R.Narayanaswamy – Financial accounting – A Managerial Perspective, Prentice Hall India Ltd., New Delhi 5th edition, 2014.

3. Paresh Shah Basic Financial Accounting for Management, Oxford Publications, 3rd edition, 2007

**WEB SOURCES:**

1. https://corporatefinanceinstitute.com/resources/knowledge/finance/analysis-of-financial-statements/

2. https://www.aafmindia.co.in/financial-statement-analysis-tools-limitation-uses-process

3. https://www.accountingtools.com/articles/2017/5/14/financial-statement-analysis

**21CMBN15**  **LEGAL & BUSINESS ENVIRONMENT**  **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To create the knowledge of Legal perspective and its practices to improvise the business.
- To describe the nature and classes of contracts.
- To identify the elements needed to create a contract.
- To analyze, interpret the various act related to business, property and business.
- To identify the rights related to copyrights and patents.

**UNIT  I**  **INTRODUCTION**  **12**

Legal Aspect of Business: Introduction to Business Laws- Business Management and Jurisprudence; structure of the Indian Legal Systems: sources of Law; Manager and Legal System

**UNIT  II**  **LEGAL ASPECTS**  **12**

Fundamentals of contract laws-Formation of Contracts;- Principles of Contract Laws-Legality of Object Consideration; Performance of contract-Discharge of contract- breach of contract-Quasi contracts.

**UNIT  III**  **CONTRACT MANAGEMENT**  **12**

Contract Management-Special Contracts-Laws of Agency; Principal-Agent Problem-Bailment, Pledge, Guarantee and Indemnity-Sales of Goods- Principles of Sales of Goods.

**UNIT  IV**  **TRANSFER OF OWNERSHIP& PROPERTY**  **12**

Transfer of Ownership& Property–Performance of contract-Consumer Protection Laws-Law relating to Business Organizations-Partnership Trusts- Company form of organization.

**UNIT  V**  **COPYRIGHTS & TRADEMARKS**  **12**

Protecting the property of Business-Copyright, Trademark, secret, Geographical Indications-Alternate Dispute resolutions.

## TOTAL: 60 HOURS

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1  : Draft a simple employment contract

CO – 2  : Arrange the basics elements of contracts and classifications of contract

CO – 3  : Improve their awareness and knowledge about functioning of local business.

CO – 4  : Improve their awareness and knowledge about functioning of global business.

CO – 5  : Gather knowledge on evolvement of business enterprises

**TEXT BOOKS:**

1. N.D.Kapoor, Elements of Mercantile Law, S.Chand& Sons, 2013
2. P.P.S.Gogna, Mercantile Law, S. Chand & Co. Ltd., India, Fourth Edition, 2008.
3. Dr. Vinod, K. Singhania, Direct Taxes Planning and Management, 2008.
4. Richard Stim, Intellectual Property- Copy Rights, Trade Marks, and Patents, Cengage Learning, 2008.

**REFERENCE BOOKS:**

1. Balachandran V., Legal Aspects of Business, Tata McGraw Hill, 20
2. Daniel Albuquerque, Legal Aspect of Business, Oxford, 20
3. Ravinder Kumar– Legal Aspect of Business. – Cengage Learning, 2nd Edition-2011.

**WEB SOURCES:**

1. https://www.airtract.com/article/the-legal-environment-of-business-%E2%80%93-a-complete-guide#:~:text=Legal%20environment%20of%20business%20is,the%20scope%20of%20the%20firm.
2. https://www.indiastudychannel.com/resources/.6169-What-Legal-Environment.aspx
3. https://www.lawteacher.net/free-law-essays/international-law/the-law-that-regulates-businesses-in-united-state-of-america-international-law-essay.php

**21CMBN16**       **BUSINESS COMMUNICATION & SOFT SKILLS**       **4 0 0 4**

**COURSE OBJECTIVE: ( Skill Development)**

- To study the communication skills
- To apply it in practical business situations, written exercises & e-mails and letters: Re-writing and re-framing of sentences are being delivered.

**UNIT  I          INTRODUCTION                                    12**

Fundamentals of Communication, Business Communication, The Communication Model, Communicating in teams, Overcoming the Barriers to Communication. Non-verbal communication, Introducing the 7 Cs of business writing – Candid, Clarity, Complete, Concise, Concrete, Correct and Courteous, writing business messages, The Stages in writing, Pre writing, Writing and Post writing.

**UNIT  II          REVISING AND CHECKING MESSAGES                 12**

Revising to improve the content and sentence structure, Avoiding redundant phrases and words, Proof-reading to correct grammar, spelling, punctuation, format, and mechanics, Evaluating whether the message achieves its purpose. The Process of Writing E Mails, breaking it Down – The PAIBO Technique, Structuring an E Mail – The 3 T's – Introduction, Body and Conclusion, Effective Subject lines, Salutation and Signing off. Business reports and Proposals, Format, visual aids and contents, Oral Business presentations

**UNIT  III          ETIQUETTE ANDINTERVIEW                       12**

Meaning, Body Language, Gesture, Postures, Expressions, Dress code, Etiquette etc... Public speaking and Speech composition Technical Speeches and non technical presentation Principles of effective speaking and Presentations. Interview, Exit interview, Appraisal etc.. Importance of Interview, Art of conducting and giving interview Types of Interviews like Placement interview Discipline interview, Appraisal interview, Exit interview etc...

**UNIT  IV          MEETING AND LETTERS                           12**

Opening and closing of meeting, Brain storming, e-meeting etc.. Importance of Meeting Procedure of conducting Group Discussions Significance of Brain Storming in Business Decisions, Advantages/Disadvantages of E-Meeting Preparing Agenda and Minutes of the meeting. Inquires, Circulars, Quotations, Orders, Memo, Minutes, Notice etc... Types of Letters : Letter Writing – letters - Business letters. Application for a job / covering letter with bio-data. Attitude. Negotiation skills Social Conversation - Values and ethics - Managing stress.

**UNIT  V          SOFT SKILLS                                   12**

Principles of group discussion - Purpose of group discussion - Preparation - Skills to be acquired —

communication, leadership, problem-solving - Effective participation. Personality Enrichment - Positive attitude - SWOT Analysis - Self-confidence and motivation - Inter-personal skills - Projecting a positive social image Time Management - Goal setting and prioritisation - ABC Analysis—preparing a personal schedule - Short term and long term goals - Implementing goals - Task list organisation Leadership Skills - Setting objectives and taking initiatives - Persuading and negotiating - Team work - Maintaining morale - Inspiring others

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1          : Recall the basics of communication and its process, elements and importance.

CO – 2          : Evaluate the effectiveness of revising, checking and proof reading the messages.

CO – 3          : Discuss the concept of Etiquette and significance of Interviews

CO – 4          :Identify different types of letters to make effective internal and external correspondence

CO – 5          : Evaluate the effectiveness of revising and checking the messages.

**TEXT BOOKS:**

1. Sanjay Kumar &Pushpalatha, Communication Skills, Oxford University Press, 2011.
2. Kaul& Asha, Effective Business Communication, PHI 2$^{nd}$ Edition, 2006.

**REFERENCE BOOKS:**

1. Lesikar R.V &Flately M V, Basic Communication Skills for empowering the internet generation, Tata-McGraw Hill, 2009.
2. Sharma R C & Mohan K, Business Correspondence & Report Writing, TMH, 2009.

**WEB SOURCES:**

1. https://www.softskillsusa.com/what-is-meaning-of-business-communication-skills.php
2. https://www.atctraining.com/soft_skills_definition_of_communication.htm
3. https://www.jobwise.co.uk/the-importance-of-soft-skills-in-business/

**21PMBN11**       **DATABASE MANAGEMENT SYSTEM & SQL (PRACTICAL) 0 0 2  1**
<mark>**(Skill Development)**</mark>

**LIST OF EXPERIMENTS**

1. DDL and DML Commands.
2. Join Queries.
3. Views and Set operations.
4. Built in functions.
5. Nested Queries.
6. Triggers.
7. Aggregate Functions.
8. Roles and Privileges.
9. Cursors.
10. PL/SQL programs.
11. PL/SQL cursor programs.
12. Front end tools – Mini Project.

**COURSE OUTCOMES:**

CO – 1     : Understand the <mark>basic concepts and applications of Database management</mark>

CO – 2     : Understand the <mark>query evaluation techniques and query optimization</mark>

CO – 3     : <mark>Design and develop the database</mark> application systems skills

CO – 4     : Demonstrate an understanding of the relational data model.

CO – 5     : Formulate <mark>using SQL solutions to a broad range of query and data update</mark>
              <mark>Problems</mark>

**21PMBN12**     **DATA VISUALIZATION USING R AND WATSON STUDIO (IBM)     0 0 2 1**
**( Skill Development)**

## LIST OF EXPERIMENTS

Introduction to Statistics

- Difference between inferential statistics and descriptive statistics

- Drawing Inferences from Data, Random Variables, Normal Probability Distribution

- Sampling, Sample Statistics and Sampling Distributions Descriptive Data analysis using R

- Description of basic functions used to describe data in R Data manipulation with R

- Introduction to dplyr (filter, select, arrange, mutate, summarize), data. table, reshape2 package, tidyr package and Lubridate package Data visualization with R

- Working with Base R Graphics (Scatter Plot, Bar Plot, and Histogram) and ggplot2 Data visualization in Watson Studio

- Adding data to data refinery and Visualization of Data on Watson Studio

## COURSE OUTCOMES:

CO – 1     : Understand R basics and its installation

CO – 2     : Understand Descriptive and Inferential Statistics using R

CO – 3     : List out the available Packages of R and its usages with hands on

CO – 4     : Demonstrate data using various basic visualization skills with R.

CO – 5     : Demonstrate data using IBM Watson Studio

**21PMBN13**                    **MINI PROJECT( Skill Development)      0 0 2 1**

**COURSE OUTCOMES:**

CO – 1    : Select the organizations of all types and sizes by managing critical mini projects.

CO – 2    : Identify the creative solutions to key challenges.

CO – 3    : Apply the knowledge and skills acquired in the classroom to a professional context.

CO – 4    : Understand what skills are transferable to new contexts.

CO – 5    : Illustrate the quality of the contribution made to the organization.

**21PMBN14**                    **MOOC**                              **0 0 2 1**

The objective of this course is to take the best teaching learning resources to all to create a levelled platform. To make use of the Indian massive online to the aspiring youth of India

- The students will select a <mark>MOOC course from the Swayam platform</mark>.
- They will spend 2 hours per week undergoing this practical MOOC course under the guidance of a faculty.
- Every course will have a minimum of 8 to a maximum of 12 assignments depending on the duration of the course.
- Assignments will be submitted as per the requirements of the course.
- The marks scored in the assignments will be taken for internal assessment marks.
- The students will appear for a final practical exam conducted by VISTAS.

**COURSE OUTCOMES:**

CO – 1     : Understand the <mark>latest developments</mark> in the field of study

CO – 2     : Explain the students with <mark>latest information about the field of study</mark>

CO – 3     : Apply the <mark>skills in the business world</mark>

CO – 4     : List the <mark>various skills gained</mark> through this course

CO – 5     : Summarize the concepts for application

**21CMBN21**                         **OPERATIONS MANAGEMENT**                         **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To provide foundational knowledge associated with the operations management
- To describe the various techniques for implementation of operations management based on the forecasting, planning, quality and inventory

**UNIT  I          INTRODUCTION                                              12**

History and Definition – Production Vs. Operations – Manufacturing Vs. Service Operations – Functions – Production Systems – Types of Production Systems – Operations Strategy – Operations Management Vs. Operations Strategy

**UNIT  II          LOCATION, LAYOUT AND FORECASTING          12**

Plant Location – Factors influencing location – Plant Layout – Types of Layout – Forecasting – Forecasting technique: Qualitative and Quantitative – Delphi Method – Regression Analysis – Forecasting Error

**UNIT  III          PLANNING                                              12**

Capacity Planning – Aggregate Production Planning (APP) – Disaggregation: Master Production Scheduling (MPS) – Material Requirement Planning (MRP) – Production Planning and Control (PPC)

**UNIT  IV          QUALITY                                              12**

Evolution of Quality – Quality Definition and Contributions by W. Edwards Deming, Joseph M. Juran and Philip B. Crosby – Dimensions of Quality – Process Quality Vs. Product Quality – Seven Basic Quality Tools – Plan-Do-Check-Act (PDCA) Cycle

**UNIT  V          INVENTORYMANAGEMENT                          12**

Inventory Management – Types of Inventory Models – Independent Demand Vs. Dependent Demand – Basic Economic Order Quantity (EOQ) Model – Analysis: ABC and VED – Push Vs. Pull system – Just-In-Time (JIT) Vs. Material Requirement Planning (MRP)

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Explain the fundamental concepts of operations and production.

CO – 2      : Understand the types of production systems.

CO – 3      : Explain the fundamental concepts of layout and location.

CO – 4      : Predict the demand using the different forecasting techniques.

CO – 5      : Explain the fundamental concepts of various planning.

**TEXT BOOKS:**

1. Ajay Garg. Production and Operations Management, Tata McGraw-Hill Education, 2017.

2. Stevenson J. William, Operations Management, 9th Edition, TMH, 2007.

**REFERENCE BOOKS:**

1. Roger Schroeder, Susan Goldstein, M. Johnny Rungtusanatham. Operations Management, McGraw-Hill Education, 2010.

2. Lee J. krajewski and Larry P.Ritzman, 2007, Operations Management strategy and analysis, 9th Edition, Pearson Education / Prenctice Hall of India, 2007.

**WEB SOURCES:**

1. https://corporatefinanceinstitute.com/resources/knowledge/strategy/operations-management/

2. https://managementhelp.org/operationsmanagement/

3. https://hbr.org/topic/operations-management

**21CMBN22**               **HUMAN RESOURCES MANAGEMENT**               **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To teach relevant, practical and applicable human resource management skills to equip the student with the foundation competencies for working as HR practitioners in business.
- To highlight the important challenges facing managers and employees in today's business climate.
- To introduce contemporary theory and practice in modern human resource management and the range of tools and methods available to address HR challenges and problems.

**UNIT  I          HUMAN RESOURCE MANAGEMENT                    12**

Meaning, Scope & Objectives of HRM, Evolution of HRM, Difference between PM & HRM, HRM function's, HR Policy & procedures. Competitive challenges influencing HRM Qualities & qualification of HR Manager, Line & Staff Roles and Responsibilities of HR Manager/Departments, HR as a factor of Competitive Advantage

**UNIT  II          HUMAN RESOURCE PROCESS                    12**

Human Resource Planning – Job Analysis and Design -Recruitment - Selection and placement process – Types of interviews, Placement, Orientation & Induction, Determining training needs analysis, Delivery Methodology, Evaluation, Capacity Building.

**UNIT  III          MANAGING CAREERS                    12**

Career Planning & Development vs. Employee development. Career stages – Career Choices and Preferences, Mentoring and Coaching, Time Management. Employee Separations, Downsizing & Outplacement, HRIS, Fundamentals of Industrial Relations and Fundamentals of Labour Laws

**UNIT  IV          PERFORMANCE MANAGEMENT                    12**

Purposes of Performance Management, Performance Appraisal Methods, limitations and problems, Punishment and Promotion, Job evaluation. Wage & Salary fixation, incentives, bonus, ESOPs. Insurance, Fringe Benefits.

**UNIT  V          CONTEMPORARY ISSUES IN HRM                    12**

Talent Management, Competency Mapping, Industrial Relations – Health & Safety issues, grievance handling, Work Life Balance, Quality of Work Life, HRD in India, International HRM

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Discuss the History and evolution of HRM.

CO – 2      : Explain the importance of HRM in the organizations

CO – 3      : Assess the major HRM functions and processes of HRM planning

CO – 4      : Identify strategic HR planning and the HRM process to the organization's strategic.

CO – 5      : Explain how training helps to improve the employee performance.

**TEXT BOOKS:**

1. Aswathappa.K, Human Resource Management, Text and Cases, Tata McGraw Hill, New Delhi. 2014

2. Gupta. S.C, Advanced Human Resource Management, Strategic Perspective, ANE Books Pvt. Ltd, New Delhi.2009.

**REFERENCE BOOKS:**

1. Angela Baron and Michael Armstrong, Human Capital Management (Achieving Added Value through People), Kogan Page Limited, United States. 2007

2. Anuradha Sharma and Aradhana Khandekar Strategic Human Resource Management. Response Books, New Delhi. 2006

3. Beer et al, Managing Human Assets, The Free Press: Maxwell Mac Millan Inc, New York. 1984

**WEB SOURCES:**

1. https://open.lib.umn.edu/humanresourcemanagement/chapter/1-1-what-is-human-resources/

2. https://www.hrdconnect.com/2019/05/22/what-is-hr-management-in-an-organisation/

3. https://www.thebalancecareers.com/what-is-human-resource-management-1918143

**21CMBN23**               **RESEARCH METHODOLOGY**               **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To develop a research orientation among the students and acquaint them with fundamentals of research methods.
- To have a knowledge about research and how research is conducted.
- To understand the data collection methods the sampling methods and the data analysis method.
- To create awareness about the importance of research in all fields.

**UNIT  I            INTRODUCTION                                    12**

Introduction to Research – Meaning of research-Research applications in social and business sciences – Characteristics of good research study –– Types of Research – Research process– Defining the Research problem – Problem identification process – Research Questions – 'Literature Survey – Formulating the research hypothesis – Writing a research proposal

**UNIT  II          RESEARCH DESIGN AND MEASUREMENT              12**

Research design – Definition – types of research design – Descriptive Research Designs: Exploratory – Cross-sectional studies and Longitudinal studies; Experimental Designs – Data Collection – Types of data –Primary and Secondary data – Methods of primary data collection – Online Interviews and Focus Groups – Observation – Interview – Case study Questionnaire and Schedule – Construction of questionnaire – pilot study

**UNIT  III          SAMPLING AND DATA COLLECTION                 12**

Sampling concepts- Sample vs Census – Non Sampling error-Sampling Techniques  –  Probability and Non–probability sampling methods- Determination of Sample size- Types of Measurement Scales; Attitude; Classification of Scales: Single item vs Multiple Item scale, Comparative vs Non-Comparative scales, Measurement Error, Criteria for Good Measurement.

**UNIT  IV          DATA PROCESSING AND ANALYSIS THROUGH SPSS      12**

Data Processing Operations– editing – Coding –Data entry – Classification and Tabulation of Data – Univariate and Bivariate Analysis of Data: Descriptive vs Inferential Analysis – Chi-square Analysis – Analysis of Variance – t test – Procedure for testing hypothesis

**UNIT  V            REPORT DESIGN AND WRITING                    12**

Introduction - Research Report - Different types – Criteria of Good Research -Structure of the research report – Title, Table of Contents – Synopsis, bibliography - Introductory Section –Research

Design – Result Section – Recommendation & Implementation Section- - Bibliography – Citation rules Research ethics – Research databases –research metrics – Publication ethics – Use of plagiarism software – Turnitin – Urkund and open source software tools

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1     : Demonstrate how research to be conducted in a systematic way

CO – 2     : Develop hypothesis and understand procedure for experimenting hypothesis

CO – 3     : Construct a questionnaire, interpret the results with the help of various statistical tools

CO – 4     : Analysis the data using the SPSS software

CO – 5     : Discuss the Researchers Ethical code and plagiarism software tools

**TEXT BOOKS:**

1. Kothari, C.R., Research Methodology", Methods and Techniques, New Age International, 6th Edition, 2010.

**REFERENCE BOOKS:**

1. Panneerselvam, R., "Research Methodology", Prentice-Hall of India, New Delhi, 7$^{Th}$ Edition, 2004.

2. Donald R. Cooper, Pamela S. Schindler and J K Sharma, Business Research methods,11$^{th}$ Edition, Tata McGraw Hill, New Delhi, 20 .

**WEB SOURCES:**

1. https://nptel.ac.in/courses/121106007
2. https://nptel.ac.in/courses/110107080
3. https://www.sagepub.com/sites/default/files/upm-binaries/36330_Chapter2.pdf
4. https://www.youtube.com/watch?v=LKH1Kp7TQA4

**21CMBN24**              **MARKETING MANAGEMENT**              **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To understand the basics of market, marketing, marketing environment and business environment and its domain knowledge.
- To understand the core concepts in marketing concepts, critical thinking, problem solving an analysis

**UNIT  I          INTRODUCTION                               12**

Understanding the term Marketing-Importance of Marketing-Scope of Marketing-Core Concepts-Company Orientation toward marketplace-Marketing and Customer Value-Marketing Environment-Micro and Macro Environment.

**UNIT  II          CONSUMER MARKETS                         12**

Consumer Markets: Model of Consumer Behavior, Seven Os Structure, Factors Affecting Consumer Behavior, Stages in the Adoption Process, Industrial Markets -Characteristics, Industrial Buyer Behavior, Service Marketing-Characteristics-Marketing Strategy.

**UNIT  III          MARKET SEGMENTATION                    12**

Market Segmentation: Levels and Bases for Segmentation, Segmenting Consumer Markets, Business Markets, Market Targeting -Evaluating Market Segments -Product Positioning for competitive advantage, Positioning Strategies.

**UNIT  IV          MARKETING PROGRAMME                    12**

Marketing Programme: Decisions Involved in Product, Branding, Packaging, Product Extension Strategies - Product Line and Product Mix Decisions, New Product Development, Product Life Cycle. Pricing Products, Strategies, Distribution -Channels, Channel Management Decisions, Promotion Mix - Advertising, Sales Promotion, Public Relations, Personal Selling, Promotion Decisions, Place.

**UNIT  V          MARKETING RESEARCH                       12**

Marketing Research and Control: Marketing Research – Course Objectives: & Scope – Research designs – research procedure – data types & sources, sampling techniques, analysis & reporting. Demand Measurement and Sales Forecasting Methods, Estimating Current and Future Demand. Annual Plan Control, Efficiency Control, Profitability Control and Strategic Control, Marketing

Audit, <mark>Online Marketing</mark>. Ethics in marketing.**Case study**: Marketing strategy Implementation; Market Segmentation / Targeting / Positioning; Product Levels, Pricing

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Relate the <mark>corporate function of marketing.</mark>

CO – 2      : Outline the <mark>macro and micro environment</mark> in the company's marketing function.

CO – 3      : Differentiate the <mark>consumer and institutional buyer behaviour.</mark>

CO – 4      : Compare and contrast <mark>goods and services</mark>.

CO – 5      : Define the <mark>target segments for the products</mark>

**TEXT BOOKS:**

1. Philip Kotler and Kevin Lane Keller, Marketing Management, PHI 14th Edition, 20 2. KS Chandrasekar, "Marketing management-Text and Cases", Tata McGraw-Hill-Vijaynicole, First edition, 2010.

2. Lamb, Hair and McDaniel, Marketing, 8th Edition, Thomson Learning, 2005, Rajan Saxena, Marketing management, TMH, 2006.

**REFERENCE BOOKS:**

1. Keith Blois, Marketing, Oxford University Press, 2005.

2. Ramaswamy V.S. Namakumari S, Marketing Management - The Indian Context, Macmillan India Ltd, 2006.

**WEB SOURCES:**

1. https://www.iedunote.com/marketing-management#:~:text=Marketing%20management%20is%20the%20process,satisfy%20individual%20and%20organizational%20goals.

2. https://www.economicsdiscussion.net/marketing-management/what-is-marketing-management/31788

3. https://www.indeed.com/hire/c/info/marketing-management

**21CMBN25**           **QUANTITATIVE TECHNIQUES**        **3 1 0 4**

**COURSE OBJECTIVE: ( Employability)**

- To acquaint the student with the applications of Statistics and Operations Research to business and industry

- To help them to grasp the significance of analytical techniques in decision making.

- To test on the application of Operations Research to business related problems.

**UNITI**           **LINEAR PROGRAMMING**           **12**

Operations Research – Linear programming (LP) – Formulation – Graphical Solutions – Simplex Method – Duality Concepts – Sensitivity Analysis – Using Excel solver to solve LP Problems

**UNITII**           **TRANSPORTATION AND ASSIGNMENT**        **12**

Transportation Model – Initial Solution: North West Corner Rule, Least Cost Method, Vogel's Approximation method – Assignment Problem.

**UNITIII**           **NETWORK MODELS**           **12**

Network Models – Shortest Path Problem: PERT & CPM – Maximum Flow Problem – Minimum Spanning Tree

**UNITIV**           **GAME THEORY**           **12**

Game Theory – Game – Zero-sum games and Non-zero sum games – Pure & Mixed Strategy – Maximin–Minimax Principle – Dominance Property.

**UNITV**           **QUEUING & SIMULATION**           **12**

Queuing System – Four elements – Kendall's Notation – Queuing models – Birth and Death Model– Simulation– Type: Discrete and Continuous simulation – Simulation models

                                                       **TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1       : Construct linear programming models and explain the solution.

CO – 2       : Synthesize and evaluate transportation, assignment problems

CO – 3       : Synthesize and evaluate network models

CO – 4       : Synthesize and assess game theory

CO – 5       : Evaluate the Queuing System

**TEXT BOOKS:**

1. Tulsian, P. C., Vishal Pandey, Quantitative Techniques – Theory and Problems, Pearson Publications,2006.

2. Sankar P. Iyer, Operations Research, Tata McGraw-Hill Education,2008

**REFERENCE BOOKS:**

1. Hamdy A. Taha, Operations Research-An introduction, Pearson Education, 8th Edition / Prentice Hall of India,2007.

2. A.Ravindren,DonT.PhillipsandJamesJ.Solberg,OperationsResearchPrinciplesand Practice, John Wiley and Sons, 2nd edition, 2000.

**WEBSITES:**

1. https://www.britannica.com/science/linear-programming-mathematics

2. https://www.iitg.ac.in/skbose/qbook/qbook.html

**WEB SOURCES:**

1. https://www.slideshare.net/beautifulneha/transportation-problem-in-operational-research

2. https://www.slideshare.net/benghuid/game-theory-6705811

**21CMBN26**                    **BUSINESS INTELLIGENCE**                    **4 0 0 4**

**COURSE OBJECTIVE:** (Employability)

- To introduce the Business Intelligence methods that support the decision process in business operations.
- To analyze data to improve business performance through Business Intelligence methods.

**UNIT  I          INTRODUCTION                                    12**

Business Intelligence: Definition and Concept – Process Flow of Business Intelligence – Data, Information and Knowledge – Business Intelligence and Related Technologies Such as Data Warehousing and Data Mining – Business Intelligence Capabilities

**UNIT  II         BUSINESS INTELLIGENCE & ANALYTICS STRATEGY       12**

Business Analytics Vs. Business Intelligence – Business Intelligence & Analytics Strategy – Business Analytics (BA) Model – Business Analytics at the strategic level – Strategy and Business Analytics: Four Scenarios

**UNIT  III        DATA WAREHOUSING                                 12**

Business Intelligence or Analytics at Data Warehouse Level – Descriptive Analytics: Data Warehouse – Extract, Transform and Load (ETL) processes – The types of data warehouse – Architecture and Processes in a Data Warehouse

**UNIT  IV         DATA MINING                                      12**

Business Intelligence or Analytics at Analytical level – Analyst's Role in Business Analytics Model – Statistics Vs. Data Mining – Predictive Analytics: Data Mining – Data MiningTasks (Descriptive, Predictive) – Learning methods (Unsupervised, Supervised) – Data Mining Algorithm or Techniques or Tools

**UNIT  V          BUSINESS INTELLIGENCE                            12**

Business Intelligence Architectures: The major components – Cycle of Business Intelligence Analysis – Development of Business Intelligence System: Phases – Business Intelligence Tools – Business Intelligence Applications

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1 : Relate Business Intelligence with appropriate technologies.

CO – 2 : Discriminate Business Intelligence and Analytics Strategy.

CO – 3 : Appraise descriptive analytics and its components.

CO – 4    : Assess Data Mining Algorithm

CO – 5      : Assess and evaluate Development phases of Business Intelligence System

**TEXT BOOKS:**

1. Rajiv Sabherwal, Irma Becerra-Fernandez, Business Intelligence: Practices, Technologies, and Management, John Wiley & Sons, 2011

2. Carlo Vercellis, Business Intelligence: Data Mining and Optimization for Decision Making, John Wiley & Sons Ltd., 2009.

**REFERENCE BOOKS:**

1. Gert H.N. Laursen, Jesper Thorlund, Business Analytics for Managers: Taking Business Intelligence beyond reporting, Wiley and SAS Business Series, 2010.

2. Ramesh Sharda, Dursun Delen, Efraim Turban, Business Intelligence and Analytics – Systems for Decision Support, Pearson, 10th Edition, 2014.

**WEBSITES:**

1. https://www.datapine.com/articles/best-bi-tools-software-review-list

2. https://www.talend.com/resources/what-is-data-warehouse/

**WEB SOURCES:**

1. https://www.talend.com/resources/what-is-data-mining/

2. https://www.researchgate.net/figure/Figure21-Business-Intelligence-Architecture_fig1_319458909

**21CMBN27**                 **DATA CLEANING, NORMALIZATION AND DATA MINING**                 **4 0 0 4**

**COURSE OBJECTIVE: (Employability)**

- To understand and interpret a business objective, and translate the business objective to data mining objectives.
- To apply the data cleaning and normalization for data set in achieving business objectives.
- To apply the appropriate data mining techniques to match a business objective.

**UNIT  I          INTRODUCTION                                                      12**

Knowledge Discovery from Data (KDD) or Data mining – Data mining as a step in the process of knowledge discovery – Architecture of a typical data mining system – Data repositories such as Database Management System (DBMS), Data Warehouses, Transactional Databases – Data Mining Functionalities: Patterns – Data mining tasks – Classification of Data Mining Systems

**UNIT  II          DATA CLEANING                                                    12**

Data Cleaning – Missing Values: methods – Noisy Data: data smoothing techniques such as Binning, Regression and Clustering – Data Cleaning as a Process: discrepancy detection and data transformations – Discrepancy detection tools such as Data scrubbing Data auditing – Data transformations tools such as Data migration and ETL (extraction/transformation/loading)

**UNIT  III          DATA QUALITY                                                    12**

Data Quality: Meaning and Definition – End to-End Data Quality: The Data Quality Continuum – Data Quality Process – Measuring Data Quality: Components and Their Measurement – Data monitoring – Total Data Quality Management

**UNIT  IV          DATA WAREHOUSE & NORMALIZATION                          12**

Data integration such as a data warehouse – Extract/ Transform / Load (ETL) – OLTP and OLAP – From Data Warehousing to Data Mining; Data transformations, such as normalization – Methods for data normalization such as min-max normalization, z-score normalization and normalization by decimal scaling

**UNIT  V          TOOLS & APPLICATIONS                                           12**

Data Mining tools: Classification and Prediction Method – Classification by Decision Tree, Neural networks, Association rules – Prediction by Regression – Clustering Analysis; Applications in various sectors

**TOTAL: 60 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1     : Construct a <mark>typical data mining system</mark>

CO – 2     : Evaluate and <mark>design data cleaning process</mark>

CO – 3     : Assess the <mark>Data Quality Management</mark>

CO – 4     : Explain <mark>data warehouse and normalization</mark>.

CO – 5     : Evaluate <mark>data mining tools and predict</mark> the output using the Regression
                Methods

**TEXT BOOKS:**

1. Jaiwei Ham and Micheline Kamber, Data Mining Concepts and techniques, Kauffmann Publishers, 2006

2. Tamraparni Dasu and Theodore Johnson, Exploratory Data Mining and Data Cleaning John Wiley & Sons, Inc., Hoboken, New Jersey, 2003.

**REFERENCE BOOKS:**

1. Jiawei Han and Micheline Kamber, Data Mining: Concepts and Techniques. Morgan Kaufmann Publishers, 2006.

**WEBSITES:**

1. https://www.tableau.com/learn/articles/data-cleaning

2. https://www.javatpoint.com/dbms-architecture

**WEB SOURCES:**

1. https://monkeylearn.com/data-mining-tools/

2. https://www.geeksforgeeks.org/data-transformation-in-data-mining/

**21PMBN21**                    **SPREADSHEET MODELLING**          **0  0  2  1**

**COURSE OBJECTIVE: ( Employability)**

> This course will cover all aspects of creating spreadsheet, performing calculations, formatting, some very widely used formulas.

> It will enable the students to create, build models and customize graphs, develop advanced solutions on the worksheet in the areas of marketing, finance, statistics, production and human resource and to assemble the proper Excel tools.

**UNIT –I**                    **INTRODUCTION**                    **12**

Module: Introduction to Spreadsheet Modeling–Formulas/Formatting/Printing/Functions Cell references, Lookup tables, Linking disparate workbooks, Dynamic linking, updating links, data validation, Goal seek, Pivot table, Sorting, Charting and filtering and protecting spreadsheets.

**UNIT – II**            **SPREADSHEET MODELLING IN SALES AND MARKETING**          **12**

New product decision making –  Sales and marketing data analysis.

**UNIT – III    SPREADSHEET MODELLINGIN FINANCE    12**

Forecasting financial statements – Capital budgeting decisions, Bond valuation , Stock valuation, Break even analysis, Budgeting, Ratio analysis, Sensitivity analysis, Simulation analysis, Portfolio construction and Working capital.

**UNIT – IV    SPREADSHEET  MODELLING IN STATISTICS    12**

Measures of central tendency,  t test,  ANOVA,  Correlation,  Regression and Timeseries analysis.

**UNIT – V SPREADSHEET MODELLING IN PRODUCTION AND HUMAN RESOURCE 12**

ABC analysis,  Economic order quantity,  Production budget– Employee and payroll decision making.for European and American options, including Black-Scholes option formula and binomial trees.

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Understand the basic features of Excel spreadsheet functions.

CO – 2      : Analyse and provide optimal solutions for the financial problems

CO – 3      : Understand the pricing tools

CO – 4      : Use the advanced tools of Excel

CO – 5      : Record and build Excel Macros for implementing advanced functionalities

**TEXTBOOKS:**

1. Walkenbach ,John. Excel Bible. NewDelhi: Wiley India Pvt Ltd. 2nd edition, 2010
2. MacDonald, Mathew.. Excel: The Missing Manual. Sebastopol : O'reilly. 2ndedition, 2010

**REFERENCES:**

1. Ragsdale, Cliff.T, Spreadsheet Modelling and Decision Analysis. NewYork: Thomsonsouth – western publications. .6thedition, 2008
2. Monahan,GeorgeE. Management Decision Making: SpreadSheet, Modelling, Analysis.London: CambridgeUniversity.8thedition,2000

**21PMBN22**        **DATA VISUALIZATION USING PYTHON (IBM)**        **0 0 2 1**

Introduction to Python **: ( Employability**)

- Python and Anaconda Installation, Introduction to Jupyter Notebook and Python scripting basics

Numpy and Pandas

- Numpy overview – Creating and Accessing Numpy Arrays
- Introduction to Pandas, Pandas read and write csv
- Descriptive statistics using Pandas
- Pandas working with text data and datetime columns, Pandas Indexing and selecting data, Pandas – groupby and Merge / Join datasets

Introduction to Data Visualization Tools in Python

- Introduction to Mat plotlib and read a CSV and Generate a line plot with

matplotlibVisualization Tools using mat plotib

- Basic – Area Plots, Bar Charts, Histograms
- Specialized – Pie Charts, Box Plots, Scatter Plots and Bubble Plots
- Advanced – Waffle Charts and Word Clouds

Introduction to Seaborn

- Seaborn functionalities and usage with Hands-on

Spatial Visualizations and Analysis in Python with Folium

- Introduction to Folium and Case Study (Analyze New York City Taxi Trip Ride Data Set to Identify best locations for taxi
- stops)

**COURSE OUTCOMES:**

CO – 1      : Understand Jupyter notebook and Python

CO – 2      : Use Numpy functions for scientific studies

CO – 3      : Use Pandas for data manipulation skills and analysis

CO – 4      : Create the different types of plot using matplotib.

CO – 5      : Demonstrate data using Python with Folium

### COURSE OBJECTIVE: (Employability)

The internship module aims to provide the student with:

- A practice-oriented and 'hands-on' working experience in the real world or industry, and to enhance the student's learning experience.

- An opportunity to develop a right work attitude, self-confidence, interpersonal skills and ability to work as a team in a real organisational setting.

- An opportunity to further develop and enhance operational, customer service and other life-long knowledge and skills in a real world work environment.

- Pre-employment training opportunities and an opportunity for the company or organisation to assess the performance of the student and to offer the student an employmentopportunity after his/her graduation, if it deems fit.

### COURSE OUTCOMES:

At the end of the course, a student will be able to

CO -1: Understanding the application of knowledge and skill sets acquired from the course andworkplace in the assigned job function/s.

CO – 2: Applying real life challenges in the workplace by analyzing work environment andconditions, and selecting appropriate skill sets acquired from the course.

CO – 3: Create critical thinking and problem-solving skills by analyzing underlying issue/s tochallenges.

CO – 4: Understanding the ability to harness resources by analyzing challenges and consideringopportunities.

CO – 5: Understanding appreciation and respect for diverse groups of professionals by engagingharmoniously with different company stakeholders.

**21EMBN01**  ADVANCED RESEARCH METHODS AND PREDICTIVE ANALYSIS  **3 0 0 3**

## COURSE OBJECTIVE: : ( Employability)

- To engage in a range of learning activities, with an emphasis on problem-based learning focusing on the application of data analysis techniques for addressing the research questions at the heart of their own research projects.
- To describe the data analysis using the advanced statistical techniques.

**UNIT I  CONCEPTUAL FOUNDATIONS OF RESEARCH  9**

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.

**UNIT II  SAMPLING DESIGN AND TOOLS  9**

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  9**

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

**UNIT IV  PREDICTIVE ANALYSIS – I  9**

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  PREDICTIVE ANALYSIS – II  9**

**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 integratedmoving average). Application of predictive analytics in retail, direct marketing, health care, financial services, insurance, supply chain, etc.

**TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Understand appropriate and relevant fundamental of research.

CO – 2      : Demonstrate a capacity to employ a variety of research design.

CO – 3      : Understand the Types of sampling

CO – 4      : Determine the sample size.

CO – 5      : Demonstrate the multivariate methods.

**TEXT BOOKS:**

1. Donald R. Cooper, Pamela S. Schindler and J K Sharma, Business Research methods, 11th Edition, Tata McGraw Hill, New Delhi, 2012.

2. Alan Bryman and Emma Bell, Business Research methods, 3rd Edition, Oxford University Press, New Delhi, 2011.

**REFERENCE BOOKS:**

1. Uma Sekaran and Roger Bougie, Research methods for Business, 5th Edition, Wiley India, New Delhi, 2012.

2. William G Zikmund, Barry J Babin, Jon C.Carr, AtanuAdhikari,Mitch Griffin, Business Research methods, A South Asian Perspective, 8th Edition, Cengage Learning, New Delhi, 2012.

**WEBSITES:**

1. https://www.upgrad.com/blog/normalization-in-data-mining/

2. https://www.kaggle.com/rtatman/data-cleaning-challenge-scale-and-normalize-data.

**WEB SOURCES:**

1. https://www.tutorialandexample.com/data-cleaning-in-data-mining/

2. https://www.geeksforgeeks.org/data-normalization-in-data-mining/

**21EMBN04**                    **SUPPLY CHAIN ANALYTICS**                    **3 0 0 3**

**COURSE OBJECTIVE: : ( Employability)**

- To provide foundational knowledge associated with the supply chain analytics
- To describe the various tools and techniques for implementation of analytics based on the supply chain drivers such as location, logistics and inventory
- To provide the applications of analytics in supply chain

**UNIT  I          INTRODUCTION                                           9**

Introduction – Supply Chain – Supply Chain Operations Reference (SCOR) Model – Decisions and Performance Measures in Supply Chain – Overview on Supply Chain, Analytics and Supply Chain Analytics – KPIs for Supply Chain Analytics

**UNIT  II          DESCRIPTIVE ANALYTICS                              9**

Introduction – Descriptive Analytics in Supply Chain – Business Intelligence in Supply Chain – Descriptive Analytics Techniques: Dashboard, Reporting, Data Visualization

**UNIT  III          PREDICTIVE ANALYTICS                             9**

Introduction – Predictive Analytics in Supply Chain: Demand, Pricing and Risk – Predictive Analytics Techniques: Regression, Time Series Analysis, Simulation

**UNIT  IV          PRESCRIPTIVE ANALYTICS – I                     9**

Introduction – Prescriptive Analytics in Supply Chain – Optimization – Classification of optimization problems – Optimization for Analytics – Operations Research Techniques for Analytics

**UNIT  V          PRESCRIPTIVE ANALYTICS – II                    9**

Supply Planning: Aggregate Production Planning (APP) and Pricing – Plant/Warehousing Decisions: Location Models – Logistics Decisions: Network Models – Inventory Models – Sourcing Decisions: Analytic Hierarchy Process

**TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1     : Understand the SCOR Model for Analytics.

CO – 2     : Identify the different type of analytics in supply chain.

CO – 3     : Illustrate the predictive models for analytics.

CO – 4 : Describe the different prescriptive models in supply chain

CO – 5 : Design the analytics using Simulation for supply chain.

**TEXT BOOKS:**

1. James R. Evans., Business Analytics – Methods, Models and Decisions, Pearson Publications, 1st Edition, 2012.

2. G.V.Shenoy,U.K.Srivastava,S.C.Sharma, Operations Research for Management, New Age International,Revised 2nd Ed, 2005.

**REFERENCE BOOKS:**

1. Gerad Feigin, Supply Chain planning and analytics – The right product in the right place at the right time, Business Expert Press, 2011

2. Peter Bolstorff, Robert G. Rosenbaum, Supply Chain Excellence: A Handbook for Dramatic Improvement Using the SCOR Model, AMACOM Div American Mgmt Assn, 2007

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, 2011

**WEB SOURCE:**

1. https://scg-lm.s3.amazonaws.com/pdfs/opentext-wp-dummies-guide-to-sca-100318.pdf

2. https://www.perlego.com/book/2011683/supply-chain-analytics-using-data-to-optimise-supply-chain-processes-pdf

3. https://www.routledge.com/Supply-Chain-Analytics-Using-Data-to-Optimise-Supply-Chain-Processes/Robertson/p/book/9780367540067

4. https://www.researchgate.net/publication/340169982_Big_Data_Analytics_and_Its_Applications_in_Supply_Chain_Management

**21EMBN06**     **MARKETING AND RETAIL ANALYTICS**     **3 0 0 3**

**COURSE OBJECTIVE: (Employability)**

- To create an understanding of the use of analytics in Marketing and Retail Management.
- To use the predictive analysis in decision making.

**UNIT I     INTRODUCTION TO MARKETING     9**

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     9**

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     9**

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     9**

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     9**

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

**TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1     : To understand the market place and the changing consumer needs.

CO – 2     : To identify various methods followed build CRM practices.

CO – 3     : To recognize the various segments for a product.

CO – 4     : To identify the various positioning strategies followed by the companies.

CO – 5     : To compare and contrast products and services.

**TEXT BOOKS:**

1. Kotler, P., Keller, K. L. ,Koshy, A., Jha, M. Marketing Management: A South Asian Perspective. New Delhi: Pearson Education , 14th edn,.2013

2. Rajan, S. Marketing Management. India: New Delhi: Tata McGraw-Hill Education. 4th edn,2005

**REFERENCE BOOKS:**

1. Karunakaran, K..Marketing Management. New Delhi: Himalaya Publishing House. 3rd edition, 2013

2. Kumar, A., Meenakshi. Marketing Management. New Delhi: Vikas Publishing House Pvt Ltd. , 2nd edition,2013

3. Ramaswamy, V. S., Namakumari, S. Marketing Management Global Perspective, Indian Context. New Delhi: Macmillan India Limited. 3rd edition, 2009

**WEBSITES:**

1. https://www.greatlearning.in/academy/learn-for-free/courses/marketing-retail-analytics-advanced.

2. https://www.sas.com/en_in/training/offers/free-training.html.

**WEB SOURCES:**

1. https://monkeylearn.com/data-mining-tools/

2. https://www.geeksforgeeks.org/data-transformation-in-data-mining/

**21EMBN07**              **SOCIAL AND WEB ANALYTICS**              **3 0 0 3**

**COURSE OBJECTIVE:  (Employability)**

- To understand how big data principles implemented in Social media & Web
- To understand the data processing for Social media &Web analytics
- To describe the different metrics for Social media & Web analytics
- To understand the application for Social media & Web analytics

**UNIT  I           SOCIAL MEDIA                                                              9**

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                                                         9**

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         DATA STRUCTURE                                                     9**

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                                                          9**

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                                     9**

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)

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Recognize on the fundamental concepts of Social media.

CO – 2      : Recognize on the fundamental concepts of Web.

CO – 3      : Understand the implementation framework of web analytics.

CO – 4      : Explain the experimental methods in web data analytics.

CO – 5      : Recognize the types of data for Social media & Web analytics.

**TEXT BOOKS:**

1. AvinashKaushik, Web Analytics 2.0: The Art of Online Accountability and Science of Customer Centricity, John Wiley & Sons; Pap/Cdr edition (27 Oct 2009)

2. Tom Tullis, Bill Albert, Measuring the User Experience: Collecting, Analyzing, and Presenting Usability Metrics, Morgan Kaufmann; 1 edition (28 April 2008) .

**REFERENCE BOOKS:**

1. Jim Sterne, Social Media Metrics: How to Measure and Optimize Your Marketing Investment, John Wiley & Sons (16 April 2010)

2. Brian Clifton, Advanced Web Metrics with Google Analytics, John Wiley & Sons; 3rd Edition edition (30 Mar 2012)

**WEBSITES:**

1. https://www.ibm.com/topics/social-media-analytics.

2. https://www.searchenginejournal.com/10-great-social-web-analytics-tools/90629.

**WEB SOURCES:**

1. https://monkeylearn.com/data-mining-tools/

2. https://www.geeksforgeeks.org/data-transformation-in-data-mining/

| 21EMBN14 | TIME SERIES ANALYSIS | 3 0 0 3 |
|----------|---------------------|---------|

**COURSE OBJECTIVE: (Employability)**

- To provide students with an overview and in depth knowledge of quantitative techniques used for forecasting and their application.
- To understand the techniques that range from simple ones like moving averages and smoothing techniques to more sophisticated ones like regression models, ARIMA (and related) models, VAR and VECM models, Causality testing and ARCH and GARCH models to test volatility.

**UNIT  I        INTRODUCTION TO TIME SERIES ANALYSIS                    9**

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              9**

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)                     9**

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                                      9**

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

**UNIT  V        LINEAR TIME SERIES                                       9**

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

**TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Utilize the <mark>time series method</mark> to predict the future of sales in a concern.

CO – 2      : Record the <mark>cyclical variations</mark> of the market and its trend.

CO – 3      : Assess the <mark>degree of regression among the variables.</mark>

CO – 4      : Record and predict the <mark>seasonal variations</mark> of a product and its derivatives.

CO – 5      : Estimate the <mark>variance and regression</mark> in complex web of factors.

## TEXT BOOKS:

1. Wayne A. Woodward, Henry L. Gray, Alan C Elliott, Applied Time Series Analyses, October 26, 2011 by CRC Press.

2. K.Krishnamoorthy, Handbook of Statistical Distributions with Applications, Second Edition, November 6, 2015.

## REFERENCE BOOKS:

1. Jonathan D. Cryer,Kung-SikChan,Time Series Analysis: With Applications in R (Springer Texts in Statistics), second edition, November 17, 2010.

2. Sally Lesik, Applied Statistical Inference with MINITAB®, December 21, 2009

## WEBSITES:

1. https://www.tl.nist.gov/div898/handbook/pmc/section4/pmc4.htm.

2. https://www.aptech.com/blog/introduction-to-the-fundamentals-of-time-series-data-and-analysis.

## WEB SOURCES:

1. https://towardsdatascience.com/the-complete-guide-to-time-series-analysis-and-forecasting-70d476bfe775.

2. https://www.excelr.com/blog/data-science/forecasting/18-time-series-analysis-tactics-that-will-help-you-win-in-2020.

**21EMBN18** **BUSINESS FORECASTING** **3 0 0 3**

**COURSE OBJECTIVE: (Employability)**

- To understand the various concepts of the forecasting in the application of business
- To understand the various techniques of the forecasting
- To explain about the techniques employed in the operations planning

**UNIT I** **FORECASTING** **9**

Introduction – Objectives – Features of good forecasting – Nature and uses of forecasts – Forecasting and Decision Making – Types of Forecasts – The Art and Science of Forecasting – Process of Forecasting – Application of forecasting in Business

**UNIT II** **DATA** **9**

Introduction – Data Patterns: horizontal, trend, seasonal, and cyclical – Data for Forecasting: Data Warehouse and Cleaning – Data Transformations: Data Pattern and Appropriate Transformations – Patterns in Time Series Data

**UNIT III** **TECHNIQUE – I** **9**

Forecasting Techniques: Qualitative and Quantitative – Technique Selection – Delphi Method – Regression Analysis – Simple Regression: Linear Model – Assumptions of the Regression Model – Least Square Method – Multiple Regression – Curvilinear Regression

**UNIT IV** **TECHNIQUE – II** **9**

Smoothing Techniques: naive, averaging and smoothing – Averaging Models: Simple Average and Moving Average – Exponential Smoothing Models; Time series analysis – Trend Analysis – Linear Trend and Nonlinear Trend

**UNIT V** **FORECAST ERROR** **9**

Introduction – Accuracy – Measure – Cumulative sum of Forecast Errors (CFE) – Mean Absolute Deviation (MAD) – Mean Absolute Percent Error (MAPE) – Mean Squared Error (MSE) – Cost of Prediction Errors – Control of Forecasts: Control Charts

**TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1     : To explain about the techniques employed in the operations planning

CO – 2     : Identify the types of Forecasts.

CO – 3     : Understand the different types of Data Patterns.

CO – 4     : Understand about Data Pattern and Appropriate Transformations

CO – 5     : Identify the difference between qualitative and quantitative forecasting method.

**TEXT BOOKS:**

1. A. Reza Hoshmand, Business Forecasting – A Practical Approach, Second Edition, Routledge, Taylor & Francis, New York, 2010

2. Jae K Shim, Strategic Business Forecasting,Global Professional Publishing, 2009.

**REFERENCE BOOKS:**

1. Douglas C. Montgomery, Cheryl L. Jennings, Murat Kulahci, Introduction to Time Series Analysis and Forecasting, John Wiley & Sons, 2015

2. Michael Gilliland, Len Tashman, Udo Sglavo, Business Forecasting: Practical Problems and Solutions, John Wiley & Sons, 2016

**WEBSITES:**

1. https://www.projectmanager.com/blog/business-forecasting.

2. https://www.yourarticlelibrary.com/management/forecasting/business-forecasting/99685

**WEB SOURCES:**

1. https://www.investopedia.com/articles/financial-theory/11/basics-business-forcasting.asp

2. https://www.businessmanagementideas.com/business-forecasting/business-forecasting-meaning-steps-and-sources/3934.

**21EMBN30**            **CLOUD COMPUTING**            **3 0 0 3**

**COURSE OBJECTIVE:** (**Employability**)

- To provide foundational knowledge associated with the Cloud Computing.
- To provide the knowledge based on the development of Cloud Service.
- To describe the applications of Cloud Computing.
- To describe the applications of Collaborating using Cloud Service.
- To describe the applications of Collaborating using online.

**UNIT I**          **UNDERSTANDING CLOUD COMPUTING**          **9**

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

**UNIT II**          **DEVELOPING CLOUD SERVICES**          **9**

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**          **9**

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**          **9**

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**          **9**

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

                              **TOTAL: 45 HOURS**

**COURSE OUTCOMES:**

At the end of the course, the students will be able to:

CO – 1      : Recognize on the ==fundamental concepts of Cloud Computing==.

CO – 2      : Understand the ==Cloud Architecture and Storage==.

CO – 3      : Recognize on the ==fundamental concepts of Cloud Services==.

CO – 4      : Identify the ==development of Cloud Service==.

CO – 5      : Identify the ==applications of Cloud Computing.==

**TEXT BOOKS:**

1. Michael Miller, Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online,Que Publishing, August 2008.

**REFERENCE BOOKS:**

1. Haley Beard, 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, July 2008.

**WEBSITES:**

1. https://www.ibm.com/in-en/cloud/databases?p1=Search&p4=43700052658066598&p5=e&gclid=Cj0KCQjw5PGFBh C2ARIsAIFIMNdOgYmZXB2Nzy9nYDEqiQX27EIOsx8_dEkdKV1MmkOKPN3CFycgvH UaAjasEALw_wcB&gclsrc=aw.ds.

2. https://azure.microsoft.com/en-in/overview/what-is-cloud-computing.

**WEB SOURCES:**

1. https://www.tutorialspoint.com/cloud_computing/cloud_computing_overview.htm.

2. https://aws.amazon.com/what-is-cloud-computing.

**21PMBN31    PREDICTIVE MODELING USING IBM SPSS MODELER (IBM)  0  0  2  1**
**(Employability)**

- Prepare Data for Modeling
- Data Reduction: Principal Components
- Decision Trees / Rule Induction
- Neural Networks Support
- Vector Machines
- Linear Regression
- Cox Regression for Survival
- Data Time Series Analysis
- Logistic Regression
- Discriminant Analysis
- Bayesian Networks
- Finding the Best Model for Categorical Targets
- Finding the Best Model for Continuous Targets
- Getting the most from Models
- Introduction to Data Preparation

**COURSE OUTCOMES:**

CO – 1     : Understand the different types of Predictive Models

CO – 2     : Use Regression for prediction skills

CO – 3     : Use Time Series Analysis for prediction

CO – 4     : Create a Bayes Network Model.

CO – 5     : Demonstrate data using Decision Trees

**21PMBN32       DESCRIPTIVE ANALYTICS USING IBM COGNOS (IBM)    0 0 2 1**
**(Employability)**

Introduction to the Reporting Application

- Examine Report Studio and its interface
- Explore different report types
- Create a simple, sorted, and formatted report
- Explore how data items are added to queries

Create List Reports

- Format, group, and sort list reports
- Describe options for aggregating data
- Create a multi-fact query and a report with repeated data

Focus Reports using Filters

- Create filters to narrow the focus of reports and Examine detail and summary filters
- Determine when to apply filters on aggregate data

Create Crosstab Reports

- Format and sort crosstab reports
- Convert a list to a crosstab
- Create crosstabs using unrelated data items
- Create complex crosstabs using drag and drop functionality

Present Data Graphically

- Create charts containing peer and nested items
- Present data using different chart type options and Add context to charts
- Create and reuse custom chart palettes
- Present key data in a single dashboard report

**COURSE OUTCOMES:**

CO – 1      : Understand the reporting application skills

CO – 2      : Create a simple, sorted and formatted report

CO – 3      : Create List Reports

CO – 4      : Create Crosstab Reports.

CO – 5      : Demonstrate skills related to graph the data using Cognos BI

**21PMBN33      FOUNDATION COURSE IN BIG DATA AND HADOOP      0 0 2 1**
**(Employability)**

- Introduction To Hadoop & IBM Infosphere Big Insights

- Getting Started with HADOOP

- Basic HADOOP commands

- Running a sample map reduce program from command line.

- Introduction to Web Console, Big Sheets

- Getting started with Web console.

- Administering Big insights

- Working with HADOOP DISTRIBUTED FILE SYSTEM (HDFS)

- Create your first workbook.

- Running an application to generate data for a workbook and deploy the word count application.

**COURSE OUTCOMES:**

CO – 1      : Understand IBM Infosphere
CO – 2      : Understand the basic HADOOP commands
CO – 3      : Create a sample map reduce program from command line
CO – 4      : Create and develop skills for Web Console and Big Sheets.
CO – 5      : Demonstrate data for a workbook using Hadoop