GANDHI INSTITUTE OF TECHNOLOGY AND MANAGEMENT (GITAM)
(Deemed to be University)

VISAKHAPATNAM *HYDERABAD *BENGALURU
Accredited by NAAC with A+ Grade

CURRICULUM AND SYLLABUS

OF

Master of Business Administration
(Business Analytics)
(MBA – BA)

Master of Business Administration

(w.e.f. 2021-22 admitted batch)

1.0 ADMISSION

Admission into MBA (BA) Program of GITAM (Deemed to be University) is governed by GITAM (Deemed to be University) admission regulations.

2.0 ELIGIBILITY CRITERIA

Bachelor Degree or equivalent examination with 50% aggregate marks approved by GITAM University along with High score in CAT/XAT/MAT/GMAT/CMAT or High score in GIM Online Test (GOT).

3.0 CHOICE BASED CREDIT SYSTEM

Choice Based Credit System (CBCS) is introduced with effect from the admitted Batch of 2015-16 based on UGC guidelines in order to promote:

- Student Centered Learning
- Cafeteria approach
- Students to learn courses of their choice
- Students to learn at their own pace
- Inter-disciplinary learning

Learning goals/ objectives and outcomes are specified to indicate as to what a student shall be able to do at the end of the program.

4.1 STRUCTURE OF THE PROGRAM

The Program consists

4.1.1 Foundation Courses (compulsory) are designed and offered to give general exposure to a student in the relevant subject area and to improve communication skill set.

4.1.2 Core Courses (compulsory).

4.1.3 Discipline centric electives which

1.are supportive to the discipline

2.give expanded scope of the subject Intra Departmental Electives

3.give inter disciplinary exposure

4.Nurture the student skills Inter Departmental Electives

4.1.4 Open electives - which are of general nature and unrelated to the discipline to expose the student in areas such as general knowledge, personality development, economy, civil society, governance, etc.

Student has to choose ONE open elective courses, carrying **ONE** credit, from the options available during two years study period come under PCDs i.e. at any

Semester during first year or second year course of study.

Credits will be shown in IV Semester only. The courses will be chosen from Moocs, Course era, GITAM (Deemed to be University) offered open electives, BSE., & NSE certification courses. Out of which two courses are to be selected by the student. In case of students who got placement can choose any course from Moocs, Course Era, BSE & NSE, UGC Swayam certificate courses.

If the open elective course chosen other than GITAM (Deemed to be University) offered open electives, the student has to submit course cleared document/proof to the Institute along with exam material. Upon on that a viva voce examination/presentation will be conducted for awarding marks.

4.4. CREDITS: Each course is assigned a certain number of credits depending upon the number of contact hours (lectures & tutorials) per week.

In general, credits are assigned to the courses based on the following contact hours per week per trimester.

- One credit for each Lecture / Tutorial hour per week.
- One credit for two hours of practicals per week.
- Two credit for three (or more) hours of practicals per week.

Range of credits

Name of the course	**Range of credits**
Theory	2 to 6
Practical	2 to 3
Project Work	1 to 5
Professional Competency Development	1 or 2
Viva Voce	1 or 2
Seminar	1 or 2
Seminar	1 or 2

The curriculum of the Four Semester MBA program is designed to have a total of 248 credits. However, for the award of MBA degree, the students have to earn a minimum of 108 credits only as shown in Table –Program Structure**.**

Preparatory (Bridge) Course: Before the commencement of the program, the students will be sensitized on various topics that will make them confident to take up their relevant programs.

Preparatory Courses (Bridge Courses same as MBA General) offered are given below.

S. No.	Courses
1	Business, Government & Society
2	Economics
3	Perspectives on Entrepreneurship
4	Basic Mathematics & Statistics
5	Basics of Finance
6.	Understanding Financial Statements
7	Academic Writing
8	Case Analysis
9	Presentations

Note: The results of Preparatory (Bridge) Courses will not be reflected in the grade sheets

Credit distribution table

Name of the Course	No. of Courses	Total Credits	Percentage
a. Foundation/General Courses	14	48	
b. Core Courses	6	18	
c. Discipline Centric Electives	9	18	
i. within discipline	-	-	
ii. related discipline	-	-	
d. skill based	15	26	
e. open elective/contemporary course	3	3	
	47	**113**	

MEDIUM OF INSTRUCTION

The medium of instruction (including examinations and project reports) shall be English.

6.0 REGISTRATION

Every student has to register himself/herself for each semester individually at the time specified by the Institute / University.

7.0 ATTENDANCE REQUIREMENTS

A student whose attendance is less than 75% in all the courses put together in any Semester will not be permitted to attend the end- Semester examination and can be detained.
However, the Vice Chancellor on the recommendation of the Director of the University Institute may condone the shortage of attendance to the students whose attendance is between 76% and 66% on genuine medical grounds and on payment of prescribed fee. Any student with less than **76% attendance, even on medical grounds, will not be permitted to attend the end-Semester examination and can be detained.**

8.0 EVALUATION

The assessment of the student's performance in each course shall be based on continuous evaluation (CA) (50 Marks) and Semester-end examination (SEE) (50 Marks).
A student has to secure an aggregate of 40% in a course in the two components put together to be declared to have passed the course, subject to the condition that the candidate must have secured a minimum of 20 marks (i.e. 40%) in the theory component at the semester-end examination.
The marks for each component of assessment are as shown in the following table:

DETAILS OF ASSESSMENT PROCEDURE

S. No.	Component of assessment	Marks allotted	Type of assessment	Scheme of evaluation

1	**Theory/Practical**	**50**	**Continuous Evaluation**	1. Mid Semester examinations: Two mid examinations will be conducted for 20 marks each. Better of two will be considered for final 20 marks. If the student is absent for one Mid exam, the marks secured in the other mid exam will be considered as final marks. NO more re-examinations will be conducted under any circumstances except exceptional cases as approved by the HOI. 2.Coursera course/on line Course – 10 marks Student need to complete respective subject wise Coursera course/ online course listed by GIM/GITAM through online and required to submit the course completion certificate. Up on which student need to give presentation/viva for awarding marks up to 10. 1. Class room Presentations/Seminars / Case analysis/workshop/training/Assignments/survey/ project work : 20 marks
		50	**Semester-end Examination (SEE)**	Fifty (50) marks for Semester End Examinations Note: In respect of courses having practical, theory examination shall be for thirty (30) marks and practical exam for twenty (20) marks.
	Total	**100**		

2	Practical Courses like (100 % internal)	100	Continuous Evaluation	i. Record: (Ten) 10 marks ii. Quiz: Ten (10) marks. iii. Coursera: Ten (10) marks iv. Assignments / Lab Tasks / Written Test / Presentations: Ten (10) marks v. Lab Exam: Sixty (60) marks for two tests of 30 marks each (one at the mid-term and the other towards the end of the Semester) conducted by the concerned lab Teacher.
3	Project work (8 weeks) at III Semester	100	Continuous Evaluation	i. Project report carries 50 marks ii. Project viva voce carries 50 marks
4.	Social Project II Semester PCD	50	Continuous Evaluation	i. Project report carries 30 marks ii. Project viva voce carries 20 marks

- ***Class Attendance*** - 100% Attendance is a reflection of one's commitment, discipline, time management that facilitates continuous learning.
- ***Presentations/GDs*** - This is designed to shed inhibitions of public-speaking, within a controlled class-room environment.
- ***Case Analysis***- This is designed to improve analytical skills and proposal/ reflective writing skills.
- ***Field Projects/surveys*** - Application of theoretical knowledge to practical real- world problems, not only provides an end-solution, but reinforces confidence and zeal to take up bigger challenges. Field or industry projects help groom students to working environment.
- ***Research Papers*** - Research is the lifeblood of an educational institution, whose results contribute to the growth of the economy. Students are provided an opportunity to work with faculty in their desired discipline and generate research project/papers that can be published.
- ***Workshops/Training*** - 2 to 6 days workshops can be conducted as per the requirement of the Course
- ***Computer application*** - Usage of application or Developing a program, model, portal, application may be used for evaluation**.**

8.1 Semester End Examination:

Examinations are not the end, but a launching platform into brighter future. The knowledge gained during the Semester are tested through the Semester end-examinations. The duration of each Semester end-examination shall be for 3 hours as per existing rules.

Students are updated on the examination rules during admission and at regular intervals on university websites. Violation of norms regarding behaviour in the examination hall will attract severe penalty. Action, as per the University guidelines would be taken against students found copying in the examination halls.

Student shall not be absent for any of the end-term examinations conducted by the Institute. In case the student is absent, in exceptional cases on application, the Institute will decide the merits of the application on a case to case basis.

8.2 Duration and Pattern of Semester end Examination (Offline)
Duration of the Examination is 3 hours.

A. The following shall be the structure of question paper for courses with Case Studies

S.No.	Pattern	Marks
1.	**Section A: Five one-page answer questions (Five out of Eight questions to be answered).**	**5 X 2 marks = 10 marks**
2.	**Section B : Five Essay type questions (either or choice Questions from each UNIT)**	**5 X 6 marks = 30 marks**
3.	**Section C : One Case let (not more than 200 words)**	**1X10 =10 marks**
	Total	**50 marks**

A. The following shall be the structure of question paper for courses without Case Studies

S.No.	Pattern	Marks
1.	Section A: Five one-page answer questions (Five out of Eight questions to be answered).	5 X 2 marks = 10 marks
2.	Section B : Five Essay type questions (either or choice Questions from each UNIT)	5 X 8 marks = 40 marks
	Total	**50 marks**

B. The following shall be the structure of question paper for courses with numerical problems.

S.No.	Pattern	Marks
1.	Section A : Five questions (both theory / problems) (Five out of Eight questions to be answered).	5X 4 marks = 20 marks
2.	Section B : Problems/Theory questions (Five out of Eight questions to be answered)	5 X 6 marks = 30 marks
	Total	**50 marks**

Note : If the end exams are on- line, the duration and pattern of examination will be decided by the University and will be communicated to the students.

End Term Examination - General Marking Criteria

Well Below Expectations	(0-20%)	Little or no relevant material presented. Unclear or unsubstantiated arguments with very poor accuracy and understanding. Little evidence of achievement of the relevant stated learning outcomes of the course unit.
Below Expectations	(20-40%)	Reveals a weak understanding of fundamental concepts with no critical analysis. Produces answers which may contain factual and/or conceptual inadequacies. Provides poorly written answers that fail to address the question, or answers that are too brief to answer the question properly. Provides solutions to calculative questions that demonstrate inadequate analytical skills.
Meets Expectations	(40-60%)	Demonstrates good understanding of the material. Shows a basic knowledge of relevant literature but draws mainly on lecture material. Addresses the questions and demonstrates reasonable writing skills with some ability to structure the material logically. Provides solutions to calculative questions that demonstrate good analytical skills.
Exceeds Expectations	(60-80%)	Demonstrates an ability to integrate the concepts introduced and applies them to problems with some evidence of critical analysis. Shows evidence of reading beyond lecture notes that is appropriately analyzed and evaluated. Provides clear and competent answers to the questions, well written. Clearly presents solutions to calculative questions and demonstrates very good analytical skills.
Well Above Expectations	(80-100%)	Demonstrates the ability to evaluate concepts and assumptions critically and to thoughtfully apply concepts to problems. Demonstrates independent thinking and insight into theoretical issues. Shows evidence of extensive reading beyond the lecture notes and the ability to synthesize and integrate the relevant literature. Writes well and structures the response so as to provide a succinct, coherent and logical answer. Clearly presents solutions to calculative questions and demonstrates excellent analytical skills.

The assessments are designed with an objective to achieve the following outcomes:

Transferable and Employability skills	
1	Know how to use online learning resources: G-Learn, online journals, etc.
2	Communicate effectively using a range of media
3	Apply teamwork and leadership skills
4	Find, evaluate, synthesize & use information
5	Analyze real world situation critically
6	Reflect on their own professional development

7	Demonstrate professionalism & ethical awareness
8	Apply multidisciplinary approach to the context

Eligibility criteria to select Business Analytics and FinTech Electives Basket (for Other MBA Programs)

1. Minimum Number is 40% of the strength of the Batch or 15 students is required to run an elective course.
2. Students should have a minimum CGPA 6.5for Semester I & II.
3. Student Should have some programming background preferably in Python or R.
4. Students should have obtained 70% or more in Statistical Methods and Business Research Methodology Course.

Other Major Guidelines as per University Norms.

OVERVIEW OF CREDITS

Semester	Credits	PCD credits	Total Credits with PCD
Semester I	**26**	**3**	**29**
Semester II	**31**	**4**	**37**
Semester III	**24**	**2**	**26**
Semester IV	**21**	**5**	**26**
Total	**102**	**11**	**113**

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

The program aims at developing graduates who:

PEO 1	Are competent, creative, and highly valued professionals in industry, academia, or government.
PEO 2	Are flexible and adaptable in the workplace, possess the capacity to embrace new opportunities of emerging technologies, and embrace leadership and teamwork opportunities, all affording sustainable management careers.
PEO 3	Continue their professional development by obtaining advanced degrees in Management or other professional fields.
PEO 4	Act with global, ethical, societal, ecological, and commercial awareness expected of practicing management professionals.

PROGRAM OUTCOMES (POs) AND PROGRAM SPECIFIC OUTCOMES (PSOs):

The program will enable the students to:

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 approach.
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	Apply range of entrepreneurial skills in business decisions.
PO 7	Ability to recognize the need and adopt the knowledge of contemporary issues, and to engage in continuous learning.
PO 8	Evaluate opportunities and risks for operating businesses in the international context.
PO 9	Construct and communicate a logical, relevant, and professional quantitative assessment of business information in an effective manner
PO 10	Demonstrate comprehension of cross-cultural commonalities and differences in international business activities and customs
PO 11	Create, select, and apply appropriate techniques, resources, and modern management processes and IT tools to complex business problems and boundaries.
PO 12	Apply ethical principles and commit to professional ethics and responsibilities and norms of the management practices.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

After the culmination of the course students will be able to acquire:

PSO1	Use innovative application of analytics across different functional areas of management
PSO2	Employ the tools of business analytics to develop innovative solutions to business problems.

PROGRAM STRUCTURE
SEMESTER 1

S. №	Code	Level of course	Title of Course	Theory	Practical/ Viva Voce	Credits	Internal Assessment Marks	External Assessment Marks	Total Marks
1	MAN721	Skill based	Modelling with Spreadsheets	2	2	3	100	0	100
2	MAN711	Foundation	Statistical Methods for Managers	4		4	50	50	100
3	MMB705	Foundation	Managerial Economics	3		3	50	50	100
4	MMB707	Foundation	Organizational Behavior	3		3	50	50	100
5	MMB709	Foundation	Accounting for Managers	4		4	50	50	100
6	MMB723	Foundation	Information system for managers	2	2	3	100	0	100
7	MAN725		Programming for Analytics (100 % internals)	2	2	3	100	0	100
8	MAN713	Foundation	Softs Skills for Managers	3		3	50	50	100
		Total		**23**	**3**	**26**	**550**	**250**	**800**

Professional Competency Development (PCDs)

S. No.	Course Code	Course Level	Course	Sessions			Marks			Credits
				T	P	Total	CA	SEE	Total	
1	MMB802	Value Based	Soft Skills -1		2	2	50		50	1
2	MMB806	Value Based	Venture Discovery	2		2	100		100	2
			Total	2	2	**4**	**150**		**150**	**3**

SEMESTER 2

S. №.	Code	Level of course	Title of Course	Theory	Practical/ Viva Voce	Credits	Internal Assessment Marks	External Assessment Marks	Total Marks
1	MAN706	Skill Based	Data Mining and Data Warehousing	2	2	3	50	50	100
2	MMB704	Foundation	Financial Management	4		4	50	50	100
3	MMB706	Foundation	Business Research Methodology	3		3	50	50	100
4	MMB708	Foundation	Operations Management	4		4	50	50	100
5	MMB710	Foundation	Marketing Management	4		4	50	50	100
6	MMB712	Foundation	Human Resource Management	4		4	50	50	100
7	MMB714	Foundation	Organizational Communication	3		3	50	50	100

8	MMB716	Foundation	Innovation and Entrepreneurship	3		3	50	50	100
9	MAN794	Skill Based	Internship & Placement oriented activities	1		1	50	0	50
10	MAN796	Skill Based	Year End Viva Voce		**2**	2	100		100
			TOTAL CREDITS (excluding PCDs)	**28**	**3**	**31**	**550**	**400**	**950**

Professional Competency Development

PCDs

S. No.	**Course Code**	**Course Level**	**Course**	**Sessions**			**Marks**				**Credits**
				T	**P**	**Total**	**CA**		**SEE**	**Total**	
Instructor Lead Courses											
	PCDs	Skill Set	CBA 1		2	2	**1**	50		50	1
	PCDs	Value	Universal Human Values*	3		3		50	50	100	3
	MMB808		British English Course (BEC)	2		**2**	**1**	50		50	**1**
	PCDs	Value based	Social Project				**1**	50		50	**1**
			Total	5	2	7	**4**	200		250	**4**

*IndicatesNon-Credit Courses – Mandatory to complete and the student will be awardedPass/Fail but will not be part of CGPA.

Credit Indicates the number of hours that requires to be allotted for the course.

SEMESTER 3

S.№.	Code	Level of course	Title of Course	Theory	Practical/ VivaVoce	Credits	Internal Assessment Marks	External Assessment Marks	Total Marks
1	MMB801	Foundation	Strategic management	2	2	3	100	0	100
2	MAN801	Foundation	Big Data analytics	4		3	50	50	100
3	MAN803	Foundation	Predictive Analytics and Machine Learning for Business Managers	3		3	50	50	100
4	MAN805	Foundation	Visual Analytics	3		3	50	50	100

5		Elective 1		3		3	50	50	
6		Elective 2		3		3	50	50	
7		Elective 3		3		3	50	50	
8	MAN891	Summer Internship	6-8 weeks duration			3	100		100
		Total		**29**	**2**	**24**	**550**	**250**	**800**
	PCDs	**University**	**Soft Skills 2**		**2**	**1**	**50**		**50**
	PCDs	**Skill Set**	**Current Business Affairs (CBA) -2**	**2**		**1**	**50**		**50**
			TOTAL CREDITS (including PCDs)			**26**	**100**		**100**

MBA -BA Electives (Semester 3)					
Sl. No.	**Business Analytics Electives for MBA - BA**	**Credits**	**Internal**	**External**	**Functional**
1	AI & Machine Learning for Managers	3	100	0	Industry
2	Data Driven Change Management	3	50	50	HR
3	Supply Chain Analytics	3	50	50	OR
4	Data Analytics with R	3	100	0	Industry
5	Data Analytics with SPSS	3	100	0	Industry

6	Competency Mapping & Performance Analytics	3	50	50	HR
7	Data Analytics with Python	3	100	0	Industry
8	Marketing Analytics	3	50	50	Marketing
9	Finance & Risk Analytics	3	50	50	Finance
10	Credit Risk Analytics	3	50	50	Finance

Semester 4

S. №.	**Code**	**Level of course**	**Title of Course**	**Theory**	**Practical/ VivaVoce**	**Credits**	**Internal Assessment Marks**	**External Assessment Marks**	**Total Marks**
1	MAN802	Foundation	Web and social media analytics	2	2	3	50	50	100
2	MAN804	Foundation	Business Intelligence	3		3	50	50	100
3	MMB892	Comprehensive	Management Research Project	3		3	50	50	100
4		Elective 1		3		3	50	50	100
5		Elective 2		3		3	50	50	100
6		Elective 3		3		3	50	50	100
		Total		**18**	**2**		**550**	**250**	**600**

			Open Elective	50			**1**	50	50	**100**
			Contemporary Course- 1	50			**1**	50		**50**
			Contemporary Course- 2	50			**1**	50		**50**
	PCDs	University	Club Activity				**2***			**P/F**
	PCDs	Skill Set	Business Simulations		2		**2**			50
	PCDs	Skill Set	Spreadsheet Modelling		2		**1**			50
			TOTAL CREDITS(including PCDs)				26			

MBA -BA Electives (Semester 4)					
Sl. No.	**Business Analytics Electives for MBA - BA**	**Credits**	**Internal**	**External**	**Functional**
1	Decision Science	3	50	50	Industry
2	Project Management Tools & Techniques	3	50	50	OR
3	Simulation Modelling	3	50	50	OR
4	Marketing Research	3	50	50	Marketing
5	Data Science with Python	3	100	0	Industry
6	Retail Analytics	3	50	50	Marketing
7	HR Analytics	3	50	50	HR
8	Accounting Analytics	3	50	50	Finance

LIST OF PROFESSIONAL COMPETENCY DEVELOPMENT (PCDs)

S.№.	Title of course	Credits	
SEM1	Venture Development (Compulsory)	University	**2**
SEM1	Soft Skills 1	University	**1**
SEM 2	British English Course (BEC)	Skill Based	**1**
SEM 2	Universal Human Values	Value	**1***
SEM 2	Current Business Affairs (CBA)-1	Skill Based	**1**
SEM 2	Social Project	Value based	**1**
SEM 3	Soft Skills 2	University	**1**
SEM 3	Current Business Affairs (CBA)-2	Skill Based	**1**
SEM 4	Club Activity	University	**2***
SEM 4	Spreadsheet Modelling	Skill Based	**1**
SEM 4	Business Simulations	Skill Based	**2**
	Total		**11**

*Non Credit Courses – Mandatory to complete and the student will be awarded P/F but will not be part of CGPA**.** Out of 11 credits the student has to complete 7 credits.

LIST OF CONTEMPORARY COURSES (SEMESTER IV)

S. No.	**Course Code**	**CourseType**	**Course**	**Sessions**			**Marks**			**Credits**
				T	**P**	**Total**	**CA**	**SEE**	**Total**	
1.	MCC 801	Elective	CSR & Sustainable Development	2		2	50		50	2
0.	MCC 802	Elective	Social Innovation	2		2	50		50	2
0.	MCC 803	Elective	Behavioral Economics	2		2	50		50	2

0.			Marketing/Analytics	2		2	50		50	2
0.	MCC 807	Elective	Technological Entrepreneurship	2		2	50		50	2
1.	MCC 809	Elective	Alternative Investments	2		2	50		50	2
2.	MCC 810	Elective	Financial Metrics	1	2	2	50		50	2
3.	MCC 811	Elective	Sustainable Finance	2		2	50		50	2
4.	MCC 813	Elective	Behavioral Finance	1	2	2	50		50	2
5.		Elective	HR Metrics	2		2	50		50	2
6.		Elective	Psychometrics	2		2	50		50	2
7.		Elective	Personal Tax Planning	2		2	50		50	2

Semester-I

	MAN721	**Modelling with Spreadsheets**	L	T	P	J	S	C
			2		2			3
	Course Owner	Dept. of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

COURSE DESCRIPTION

Business uses various analytics to gain insight and establish a competitive advantage. Business Analytics are the tools used for such analysis. These tools analyze the past data and drive business planning. Analytics can be categorized as descriptive, predictive or prescriptive based on the type and technique used in analysis. Excel is a tool that helps in doing basic analytics tool.

COURSE OBJECTIVES

- To understand the advanced features of Excel
- To provide hands on experience in using Excel as analytic tool.

UNIT - I	**Excel for Descriptive Analytics**	**No of Hours: 9**
Data Visualization, Visualization tools in Excel, Other data visualization tools, Descriptive statistics in Excel, Statistical inference – Hypothesis testing, Analysis of Variance (ANOVA), Chi Square test for independence		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
● Describe and visualize different types of data.		L3
● Evaluate the best alternative for decision making.		L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, MS-Excel, Google Spreadsheet		
UNIT - II	**Excel for Predictive Analytics**	**No of Hours: 9**
Trend lines and Regression Analysis, Forecasting Techniques, Monte Carlo simulation – Concept, Usage in Excel		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Forecast or predict future data points / data trends.		L3
● Identify and evaluate various forecasting techniques.		L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, MS-Excel, Google Spreadsheet		

UNIT - III	**Excel for Prescriptive Analytics**	**No of Hours: 9**
Linear Optimization – Concept, Applications, Integer Optimization, Solver in Excel		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
● Apply optimization techniques to various business problems.		L3
● Evaluate and interpret the best alternatives for various business problems.		L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, MS-Excel, Google Spreadsheet		
UNIT - IV	**Introduction to Neural Network**	**No of Hours:9**
What is neural network? Why use neural network? Limitations of neural network? Model of neuron, Neural networks in Excel		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
● Understand and apply the concept of Neural Networks in business problems		L3
● Apply descriptive statistics in Excel		L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, MS-Excel, Google Spreadsheet		
UNIT - V	**Applications of Neural Networks**	**No of Hours: 9**
Design of Neural Network, Training of Neural Network, Neural Network Utilization		
Learning Outcomes:		

After completion of this unit, the student will be able to:	
● Designing and training of neural networks.	L3
● Application of neural networks for optimization and decision making.	L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, MS-Excel, Google Spreadsheet	
Course Outcomes • Use Excel as a descriptive analytics tool • Use Excel as a predictive analytics tool • Use solver to solve optimization problems • Working with Neural networks	
Textbook(s):	
1. Wayne L. Winston, Microsoft Excel - Data Analysis and Business Modeling, Prentice Hall of India	
Additional Reading	
Reference Book(s):	
1. Paul Mcfedris, Excel Data Analysis Visual Blueprint, Wiley	
2. Neural Networks on Excel, Tony Roberts	
Journal(s):	
1. JOURNAL OF BUSINESS ANALYTICS	
Website(s):	
1. Coursera	
2. Corporate Finance Institute	

Practical Experiments

Topics	**Type(Experiment, Project, Exercise)** Choose an item.
Data Visualization	Excel Based Visualization

Forecasting Techniques	Financial & Sales Forecasting, Monte Carlo Simulation
Optimization Techniques	Solver, What-if Analysis
Neural Networks	Designing and Training Neural Networks

Pedagogy tools:	**Practical**	**NPTEL**	**Practical**	
	Practical	**Practical**	**Practical**	

Components	**Term End Examination**	**Internal Examination**												
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
Marks	**0**	**20**	**20**	**20**	**20**	**20**								
Total Marks	**100**													

Text Books	**Topics**
1: Wayne L. Winston, Microsoft Excel - Data Analysis and Business Modeling, Prentice Hall of India	**All**
Additional Reading	

Reference Book(s):	**Topics**
1: Paul Mcfedris, Excel Data Analysis Visual Blueprint, Wiley	**All**
2: Neural Networks on Excel, Tony Roberts	**Unit IV & V**

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**3**	**2**	**0**	**1**	**1**	**2**	2	2								
CO2	**3**	**2**	**0**	**1**	**1**	**2**	2	2								
CO3	**3**	**2**	**0**	**1**	**1**	**2**	2	2								
CO4	**3**	**2**	**0**	**1**	**1**	**2**	**2**	**2**								

CO5	**3**	**3**	**0**	**3**	**3**	**3**	3	3								

1-Low, 2- Medium and 3- High Correlation

	MAN 711	**Statistical Methods for Managers**	**L**	**T**	**P**	**J**	**S**	**C**
			4					4
	Course owner	Dept. of Operations	Syllabus version				1.0	
	Course Pre-requisite(s)	NIL	Contact hours				60	
	Course Co-requisite(s)	NIL	Date Approved					
	Alternate Exposure							

Organizations are surrounded with numerical data and information. All of us in day-to-day routine use numbers in our calculations. Problems in business contain a great degree of quantitative element in the form of facts and figures. It is essential for managers to carry out data analysis and interpretation for effective decisions. In this context, they need to prepare quantitative arguments to justify their decisions. Decision making using statistical methods is the answer for accomplishing this purpose. APSM focuses on the role of Business Statistics in helping organizations take effective decisions with minimum risk.

Course Objectives

1. Understand and appreciate the most widely used tools of business statistics which form the basis for rational and sound business decisions
2. Apply basic statistical techniques to measure relative changes in price, production or any such quantities of economic interest.
3. Analyse statistical techniques to analyse business problems
4. Evaluate andmakedata-driven decisions
5. Applytime series analysis and measure different trends in data series and examine relationship between two quantitative variables

UNIT - I Probability **No of Hours:11**

Basics of Probability, Probability Rules, Additive Rule, Multiplication Rule, Marginal Probability, Joint Probability, and Bayes' Theorem.

Learning Outcomes:

After completion of this unit, the student will be able to

• Understand the basic concept of probability	L2
• Apply the probability rules in real life business problems	L3
• Analysethe addition, multiplication ofprobability theorem	L4
• Evaluatethe probability in real life business application	L5

Pedagogy tools: Classroom practice, Discussion, Presentations, Assignment, Quizzes, Graphs, Investigate, Diagrams, polls.

UNIT - II Probability Distributions **No of Hours: 12**

Discrete Probability Distribution, Expected Values, Expected Variance, Random Variable, Binomial Distribution, Poisson distribution, Continuous Probability Distribution, Normal Distribution.

Learning Outcomes:

After completion of this unit, the student will be able to

• Understandthe basic concepts of probability, discrete and continuous distribution.	L2
• Apply the probability distribution of discrete, continuous, binomial and Poisson in real life business application	L3
• Analyse the properties of normal distribution	L4
• Evaluate area under standard normal probability curve.	L5

Pedagogy tools: Classroom practice, Discussion, Presentations, Assignment, Quizzes, Graphs, Investigate, Diagrams, polls.

UNIT - III Measures Central Tendency No of Hours:13

Introduction to Measures central tendency, Merits, Demerits, Applications of Central Tendency, Grouped and Ungrouped data; Mean, Weighted Mean, Geometric Mean, Harmonic Mean, Combined Mean, Median, Mode.

Learning Outcomes:

After completion of this unit, the student will be able to

• Understand the basics of central tendency	L2
• Apply central tendency methods in real life business application.	L2
• Analyse measure of tendency in real life business application.	L4
• Evaluatethe combined mean, Geometric and Harmonic mean.	L5

Pedagogy tools: Classroom practice, Discussion, Presentations, Assignment, Quizzes, Graphs, Investigate, Diagrams, polls.

UNIT – IV Measures of Dispersion No of Hours: 12

Introduction to Measures of Dispersion, Merits and Demerits, Applications, Range, Quartile Deviation, Mean Deviation, Standard Deviation, Combined Standard Deviation, Coefficient of Variation for Grouped and Ungrouped data.

Learning Outcomes:

After completion of this unit, the student will be able to

• Understand the basics concept measure of dispersion.	L2
• Apply measure of dispersion methods in real life business application.	L3
• Analyse the mean absolute deviation and standard deviation.	L4

Pedagogy tools: Classroom practice, Discussion, Presentations, Assignment, Quizzes, Graphs, Investigate, Diagrams, polls.

UNIT - V Index Numbers No of Hours:12

Construction, Price and Quantity index numbers, Laspeyres', Paasche's, Edgeworth-Marshall's, Fisher's method, Relative methods, Chain base index number, Cost of living index number (CLI), Uses of CLI and its applications, Uses and limitations of index numbers

Learning Outcomes:
After completion of this unit, the student will be able to

• Understand the basics of concept index number.	L2
• Apply index methods in real life business problems.	L3
• Analysethe limitations of the index number in real life business application.	L4

Pedagogy tools: Classroom practice, Discussion, Presentations, Assignment, Quizzes, Graphs, Investigate, Diagrams, polls.

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Understand and appreciate the most widely used tools of business statistics which form the basis for rational and sound business decisions	A1
CO2	Focus on problem recognition and test hypothesis/model in the context of managerial decision-making.	A1, A2
CO3	Develop skills in analysis and interpretation of data	A2, A3
CO4	Handle challenging problems using appropriate analysis tool	A3
CO5	Understand the importance of various techniques for analyzing the statistical data.	A4

Textbook(s):

1. Gupta, S.C. & Gupta, I. (2012), Business Statistics, Mumbai: Himalaya Publishing House.
2. Levine, D.M., Berenson, M. L. & Stephan, D. (2012), Statistics for managers using Microsoft Excel, New Delhi: Prentice Hall India Pvt.
3. Aczel, A. D. &Sounderpandian, J. (2011), Complete Business Statistics, New Delhi: Tata McGraw Hill.
4. Anderson, D., Sweeney, D., Williams, T., Camm, J., & Cochran, J. (2013), Statistics for Business and Economics, New Delhi: Cengage Learning.
5. Davis, G., &Pecar, B. (2014), Business Statistics using Excel, New Delhi: Oxford University Press.

Additional Reading

***Reference books*:**

1. Trevor Hastie, Robert Tibshirani, Jerome Friedman, The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition, Springer
2. Sudha G. Purohit, Statistics Using R, Second Edition, Narosa Publications DalgaardPeter, Introductory Statistics with R, Second Edition, Springer

Website(s):
Onlinestatbook.com

	ProgrammeObjectives(POs)												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	1	0	0	1	0	2	1							
CO2	2	2	0	0	0	0	2	1							
CO3	2	3	0	0	1	0	1	2							
CO4	2	2	0	0	0	0	3	3							
CO5	2	2	0	0	0	0	1	0							

1-Low, 2- Medium and 3- High Correlation

	MMB 705	**Managerial Economics**	L	T	P	J		C
			3					3
	Course Owner	Dept. of Entrepreneurship	Syllabus version					1.0
	Course Pre-requisite(s)		Contact hours					45
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description:

In today's competitive business environment, effective managerial decision making requires use of economic concepts and tools. Business efficiency depends on minimization of cost and maximization of production which requires perfect understanding of the economic concepts like demand, supply, and production, cost and market conditions. Managerial economics uses economic concepts and principles by emphasizing on demand analysis, production & cost analysis and different market structures which are fundamental for further study. This course also introduces important macroeconomic concepts which are indispensable for understanding the functioning of an economy. Knowledge about those concepts is useful for timely business decisions.

Course Objectives

1. To comprehend the knowledge of key economic concepts which are used for effective business decision-making.
2. To make use of the conceptual knowledge of demand and supply in pricing decisions.
3. To combine the knowledge of costs and production to take efficient production decisions
4. To determine right output and price under different market structures both in private and public sectors.
5. To recognize the need for various government policies at macro economy level.

Unit I Introduction to Managerial Economics No of Hours- 09

Managerial Economics – Nature, scope, Principles of managerial economics – opportunity cost principle, incremental principle, principle of time perspective, discounting principle, equi-marginal principle - Differences between managerial economics and micro economics - Importance and application of managerial economics concepts in business decision making.

Learning Outcomes:

After completion of this unit, the student will be able to

- Define various concepts of Managerial Economic. L1
- Describe the nature and scope of managerial economics. L2
- Understand the principles of managerial economics. L3
- Differentiate micro and macroeconomics. L4
- Design the process of managerial decision-making. L5

Pedagogy tools: Blended Learning, Case Analysis, Situation Analysis, Group Discussion, Research Project, Student Presentations, Video lectures

Unit II Utility, Demand & Supply Analysis No of Hours- 09

Utility, Demand & Supply Analysis: Utility Concept, TU, MU and DMU. Determinants of demand, Types of demand –Law of Demand –Determinants of supply, law of supply - Market equilibrium - Price mechanism/Market mechanism with a graphical explanation. Elasticity of demand, types of elasticity, methods to measure elasticity –. Demand forecasting – Methods of demand forecasting - Qualitative Methods and - Quantitative methods.

Learning Outcomes:

After completion of this unit, the student will be able to

- Differentiate various concepts of utility
  L1
- Recognize various factors which influence demand and Supply
  L2
- Calculate various types of demand and supply elasticities
  L3
- Identify the equilibrium price conditions in a given market
  L4
- Compare and contrast various types of demand forecasting techniques
  L5

Pedagogy tools: Blended Learning, Case Analysis, Situation Analysis, Group Discussion, Research Project, Student Presentations, Video lectures

Unit IIIProduction and Cost Analysis No of Hours.09

Production and Cost Analysis: Production function, Laws of Production - Short run production function - Iso-quants - Iso-cost line - producer's equilibrium, expansion path. Long run production function- Law of returns to scale. Cost - Cost concepts and classifications, Cost output relation - short run cost output relationship, long run cost output relationship, Learning curve. Economies of scale, dis-economies of scale and economies of scope.

Learning Outcomes:

After completion of this unit, the student will be able to

- Understand the various production concepts L1
- Evaluate short run and long run production decisions L2
- Understand the various cost concepts L3
- Analyze the short run and long run cost output relations L4
- List out various economies and diseconomies of scale L5

Pedagogy tools: Blended Learning, Case Analysis, Situation Analysis, Group Discussion, Research Project, Student Presentations, Video lectures

Unit IV Market Structure No of Hours09

Market Structure - Basis for classification of market power, kinds of competitive market, Effect of time on supply – Very short run supply curve, short run supply curve and long run supply curve. Price and output decisions in perfect competition. Price and output determination in monopoly market. Price and output determination in monopolistic market. Price and output determination in Oligopoly market. Market Failures – public goods, social goods, merit goods, administered prices (ceiling price and floor price) and Externalities – Positive and negative externalities. Fundamentals of Internalization of externalities.

Learning Outcomes:

After completion of this unit, the student will be able to

- Compare and contrast various types of market structures L1
- Analyse the price and output decisions under perfect competitive conditions L2

- Analyse the price and output decisions under imperfect competitive conditions
  L3
- Compare and contrast pricing decisions in the short run and long run
  L4
- Examine and analyse the conditions in which market fails
  L5

Pedagogy tools: Blended Learning, Case Analysis, Situation Analysis, Group Discussion, Research Project, Student Presentations, Video lectures

Unit V Macroeconomics No of Hours- 09

Macroeconomics - Macroeconomic indicators-GDP growth rate, consumer price index, interest rate, unemployment, foreign exchange rate, Balance of payments (BOP) - National Income-Concepts of national income (GDP, GNP, NDP, NNP, Personal Income, Personal Savings, Disposable personal Income, Discretionary income) - Methods of calculating national income – Product Method- Final good and Value added method, Income method, Expenditure Method and Social Accounting Matrix, GDP at Purchasing Power Parity (PPP) - Inflation- causes-demand pull and cost push inflation, measures to control inflation, business cycles -phases of business cycles and measures to control business cycles - Stabilization policies – Monetary Policy and Fiscal Policy.

Learning Outcomes:

After completion of this unit, the student will be able to

- Differentiate various macroeconomic indicators
  L1
- Compare and contrast various methods of measuring national incomes
  L2
- Analyse theVarious stages of business cycles and its remedial measures
  L3
- Recognize types of inflation and its corrective measures
  L4
- Evaluate monetary and fiscal policy measures
  L5

Pedagogy tools: Blended Learning, Case Analysis, Situation Analysis, Group Discussion, Research Project, Student Presentations, Video lectures

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Discuss the nature and scope of business economics concepts	A1, A2, A4

	suitable to business problems	
CO2	Identify the differences between demand and supply conditions to balance the market forces through price mechanism and government interference	A1, A2, A3, A4
CO 3	Decide on suitable production quantities-based cost conditions to achieve economies of scale in long run business activities.	A2, A3, A4
CO 4	Assess the price and output decisions under various market structures in any form of business.	A2, A3, A4
CO 5	Evaluate the causes and effects of macroeconomic issues which effects business management decisions	A2, A3, A4

Textbooks:

1. Geetika, P.Ghosh, P.R.Choudhury, Managerial Economics, McGrawHill Education Private Limited, New Delhi, 2018/Latest Edition.

AdditionalReading :

Reference Books:

1. Dominick Salvatore, Seventh Edition, Adapted Version, OxfordPublication, New Delhi,2014/Latest Edition.
2. Dr.D.N.Dwivedi, Managerial Economics, Vikas Publishing House, New Delhi, 2015/Latest Edition.
3. Paul G. Keat, PhiliK. Y. Young, Sreejata Banerjee, “Managerial Economics", Pearson, New Delhi, 2012/Latest Edition.

Journals:

1 Economic and Political Weekly, SameekshaTrust, Mumbai

2. GITAM Journal of Management, GITAM Institute ofManagement, GITAM University,Visakhapatnam
3. Indian Journal of Economics, Academic Foundation, NewDelhi
4. GITAM Journal of Management
5. E- Books and E-Journals

Website(s):

	Programme Objectives (POs)												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	**1**	**0**	**0**	**1**	**0**	**0**	**1**	**0**							
CO2	**2**	**2**	**0**	**2**	**2**	**0**	**2**	**2**							
CO3	**2**	**2**	**2**	**2**	**2**	**1**	**1**	**2**							
CO4	**2**	**2**	**2**	**3**	**1**	**2**	**1**	**1**							
CO5	**2**	**2**	**0**	**2**	**1**	**1**	**2**	**2**							

1-Low, 2- Medium and 3- High Correlation

	MMB 707	**Organizational Behaviour**	L	T	P	J	S	C
			3					3
	Course Owner	Dept. of HRM	Syllabus version				1.0	

	Course Pre-requisite(s)		Contact hours	46
	Course Co-requisite(s)		Date Approved	
	Alternate Exposure			

Course Description:

Practicing managers have long understood the importance of interpersonal skills to managerial effectiveness. Till about three decades ago, most business schools focused on the functional aspects of management – specifically finance, accounting, and quantitative techniques. Though Organizational Behaviour was a core course right from the inception of the MBA program, the focus was essentially on gaining a psychological understanding of human behavior, and not on acquiring usable skills. In the last two decades, academia has come to realize the importance of human behavior to managerial effectiveness.

This course's essential focus is on gaining an in-depth understanding of the impact of the organization structure, organizational culture, and change on individual behavior at the workplace. Gaining an understanding and a perspective on these global implications should result in beneficial results in terms of managerial effectiveness and performance.

Course Objectives

1. To Demonstrate the applicability of organizational behavior to understand the behavior of people in the organization.
2. To Demonstrate the applicability of analyzing the complexities associated with the management of individual behavior in the organization.
3. To Analyse the complexities associated with the management of group behavior (Group Dynamics) in the organization.
4. To Demonstrate how organizational behavior can integrate into understanding the motivation, Organisational culture, organizational change, and managing stress for creating positive work culture.

UNIT - I Introduction No of Hours: 9

Interpersonal Skills in the Workplace - Manager's Functions, Roles & Skills - Effective versus Successful Managerial Activities

Definition of Organizational Behaviour - The Individual: Nature of Organizational Behaviour - Workforce Diversity - Biographical Characteristics - Ability – physical ability, intelligence. Attitude – Three Components of an Attitude - Major Job Attitudes - Job Satisfaction - Job Involvement - Psychological Empowerment - Organizational Commitment - Perceived Organizational Support - Employee Engagement.

Learning Outcomes:

After completion of this unit, the student will be able to

- Understand the concept of organizational behavior
  L3
- Analyse the nature of Individual behavior in organizations
  L4
- Understand the concept of employee engagement
  L2

Pedagogy tools: Blended learning, Lectures, Case Discussions and Presentations, Self-Awareness Exercises & Group Activities

UNIT - II Perception **No of Hours: 10**

Personality - Definition - Measurement - Determinants - Personality Traits - Myers-Briggs Type Indicator - Big Five Personality Model.

Perception - Factors of Perception - Attribution Theory - Perceptual Errors.

Motivation - Theories of Motivation – Maslow, Herzberg, Vroom, Goal-Setting Theory, And Equity Theory

Applications of Motivation - Job Characteristics Model - Job Rotation - Job Enlargement - Job Enrichment - Alternative Work Arrangements - Job Involvement Measures - Types of Variable Pay Programs - Flexible Benefits.

Learning Outcomes:

After completion of this unit, the student will be able to

- Understand the concepts of Personality, perception, and motivation
  L2
- Apply various theories of motivation at workplace L4

Pedagogy tools: Blended learning, Lectures, Case Discussions and Presentations, Self-Awareness Exercises & Group Activities

UNIT – III The Group **No of Hours: 9**

Nature of Groups - Types of Groups - Stages of Group Development - Group properties - Norms - Status - Group Size - Cohesiveness.

Leadership – Trait Theories - Behavioural Theories - Fiedler Contingency Model - Transformational Leadership.

Conflict – Traditional versus Interactionist view of Conflict - Types of Conflict - Three Loci of Conflict - The Conflict Process

Learning Outcomes:

After completion of this unit, the student will be able to

- Demonstrate the elements of group behavior L3
- Understand the various theories of leadership
  L2
- Examine the process of conflict management
  L3

Pedagogy tools: Blended learning, Case, video lectures, self-reading

UNIT – IV The Organization System No of Hours: 9

Organizational Structure - Six Elements - Work Specialization - Departmentalization - Chain of Command - Span of Control - Centralization and Decentralization - Formalization - Bureaucracy - Matrix - Boundaryless Organization - Virtual Organization

Organizational Culture - Common Characteristics - Functional and Dysfunctional Aspects of Organizational Culture on People - Creating a culture - How employees learn the culture.

Learning Outcomes:

After completion of this unit, the student will be able to

- Understand and analyze the elements of organization structure L2
- Analyse the various aspects of organizational culture
  L4
- Demonstrate how employees learn organizational culture
  L3

Pedagogy tools: Blended learning, Lectures, Case Discussions and Presentations, Self-Awareness Exercises & Group Activities

UNIT - V Organizational Change No of Hours: 9

Organizational Change - Forces for change - Planned change - Unplanned Change - Sources of Resistance to change

Managing organizational change - Lewin's Three-Step Model - Kotter's Eight-Step Plan for Implementing Change - Action Research - Organization Development

Work stress and its management - Sources of Stress - Consequences of Stress - Individual and Organizational Approaches to Managing Stress

Learning Outcomes:

After completion of this unit, the student will be able to

- Demonstrate change management
  L3
- Evaluate the various approaches to stress management in organizations
  L4

Pedagogy tools: Blended learning, Lectures, Case Discussions, and Presentations, Self-Awareness Exercises & Group Activities

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Demonstrate the applicability of the concept of organizational behavior to understand the behavior of people in the organization.	A1, A2
CO2	Demonstrate the applicability of analyzing the complexities associated with management of individual behavior in the organization.	A1, A2, A3
CO3	Analyze the complexities associated with management of the group behavior (Group Dynamics) in the organization.	A2, A3
CO4	Demonstrate how the organizational behavior can integrate in understanding the motivation, Organisational culture, organizational change and managing stress for creating positive work culture.	A2, A3

Textbook(s):

Robbins, SP, Judge, T, & Vohra, N, "Organizational Behavior", 19th Ed., Pearson Education, New Delhi, 2020

Additional Reading

Reference Book(s):

1. Sushma Khanna (editor), "Udai Pareek's Understanding Organizational Behaviour" 3rdEdition, Oxford University Press, 2013.
2. Nelson, Quick & Khandelwal, "ORGB – An Innovative Approach to Organizational Behaviour, A South Asian Perspective", CENGAGE Learning, New Delhi, 2013.
3. McShane & Von Glinow, "Organizational Behaviour" 4thEd., McGraw Hill, New Delhi, 2012

Journal(s):

1. Vikalpa, Indian Institute of Management, Ahmedabad
2. Harvard Business Review, Harvard Business School Publication Co. USA
3. GITAM Journal of Management, GITAM Institute of Management, GITAM University, Visakhapatnam

Website(s):

	ProgrammeObjectives(POs)												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	2	0	2	1	0	1	2	0							
CO2	1	1	2	1	2	1	2	2							
CO3	1	1	2	1	2	1	2	2							
CO4	2	2	3	2	3	1	2	2							

1-Low, 2- Medium and 3- High Correlation

	MMB 709	**Accounting for Managers**	L	T	P	J	S	C
			4					4
	Course Owner	Dept. of Accounting	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				60	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description:

In an economy, every manufacturing and trading entity inherently has financial transactions. These financial transactions are the accounting framework's backbone, which is as important as the technical or legal framework. Knowledge in Financial Accounting enables managers to understand and interpret financial reports essential for financial decision making and problem-solving. Cost Accounting is a branch of accounting designed to measure the economic resources used in producing goods or providing services. Cost and Management Accounting provides the fundamental rules and techniques governing accounting practices, effectively controlling and managing a business's expenses. A manager should be competent to understand the accounting framework to manage the business effectively.

Course Objectives

1. To know the accounting framework to prepare Final Accounts of trading concerns.
2. To analyze and interpret the accounting information of financial statements for decision making.
3. To understand the cost sheet preparation process and tracing of Activities for the cost object through Activity-Based Costing.
4. To value the concepts of marginal costing and its application in managerial decision making.
5. To develop the budgets and performance reports for planning and control purposes.

UNIT– I Basics of Accounting No. of Hours: 15

Financial Accounting: Book-Keeping– Double Entry System –Accounting Concepts and Conventions. Accounting Equation – Preparation of Profit and Loss a/c and Balance Sheet using the accounting equation. Basics of IFRS.

Learning Outcomes:

Aftercompletionofthisunit,thestudentwillbeab
leto

- know the book-keeping and double entry system L1
- understand the accounting concepts and conventions L2
- prepare income and position statements L3
- know the basics of IFRS L1

Pedagogytools: Blendedlearning,videolectures,self-reading and Coursera

UNIT – II Financial Statement Analysis NoofHours: 15

Financial Statement Analysis: Concept, objectives, and types. Ratio analysis – the study of liquidity, solvency, and profitability ratios. Funds Flow Analysis: Uses and preparation of funds flow statement. Cash Flow Analysis: Uses and preparation of cash flow statements.

LearningOutcomes
:

Aftercompletionofthisunit,thestudentwillbeab
let

- analyze and interpret the financial statements with ratio analysis L5
- prepare funds flow statement L3
- prepare cash flow statement and know its uses L3

Pedagogytools: Blendedlearning,videolectures,self-
reading

UNIT–III Cost Accounting NoofHours: 10

Cost Accounting: Elements of Cost – Types of Costs – Preparation of Cost Sheet – Special work orders. Activity-Based Costing (ABC): Concept of ABC – Categories in activity-based costing-allocation of overheads under ABC – Benefits and Limitations of Activity Based Costing.

LearningOutcomes:

Aftercompletionofthisunit,thestudentwillbeableto

- know the types of costs L1
- prepare cost sheet and cost sheet for special work orders L3
- allocate overheads under Activity Based Costing L3

Pedagogytools: Blendedlearning,videolectures,self-reading

UNIT–IV Marginal Costing NoofHours: 12

Marginal Costing: Marginal Cost and Marginal Costing – Importance. Break-Even Analysis: Cost Volume Profit Relationship – Application of Marginal Costing Techniques – Fixing Selling Price, Make or Buy, Accepting a Foreign Order, and Deciding Sales Mix.

LearningOutcomes:

Aftercompletionofthisunit,thestudentwillbeableto

- understand the concept of Marginal costing L2
- use marginal costing techniques L3
- take decisions under marginal costing L5

Pedagogytools: Blendedlearning,videolectures,self-reading

UNIT – V Budgeting and Budgetary Control NoofHours: 08

Budgeting and Budgetary Control: Definitions of Budget, Budgeting, and Budgetary Control – Need for Budgetary Control – Types of budgets – Preparation of Production Budget, Sales Budget, Cash Budget, and Flexible Budget –Zero-based Budgeting.

LearningOutcomes:

Aftercompletionofthisunit,thestudentwillbeableto

- understand the concepts of budget and budgeting L2
- know the different types of budgets L1
- prepare and interpret all functional budgets L3
- understand the concept of zero-base budgeting L2

Pedagogytools: Blendedlearning,videolectures,self-reading

On successful completion of this course, the Student will be able to:

CO	Course Outcomes	Assessment
CO 1	Apply accounting framework to prepare final accounts of trading concern.	A1, A4
CO 2	Analyze, interpret, and communicate the information contained in basic financial statements and explain such statements' limitations.	A1, A2, A3, A4
CO 3	Understand the method of preparing the cost sheet and tracing activities for the cost objects through activity-based costing.	A3, A4
CO 4	Value the concepts of marginal costing and its application in managerial decision making.	A2, A3, A4
CO 5	Prepare budgets and performance reports for planning and control purposes.	A2, A3, A4

Textbook(s):

1. Robert N. Anthony, David Hawkins, Kenneth A. Merchant, and Prakash Singh (2019). **Accounting: Texts and Cases.** McGraw Hill, 13th Ed.
2. S.N. Maheshwari, S.K. Maheshwari and CA S.K. Maheshwari (2016). **Accounting for Management.**Vikas Publishing House, 3rd Ed. Noida.

AdditionalReading

ReferenceBook(s):

1. Ambrish Gupta (2016). Financial Accounting for Management: An Analytical Perspective. Pearson Education, 5th Ed. New Delhi.
2. Paul M. Collier (2015). Accounting for Managers: Interpreting Accounting Information for Decision Making. Wiley Publishers, UK.

Journal(s):

1. Management Accounting Research, ISSN: 1044-5005
2. The Management Accountant Journal, ISSN: 09723528

Website(s):

1. https://www.icai.org/

	Programme Objectives(POs)												**PSOs**		
		2	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	1	0	0	0	0	0	0							
CO2	1	2	1	1	1	0	0	1							
CO3	1	3	1	1	0	0	0	0							
CO4	2	2	2	0	1	2	1	1							
CO5	2	1	1	0	1	2	1	0							

1-Low,2-Mediumand3-HighCorrelation

	MMB 723	**Information Systems for Managers**	L	T	P	J	S	C
			2		2			3
	Course Owner	Dept. of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

With information age, lots of data is generated by organization which becomes one of the important asset of any organization. Usage of information systems to carry on with the organization's task has become a norm. Information systems play a major role and is handy tool for a manager to make efficient decision making.

Course Objectives

1. Understand different types of information systems
2. Understand the importance of information system in an organization
3. Appreciate the role of information system in an organization and adopt the same in the business.
4. Perform basic operations in Excel

UNIT - I	Title: Introduction to Information System	No of Hours:9
Need of Information in Managing Business; Evolution of Information Systems; Information and Control Systems; Classification of Information Systems; Business Process Design; Managing Information Systems		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the need of information in business		L2
● Describe information and control system		L2
● Understand Business Process Design		L2
● Understand how to manage information systems		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	**Title: Types of Information Systems**	**No of Hours:9**
Introduction to Information Systems; Operations Support Systems; Management Support Systems; Other Types of Information Systems		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the concept of information systems		L2
● Describe operation support systems		L2
● Describe Management support systems		L2
● Distinguish different information systems		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - III	**Title Introduction to Excel**	**No of Hours:9**

MS Excel as Spreadsheet based DSS, Basic operations in MS Excel: Worksheet Management, Cell referencing, Building formulas, Sorting, Filters, Conditional Formatting, Working with Charts		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Identify different components of Excel		L2
● Perform basic operations in Excel		L3
● Apply sorting to a given set of data		L3
● Apply conditional formatting to a given set of data		L3
● Create different types of charts		L3
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - IV	**Title Working with Functions**	**No of Hours:9**
Text Functions, Logical Functions, Lookup Functions, Date and Time Functions, Math and Statistical Functions		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Apply different text functions		L3
● Apply different logical functions		L3
● Apply different lookup functions		L3
● Apply different math functions		L3
● Apply different date and time functions		L3
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

UNIT - V	Title What if Analysis and Pivot Tables	No of Hours:9
Data Tables, Scenario Manager, Goal Seek, Pivot Tables and Pivot Charts		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Distinguish different programs under what-if analysis		L2
● Apply data table for a given problem		L5
● Apply scenario manager for a given problem		L5
● Apply goal seek for a given problem		L5
● Apply pivot tables and chart on a given problem		L5
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

On successful completion of this course, students will be able to:

	Course Outcomes	Assessment
CO1	Perform basic operations in MS Excel	A1
CO2	Use different built in functions in Excel	A1, A2
CO 3	Perform What-if analysis for a business situation	A1
CO 4	Write simple macros in VBA	A1, A2
CO5	Understand the importance of Business Analytics	A2

Textbook(s):

1.Kenneth C Laudon, Jane P Laudon, Management Information Systems, Pearson Education
2. Paul Mcfedris, Excel Data Analysis Visual Blueprint, Wiley

Additional Reading

Reference Book(s):

1.*Effy Oz, Management Information Systems, Cengage*

Journal(s):

1.

Website(s):
1. https://archive.ics.uci.edu/ml/index.php 2. https://www.kaggle.com/ 3. https://data.gov.in/

Practical Experiments

Topics	**Type(Experiment, Project, Exercise)** Choose an item.
Basic worksheet management	Programming Exercise
Working with basic functions	Programming Exercise
Working with Lookup functions	Programming Exercise
Creating charts in Excel	Programming Exercise
Working with What if Analysis	Programming Exercise
Working with Pivot tables and charts	Programming Exercise

Pedagogy tools:	**Practical**	**NPTEL**	**Practical**	
	Practical	**Practical**	**Practical**	

Components	**Term End Examination**	**Internal Examination**													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Marks															
Total Marks															

Text Books	**Topics**
1: Paul Mcfedris, Excel Data Analysis Visual Blueprint, Wiley	**All**

Additional Reading	

Reference Book(s):	**Topics**

	Programme Objectives (POs)												PSOs			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**1**	**0**	**2**	**0**	**0**	**1**	**1**								
CO2	**2**	**2**	**0**	**1**	**0**	**0**	**1**	**1**								
CO3	**2**	**2**	**2**	**2**	**2**	**1**	**2**	**2**								
CO4	**1**	**1**	**0**	**1**	**1**	**1**	**2**	**2**								
CO5	**2**	**2**	**2**	**1**	**0**	**1**	**2**	**2**								

1-Low, 2- Medium and 3- High Correlation

	MAN 725	**Programming for Analytics**	L	T	P	J	S	C
			2		2			3
	Course Owner	Dept. of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description:

Python is an open-source high level interpreter-based language. Python is interactive and object-oriented language with wide range of applications. Python is commonly used in the area of data science and web-based analytics. The approach will be to present an example followed by a small exercise where the learner tries something similar to solidify a concept. It is intended for students with little or no programming background, although students with such a background should be able to move forward at their preferred pace.

Course Objectives

The goal of the course is to

1. Introduce students to Python programming using hands on instruction.
2. Show how to install Python and use the suitable IDE (Integrated Development Environment) for writing and debugging programs

UNIT - I	**Introduction**	**No of Hours:9**
Features of Python, setting up path, Variables and Data types, Operators in Python, Input – Output Statements, Control Structures: Conditional Statements, Looping Statements, Control Statements		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
• Define the data types and understand the control and conditional statements		L2
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, Python IDE		

UNIT - II	**Data Structures of Python**	**No of Hours:9**
Strings, Lists, Tuples, Dictionaries, Functions: Defining and calling a function, Types of Function; Modules: Importing Module, Packages, Composition, Exception Handling. OOP Concepts and Regular Expressions: OOP concepts in Python, Regular Expressions: Match Function, Search Function, Matching Vs Searching, Modifiers, Patterns, Working with Database.		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
● Understand and define different data structures and OOP Concepts.		L2
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, Python IDE		
UNIT - III	**Python for Data Analysis - I**	**No of Hours: 9**
NumPy Basics: Arrays and Vectorized Computation, Pandas Basics: Working with Series and DataFrame; Scipy Basics: Random Variables, Building specific distributions, Univariate analysis, Bivariate and multivariate analysis.		
Learning Outcomes:		
After completion of this unit, the student will be able to:		
● Executevarious data analysis techniques.		L3
● Interpret and analyze the results for decision making.		L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, Python IDE		
UNIT - IV	**Python for Data Analysis– II**	**No of Hours:9**
Pandas for Data Analysis: I/O tools; Series, Data frames, arrays, Indexing & selecting data, Merge, Join and Concatenate; Reshaping and Pivot tables; Working with missing data; Working with numerical and categorical data.		

Learning Outcomes:	
After completion of this unit, the student will be able to:	
● Apply I/O tools for analysis of structured data	L3
● Analyze and interpret the results of the analysis for decision making.	L4
● Evaluate the various outcomes of the analysis and take an informed decision.	L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, Python IDE	

UNIT - V	**Advanced Visualizations**	**No of Hours: 9**
Python packages for plotting and visualizations; Introduction to Matplotlib package; Subplots, axes and figures; Text, Labels and Annotations; Managing colors; Working with lines, dates and text on plots; Scatter plots; Pie and Polar charts; Bar charts and Histograms; Plotting discrete distributions; Plotting categorical variables; Plotting images, contours and fields; Visualizations for statistics; Animations.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
● Applying plotting and visualization techniques to create relevant reports / analysis.	L3
● Evaluating various results to take appropriate decisions.	L5
Pedagogy tools: Blended learning, Case-let, Video lectures, Self-reading, Python IDE	

On successful completion of this course, students will be able to:

CO	Course Outcomes	Assessment
CO1	Understand the language elements of Python	A1, A2
CO2	Understand the OOP concepts in Python	A1, A4

CO3	Write programs in python	A1, A4, A5
CO4	Use python for data analysis	A3
CO5	Use python for data visualization	A5

Textbook(s):

2. Padmanabhan T.R., Programming with Python, Springer Verlag, Singapore

Additional Reading

Reference Book(s):

1. Henley A.J., Learn Data Analysis with Python, APress
2. Idris Ivan, Python Data Analysis, Packt Publishing Limited
3. Vo.T.H Phuong, Getting Started with Python Data Analysis, Packt Publishing Limited

Journal(s):

1. INFORMS JOURNAL ON APPLIED ANALYTICS

Website(s):

1. Coursera

Practical Experiments

Topics	**Type(Experiment, Project, Exercise)** Choose an item.
Basic worksheet management	Programming Exercise
Working with basic functions	Programming Exercise
Working with Loop functions	Programming Exercise
Creating charts	Programming Exercise
Data Analysis and Interpreting Results	Programming Exercise

Pedagogy tools:	**Practical**			**NPTEL**			**Practical**								
	Practical			**Practical**			**Practical**								
Components	**Term End Examination**	**Internal Examination**													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Marks		**20**	**20**	**20**	**20**	**20**									
Total Marks	**100**														

Text Books	**Topics**
1: Padmanabhan T.R., Programming with Python, Springer Verlag, Singapore	**All**

Additional Reading:	

Reference Book(s):	**Topics**
1. Henley A.J., Learn Data Analysis with Python, APress 2. Idris Ivan, Python Data Analysis, Packt Publishing Limited 3. Vo.T.H Phuong, Getting Started with Python Data Analysis, Packt Publishing Limited	**All**

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**3**	**1**	**0**	**0**	**0**	**0**	3	3								
CO2	**3**	**1**	**0**	**1**	**0**	**0**	3	3								
CO3	**3**	**1**	**0**	**1**	**0**	**0**	3	3								
CO4	**3**	**3**	**0**	**3**	**0**	**0**	**3**	**3**								
CO5	**3**	**3**	**0**	**3**	**0**	**0**	3	3								

1-Low, 2- Medium and 3- High Correlation

	MAN713	**Course Title**	**L**	**T**	**P**	**J**	**S**	**C**
		Soft Skills for Managers	3					3
	Course owner	Dept. of English	Syllabus version				1.0	
	Course Pre-requisite(s)	NIL	Contact hours				45	
	Course Co-requisite(s)	NIL	Date Approved					
	Alternate Exposure							

Course Description

Soft Skills is the core skills which are highly desirable for all the professions. They primarily deal with how to work, how to manage with people effectively, how to solve problems, how to divide the work among the team, and also how to build relationships so on and so forth. Further, they encompass personality development, attitude, flexibility, motivation, and manners. It also renders a realistic perspective of work and work expectation.

Therefore, this course is designed to:

Course Objectives:

- Learn the employability skills which facilitates them to work amicable in the working environment
- Understand how to function effectively in order to meet the organisational goals
- Understand the stress and know about the awareness, knowledge and strategies to deal with stress more effectively (Blooms Taxonomy Level 2 & 3)
- Define how to plan and work towards goals by breaking them down into sets of smaller goals (Blooms Taxonomy Level 1 & 2)

- Infer the significance of time management and list the sets to overcome barriers for effective time management (Blooms Taxonomy Level 2 & 1)
- Develop good interpersonal skills so as to try to achieve synergy among team members for helping low achievers and go along with the high performers(Blooms Taxonomy Level 5)
- Categorize between managing and leading for developing the effective leadership (Blooms Taxonomy Level 4&5)

UNIT - I	**Title**	**No of Hours: 9**
	Stress Management	

Learning Outcomes:

After completion of this unit, the student will be able to

● Understand how to manage stress	
● Recognise the means to subside stress situations	
● Use the effective strategies to deal with the stress efficiently	
● Apply proactive approach towards stressful situations	

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - II	**Title**	**No of Hours: 9**
	Goal Setting	

Learning Outcomes:

After completion of this unit, the student will be able to

● Define the term 'goal'	
● Explain the prominence of goal setting	
● Apply the qualities of SMART **(**Specific, Measurable, attainable, Realistic, Time-bound**)** in order to achieve the goals	
● Develop the strategies to overcome barriers in goal setting	

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - III	**Title**	**No of Hours: 9**
	Time Management	

Learning Outcomes:

After completion of this unit, the student will be able to:

• Discover the strategies to set priorities	
• Classify various time stealers	
• Evaluate different time management skills	
• Develop the steps to overcome barriers to effective time management	

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - IV	**Title**	**No of Hours: 9**

	Team Building	

Learning Outcomes:

After completion of this unit, the student will be able to:

• Learn to adopt adjustability and adaptability	
• Develop the team spirit in a broader spectrum of team success	
• Coordinate within team members with effective interpersonal skills	
• Collaborate with team members for balanced work life with respect to their soft skills	

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - V	**Title**	**No of Hours: 9**
	Leadership skills	

Learning Outcomes:

After completion of this unit, the student will be able to:

• Develop the traits of effective leader	
• Apply various strategies for building effective leadership qualities	
• Direct the team to take smart decisions	
Focus to motivate the team in the adverse situations	

Pedagogy tools: Blended learning, case study, video lectures, self-reading

Course Outcomes

1. Develop strategies to deal with the stress efficiently
2. Distinguish different strategies for effective goal setting
3. List different steps for effective time management
4. Develop skills to coordinate with team members
5. List different traits of a effective leader

Textbook(s): Prepared by faculty

Additional Reading

Reference Book(s):

- Chakravarthi, Dr T Kalyana. *Soft Skills for Managers* – A Professional Manual for Soft Skills & Behavioural Skills Trainers. Biztantra: Delhi, 2011.

- Dorch, Patricia. What Are Soft Skills? New York: Execu Dress Publisher, 2013.

- Kamin, Maxine. Soft Skills Revolution: A Guide for Connecting with Compassion for Trainers, Teams, and Leaders. Washington, DC: Pfeiffer & Company, 2013.

- Klaus, Peggy, Jane Rohman& Molly Hamaker. The Hard Truth about Soft Skills. London: HarperCollins E-books, 2007.

- Petes S. J., Francis. Soft Skills and Professional Communication. New Delhi: Tata McGraw-Hill Education, 2011.

- Stein, Steven J. & Howard E. Book. The EQ Edge: Emotional Intelligence and Your Success. Canada: Wiley & Sons, 2006.

Journal(s): E-journals

1. https://iupindia.in/Soft_Skills.asp

Website(s)

- https://www.housetogrow.org/
- https://www.skillsoft.com/

	Programme Objectives (POs)												**PSOs**		
									9	**10**	**11**	**12**	**1**	**2**	**3**
CO1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	0	0	1	0	0	1
CO2	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	2	0	3	0	0	1
CO3	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	3	0	2	0	0	0	1
CO4	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	3	0	3	0	0	1
CO5	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	2	0	3	0	0	0	1

1-Low, 2- Medium and 3- High Correlation

Semester-II

	MAN 706	**Data Mining and Data Warehousing**	L	T	P	J	S	C
			2		2			3
	Course Owner	Dept. of Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description:

Each and every organization maintains database related to their business such as employees, customers, products, sales and so on. As the business grows, amount of data that is accumulated over the years and

in different sources will also grow. Mining the data to discover patterns enables businesses to make effective data driven decisions and develop sustainable competitive advantage. Applications of data mining can be found in e-commerce, social welfare, politics, terrorism, sales and marketing, finance, operations etc. In this course we explore how this field brings together techniques from statistics, machine learning, and information retrieval. We will discuss the main data mining methods currently used, including clustering, classification; association rules mining, decision trees and random forest.

Course Objectives

1. Understand different concepts in Data warehousing
2. Understand the concept of OLAP
3. Ability to build Models using Clustering, Classification Tree Techniques, Random Forest
4. Understand key statistical measures to be observed when building models and ensure model robustness

UNIT - I	Title: Data Warehousing	No of Hours: 7
Introduction to Data warehouse, Difference between operational database systems and data warehouses, Data warehouse Characteristics, Data warehouse Architecture and its Components, Extraction-Transformation-Loading, Logical(Multi-Dimensional), Data Modeling, Schema Design, Star and Snow-Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi-Addictive, Non-Addictive Measures; Fact-Less-Facts, Dimension Table Characteristics; OLAP Cube, OLAP Operations, OLAP Server Architecture-ROLAP, MOLAP and HOLAP.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Distinguish between database and data warehousing		L2
● Describe data warehouse architecture		L2
● Design a data warehouse schema		L3
● Distinguish different types of OLAP		L2
● Discuss different OLAP operations		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	**Title: Introduction to Data Mining:**	**No of Hours: 6**
Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing- Data Cleaning, Missing Data, Dimensionality Reduction, Feature Subset Selection, Discretization and Binaryzation , Data Transformation; Measures of similarity and dissimilarity-Basics.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Define KDD process		L2
● Describe the task under data preprocessing		L2
● Apply data preprocessing on a given data set		L3
● Analyze a dataset for appropriate data cleaning methods to apply		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

UNIT - III	**Title Association Rules:**	**No of Hours: 7**

Problem Definition, Frequent Item Set Generation, The APRIORI Principle, Support and Confidence Measures, Association Rule Generation; APRIOIRI Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Frequent Item Set- Maximal Frequent Item Set, Closed Frequent Item Set.

Learning Outcomes:

After completion of this unit, the student will be able to

● Describe Apriori principle	L2
● Perform association on a given dataset	L3
● Evaluate the association rules	L5
● Identify frequent itemsets in the dataset	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - IV	**Title Classification:**	**No of Hours: 8**

Problem Definition, General Approaches to solving a classification problem, Evaluation of Classifiers , Classification techniques, Decision Trees-Decision tree Construction, Methods for Expressing attribute test conditions, Measures for Selecting the Best Split, Algorithm for Decision tree Induction; Naive-Bayes Classifier, Bayesian Belief Networks; K- Nearest neighbor classification-Algorithm and Characteristics, prediction: Accuracy and Error measures, Evaluating the accuracy of a classifier or a predictor, Ensemble methods.

Learning Outcomes:

After completion of this unit, the student will be able to

Describe classification process	L2
Construct a classifier for a given problem	L3
Evaluate a classifier	L5
Compare different classification techniques	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - V	Title Clustering:	No of Hours: 8

Clustering Overview, A Categorization of Major Clustering Methods, partitioning methods, hierarchical methods, , partitioning clustering-k-means algorithm, hierarchical clustering-agglomerative methods and divisive methods, Basic Agglomerative Hierarchical Clustering Algorithm, Key Issues in Hierarchical Clustering, Strengths and Weakness, Outlier Detection.

Learning Outcomes:

After completion of this unit, the student will be able to

Describe clustering process	L2
Create clusters on a given dataset	L3
Evaluate the clusters formed	L5
Compare different clustering techniques	L4
Know how to detect an outlier	L2

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

S. No.	Course Outcome	Assessment
1	Understand different type of data mining techniques	A1, A2, A4
2	Perform unsupervised learning techniques in R	A5
3	Perform supervised learning techniques in R	A5
4	Understand different model evaluation techniques	A3

Textbook(s):

1.*Parteek Bhatia, Data Mining and Data Warehousing: Principles and Practical Techniques, Cambridge University Press*

Additional Reading

Reference Book(s):
1. Alex Berson, Data Warehousing, Data Mining and OLAP, McGraw Hill Education
2. Pang Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to data mining, Pearson Education
3. Jiawei Han, MicheleinKamber, Jian Pei, Data Mining Concepts and Techniques, Morgan Kaufamann
Journal(s):
1.
Website(s):
4. https://archive.ics.uci.edu/ml/index.php 5. https://www.kaggle.com/ 6. https://data.gov.in/

Practical Experiments

Topics	Type(Experiment, Project, Exercise) Choose an item.
Preprocessing a dataset	Lab Exercise
Association mining	Lab Exercise
Building classifier using different algorithms	Lab Exercise
Clustering a dataset	Lab Exercise

Pedagogy tools:	**Practical**	**NPTEL**	**Practical**	
	Practical	**Practical**	**Practical**	

Components	**Term End Examination**	**Internal Examination**													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Marks															
Total Marks															

Text Books	**Topics**
1: *Parteek Bhatia, Data Mining and Data Warehousing: Principles and Practical Techniques, Cambridge University Press*	**All**

Additional Reading	

Reference Book(s):	**Topics**
1. Alex Berson, Data Warehousing, Data Mining and OLAP, McGraw Hill Education 2. Pang Ning Tan, Michael Steinbach, Vipin Kumar, Introduction to data mining, Pearson Education 3. iawei Han, MicheleinKamber, Jian Pei, Data Mining Concepts and Techniques, Morgan Kaufamann	**All**

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**1**	**2**	**0**	**0**	**0**	**2**	**2**	**3**								

CO2	**0**	**2**	**0**	**0**	**0**	**2**	**2**	**3**								
CO3	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**3**								
CO4	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**3**								
CO5	**2**	**2**	**0**	**0**	**0**	**2**	**2**	**3**								

1-Low, 2- Medium and 3- High Correlation

	MMB 704	**Financial Management**	L	T	P	J	S	C
			4					4
	Course Owner	Dept. of Finance	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				60	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description:
This course is designed to provide fundamental knowledge on financial management. The course will introduce learners to - planning and acquisition of funds; effective utilization and allocation of the funds received or acquired; and distribution of profits in a business.

Course Objectives

1. To introduce time value of money and risk return trade off.
2. To familiarize students with assumptions and concepts underlying the decision making.
3. To impart knowledge on capital structure, capital budgeting, working capital and dividend decisions.
4. To impart critical thinking skills in the area of capital budgeting and capital structure

UNIT - I	**Title: Introduction to Financial Management**	**No of Hours : 10**

Nature, Scope, Goals and organization of finance function -The finance function and its interlinkages with other functional areas of management -Finance Vs Accounting, Corporate Finance Vs Financial Management - Time value of money – PV and FV in case of lump sum, Annuities and Uneven Cash flows -Introduction to measurement of Risk and Return. (Numerical Problems)

Learning Outcomes:

After completion of this unit, the student will be able to:

- Solve problems on future value of money in the context of personal finance L3
- Solve problems on present value of money in the context of personal finance including calculation EMIs. L3
- Comprehend the linkage of finance function with other functions L2
- Discuss the risk and return in the context of personal investment decision L2

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT - II	**Title: Cost of Capital and Capital Structure**	**No of Hours :13**

CostofCapitalandCapitalStructure (Financing Decision): Sources of Finance for Business –Classification of markets- Concept of Cost of Capital –Cost of equity, debt and WACC-Theories of Capital Structure –Factors affecting Capital Structure Decision- Introduction to leverage-Types of leveragesand Measurement. (N.P)

Learning Outcomes:

After completion of this unit, the student will be able to

- Solve for Cost of Equity, Debt and Preference capital L3
- Propose the capital structure alternative using 1) EBIT and EPS approach 2) WACC L5
- Comprehend the theories of capital structure L2
- Analyze operating, financial, and combined leverages for decision making L4
- Identify the sources of Long term and Short term finance L2

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT - III	**Title : Investment Decision**	**No of Hours :14**

Investment Decisions (CAPEX): Phases of Capital Expenditure Decisions, Capital Budgeting Process - Estimating cash flows for capital budgeting - Capital Budgeting Techniques for decisions making – Introductionto Risk Adjusted Capital Budgeting Techniques (N.P)

Learning Outcomes:

After completion of this unit, the student will be able to ● Analyze using capital budgeting techniques for decision making L4 ● Estimate cashflows for capital budgeting decisions L3 ● Comprehend the phases in capital expenditure decisions L2	
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV	**Title: Working Capital Management**	**No of Hours:13**
Working Capital Management: Meaning of Working capital – Factors influencing workingcapital – Estimating working capital requirement- Managing various components of WorkingCapital: Cash and Marketable securities management; Accounts Receivable and inventorymanagement- EOQ- Reorder levels – Inventory cycle - Operating cycle – Cash Conversioncycle– Sources of financingworkingcapital (N.P) **LearningOutcomes**:		
After completion of this unit, the student will be able to		
● Estimate working capital requirement		L3
● Prepare Cash Budgets		L5
● Propose a credit policy using the accounts receivable information		L5
● Solve for Operating cycle, Cash Conversion Cycle		L3
● Understand the factors influencing working capital management		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V	**Title: Dividend Decision**	**No of Hours:10**
Dividend Decisions:Factorsinfluencing dividenddecisions-Classificationof dividends– TheoriesofDividend–Walters and Gordon Model-MM Model.(N.P) **LearningOutcomes**:		
After completion of this unit, the student will be able to		

• Comprehend factors influencing dividend decisions	L2
• Understand the classification of dividend and their influence on EPS	L2
• Illustrate the use of Gordon and Walters Model for dividend decision	L3
• Distinguish the assumptions of relevance and irrelevance approach	L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Understanding of terminologies and concepts of financial management	A1,A3
CO2	Apply measures of cost of capital/ solve problems on time value of money	A2
CO 3	Analyze information and construct a statement of cashflows in capital budgeting, estimate WACC, estimate Working Capital Requirement	A3,A4
CO 4	Make use of dividend models, capital structure theories for decision making	A3,A4

Textbook(s):

1. I.M. Pandey, Financial Management, Vikas Publication House, New Delhi
2. James C Van Horne and Sanjay Dhamija, Financial Management and Policy, 12th Edition, Pearson Publications
3. Richard A Brealey, Stewart C Myers, Franklin Allen and Pitabas Mohanty, Principles of Corporate Finance, Tata McGraw Hill, New Delhi

Additional Reading

Reference Book(s): (All latest editions preferable)

1. Jonathan Berk, Peter DeMarzo, and Ashok Thampi, Financial Management, Pearson Education in

South Asia,
2. Prasanna Chandra, Financial Management Theory and Practice, Tata Mcgraw Hill Publishing Company Ltd., New Delhi.
3. Damodaran, Corporate Finance Theory and Practice, John Wiley & Sons
4. Rajiv Srivastava and Anil Misra, Financial Management, Oxford University Press
5. James C Van Horne, and John M. Wachowicz, Fundamentals of Financial Management, PHI
6. Financial Management, M Y Khan and P K Jain (8th ed.) McGraw Hill

Journal(s):						

1. Indian Journal of finance
2. Journal of finance
3. The Review of Financial Studies

Websites:

1. https://ocw.mit.edu/courses/sloan-school-of-management
2. Corporate Finance - Course (nptel.ac.in)

	Programme Objectives												**PSO**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	1					1									
CO2			2				1								
CO3				1											
CO4		3			1	2									

	MMB 706	**Business Research Methodology**	**L**	**T**	**P**	**J**	**S**	**C**
			3					**3**
	Course owner	**Dept. of Operations**	Syllabus version				1.0	
	Course Pre-requisite(s)	NIL	Contact hours				47	
	Course Co-requisite(s)	NIL	Date Approved					
	Alternate Exposure							

Course Description

Research methodology is the systematic and scientific method of how to review and research a topic. It starts with identification of the problem and continues with sample design, data collection, analysis and report. It is extensively used to find a solution to a problem and enhance knowledge. Continuous growth is one of the key challenges for business, which needs innovative ideas and solutions to stagnation in growth. Research is a valuable tool for businesses to identify potential avenues for growth and solutions to problems. Understanding the methodology to be adopted when researching is, therefore, very crucial for businesses.

Course objectives:

1. To understand the formulation of research problem and hypotheses
2. To learn critical analysis, problem solving and research skills
3. To enable students to understand the rationale for using a particular qualitative and quantitative research method
4. To enable students to understand various methods to select appropriate research designs and methods to investigate their chosen research problems

UNIT - I Introduction to Research Methodology No of Hours : 7

Importance of research methodology, types of research methods, research process, identification of the problem, hypothesis formulation, types of research design.

Learning Outcome:

After completion of this unit, the student will be able to

- Demonstrate knowledge on addressing management problems through business research methods L2
- Interpret, define and formulate research problems, hypothesis that can be tested L3
- Analyze the nature of business research and type of research L4

Pedagogy tools: Blended learning, Pre-class reading, flipped classroom, Video Lectures

UNIT - II Sample design No of Hours : 9

Census Vs Population, determination of sample size, sampling techniques- data collection - primary data, secondary data- methods of collecting primary data: Interview, observation techniques, and questionnaire, and Sources of secondary data. Guidelines and design of questionnaire: Levels of measurement scales and scaling techniques.

Learning Outcome:

After completion of this unit, the student will be able to

- Explain different types of sampling techniques L2
- Analyze different sources of primary and secondary data L4
- Design a survey using different data collection methods and tools L4

Pedagogy tools: Blended learning, Pre-class reading, flipped classroom

UNIT - III Data Processing & Reporting writing No of Hours : 11

Data processing: Editing, coding, classification, tabulation, diagrammatic and graphical representation of the data using Excel/SPSS; Interpretation; Report Writing – Importance of Report, types of reports, report preparation – report format, report writing, guidelines for tables and graphs; presentation of reports.

Learning Outcome:

After completion of this unit, the student will be able to

- Analyze data using different methods and tools L4
- Analyze and interpret the results of statistical tests L4
- Evaluate and prepare a structured business research report L5

Pedagogy tools: Blended learning, Pre-class reading, flipped classroom

UNIT - IV Hypothesis Testing & Parametric tests: No of Hours : 12

Components of hypothesis, Hypothesis testing procedure, parametric tests Z test, t distribution (single, independent, paired sample tests), ANOVA - one way and two ways test. (With numerical Problems)

Learning Outcome:

After completion of this unit, the student will be able to

- Explain the process of hypothesis testing L2
- Apply different statistical methods to test hypothesis L3
- Analyse and testing the hypothesis using parametric tests L4

Pedagogy tools: Blended learning, Numerical problems & Solving, Pre-class reading, flipped classroom

UNIT - V Non-Parametric tests & Multivariate Analysis No of Hours : 8

Non-Parametric tests- Chi-Square test, Mann-Whitney 'U' test, Kruskal-Wallis test (with numerical Problems). Introduction to multivariate analysis, discriminant Analysis, factor analysis (only theory and application)

Learning Outcome:

After completion of this unit, the student will be able to

- Differentiate parametric and non-parametric tests and its applications L2
- Analyze and testing the hypothesis using non-parametric tests L4
- Demonstrate knowledge in application of multivariate techniques in business situations. L2

Pedagogy tools: Blended learning, Numerical problems & Solving, Pre-class reading, flipped classroom

On successful completion of this course, students will be able to:

	Course Outcomes (COs)	**Assessment**
CO1	Demonstrate their knowledge on addressing various management decision process through business research.	A1, A3

CO2	Demonstrate their skill to apply different research techniques in a scientific manner to assist the management for proper decisions on functional aspects.	A3
CO3	Acquire knowledge in generating and handling data with the help of statistical software to draw meaningful conclusions and suitable suggestions.	A3
CO4	Conduct field based surveys either for problem identification or problem solving management issues.	A2

Textbook(s):

1. Ranjith Kumar, Research Methodology- A step by step guide for beginners, SAGE publishers, Latest Edition.

Additional Reading

Reference Book(s):

1. Malhotra, N. (2019). *Marketing Research: An Applied Orientation*, 7th Edition, Pearson Education Limited.

Journal(s):

1. Journal of Business Research, Elsevier

Website(s):

	Programme Objectives (POs)												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	0	0	0	1	0	2	1							
CO2	1	2	0	0	0	0	1	1							
CO3	0	3	0	0	1	0	1	1							
CO4	1	3	0	0	0	0	3	3							

1-Low, 2- Medium and 3- High Correlation

	MMB 708	**Operations Management**	**L**	**T**	**P**	**J**	**S**	**C**
			4					4
	Course owner		Syllabus version				1.0	
	Course Pre-requisite(s)	NIL	Contact hours				60	
	Course Co-requisite(s)	NIL	Date Approved					
	Alternate Exposure							

Course Description

Operations Management (OM) is concerned with the management of resources and activities that produce and deliver goods and services for customers. Efficient and effective operations can provide an organization with major competitive advantages since the ability to respond to customer and market requirements quickly, at a low cost, and with high quality, is vital to attaining profitability and growth through increased market share. Therefore, this course is designed to:

- Understand the process model of operations that describes inputs being transformed into outputs within the boundary of an operations system.
- Know the role of operations managers, in particular the importance of focusing on suppliers and customers who are outside this boundary, as well as on other aspects of the operations system's external environment.

Course Objectives

1. Understand the basics of operations management using manufacturing and service examples.
2. Identify the roles and responsibilities of operations managers in different organizational contexts.
3. Apply the planning and control concepts for decision-making
4. Analyze the operations to identify areas for improvement
5. Evaluate strategies for improvement in manufacturing and service contexts

UNIT - I Introduction to Operations & Operations Strategy No of Hours: 12

Introduction to Operations Management- Scope, Need, Input-Process-Output Model, Nature of Operations, Goods Vs. Services, Four Vs, Five Performance Objectives, Operations Strategy and its Formulation.

Learning Outcomes:

After completion of this unit, the student will be able to

• Explain the role of operations management in an organisation	L2
• Articulate the dimensions that make up the operations management	L2
• Analyse the nature of operations and types of output	L4
• Evaluate the crucial role of operations management in organisational success	L5
• Apply different strategies for various businesses	L3

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - II Designing Operations No of Hours: 12

Designing Products and Services: Product Development, Sequential vs Concurrent Design. Process Design: Manufacturing and Service Process Types, Service Delivery Systems. Facilities Location – Location Decision Relevant Factors.

Learning Outcomes:

After completion of this unit, the student will be able to

• Articulate the designing of various product and services	L2
• Explain the process of product development	L2

• Evaluate the advantages of concurrent design	L5
• Analyse the factors that influence the choice of layout	L4
• Analyse the facilities location	L4

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - III Planning and Control of Operations – I No of Hours: 12

Layout Planning - Types of Layout, Implications for Layout Planning, Layout Design. Dependent and Independent Demand, Strategies to Meet Demand, Loading – Finite and Infinite, Sequencing, Capacity Planning.

Learning Outcomes:

After completion of this unit, the student will be able to

• Analyse the process of layout planning	L4
• Illustrate the implications of dependent and independent demand	L2
• Evaluate strategies to meet demand	L5
• Explain the planning and control activities	L2
• Applysequencing and capacity planning techniques	L3

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - IV Planning and Control of Operations – II No of Hours: 12

Aggregate Production Planning (APP) - Strategies, Master Production Scheduling – Linkages with APP. Evolution of ERP – Developing MRP Logic - Bill of Materials (BoM), Lot Sizing Rules, Inventory Management.

Learning Outcomes:

After completion of this unit, the student will be able to

• Explain aggregate production planning	L2
• Apply master production scheduling	L3
• Illustrate the evolution of ERP	L2
• ExplainMRP logic and bills of materials	L2
• Apply inventory management techniques	L3

Pedagogy tools: Blended learning, case study, video lectures, self-reading

UNIT - V Quality Management No of Hours: 12

Introduction to Quality and its Characteristics, Quality Philosophy – Perspectives from WE Deming, PB Crosby and JM Juran, Quality Assessment Models and Frameworks – EFQM and ISO9001, Service Quality, BPR vs Continuous Improvement – Introduction to TQM, Lean and Six Sigma.

Learning Outcomes:

After completion of this unit, the student will be able to

• Illustrate the need for quality and its characteristics	L2
• Apply quality philosophy	L3
• Explain the perspectives from WE Deming	L2

• Evaluate the differences between BPR and continuous improvement	L5
• Analyse lean and six sigma tools and its applications	L4

Pedagogy tools: Blended learning, case study, video lectures, self-reading

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Understand the basics of operations management using manufacturing and service examples.	A1, A3, A4
CO2	Identify the roles and responsibilities of operations managers in different organizational contexts.	A1, A2, A3, A4
CO3	Apply the planning and control concepts for decision-making	A2, A3& A4
CO4	Analyze the operations to identify areas for improvement	A3, A4
CO5	Evaluate strategies for improvement in manufacturing and service contexts	A3, A4

Textbook(s):

1. Mahadevan B. *Operations Management: Theory and Practice*, Third Edition.

Additional Reading

Reference Book(s):

1. Slack, N., Brandon_Jones, A. and Johnston, R. (2014), *Essentials of Operations Management*, 1st Indian Ed., Pearson Education Limited.
2. Hill, A. and Hill, T. (2011), *Essential Operations Management*, Palgrave Macmillan: Basingstoke.

Journal(s):

2. International Journal of Logistics Management, Emerald publisher.
3. Benchmarking: An International Journal.

Website(s)

1. www.poms.org

	Programme Objectives (POs)												**PSOs**		
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**
CO1	3	0	0	0	0	0	0	3							
CO2	3	2	2	0	2	3	2	3							

CO3	0	3	0	3	0	0	2	3							
CO4	3	0	0	3	0	2	2	3							
CO5	0	0	3	0	3	0	0	3							
CO6															

1-Low, 2- Medium and 3- High Correlation

	MMB 710	**Marketing Management**	4					4
	Course Owner	Dept. of Marketing	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				60	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Marketing helps to communicate the value of a product or service to the consumer, with an aim to sell the product. Marketing Management is a discipline focused on the application of marketing techniques and the management of marketing resources and activities. It is important to gain insights into the dynamic nature of the markets and the ways and means to manage them, using theoretical knowledge and its applicability on the field. The importance of the 4 Ps of Marketing, i.e. Product, Pricing, Promotion and Place can never be undermined.

This course provides an overview of marketing processes and marketing principles, and provides students with the opportunity to apply the key concepts to practical business situations

Course Objectives

1. To explain the conceptual framework of marketing and its applications in "the real world
2. To apply marketing concepts to make business decisions under various environmental constraints
3. To illustrate the functionality and application of elements of Marketing Mix
4. To create a suitable Marketing plan for a product
5. To assess the range of common strategies used, with each of the various promotional mix tools

UNIT–I Introduction to MarketingNo of Hours:12hours

Nature, Scope, functions and importance of Marketing – Marketing concepts -Philosophies of Marketing. The environment of marketing –macro and micro components

Learning Outcomes:

After completion of this unit, the student will be able to

- To familiarize students with evolution and concepts of marketing conceptsL1
- Appreciate the various philosophies of marketing

L2

- Analyze the marketing environment

L2

- Classify the different components of micro and macro environment. L3
- Understand the scope and functions of marketing. L2

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT–II Building Customer value, Satisfaction and loyaltyNo of Hours: 12 hours

Buyers' behavior – consumer verses organizational -Factors influencing buyer behavior – The Buying Decision Process: The Five-Stage Model - Segmenting, Targeting and Positioning - Concept of Market Segmentation, Bases and Levels of Segmenting Consumer Markets, Effective segmentation criteria, Evaluating and Selecting Target Markets. Targeting (T), Positioning (P) Value Proposition and USP

Learning Outcomes:

After completion of this unit, the student will be able to

- To familiarize students to theconcepts of buyer behavior L1
- To understand the buying decision making process L2
- Understanding various bases of segmenting consumer markets L2
- Describeeffective segmentation criteria L2
- Analyze the implementation of Targeting and positioning L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT-III Marketing mixNo of Hours:12 hours

Elements of the marketing Mix – four P's, extended 7 P's of services. Product Decisions: Concept of a product; Classification of products; Major product decisions; Product line and product mix; Product life cycle; New product development and consumer adoption process

Learning Outcomes:

After completion of this unit, the student will be able to

- To familiarize students to the concepts of marketing mix.

L1

- To understand the extension of the 4Ps to the 7Ps.
  L2
- Understanding the major product decisions L2
- Describethe new product development process
  L2
- Analyze the consumer adoption process
  L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT-IV Price No of Hours: 12 hours

Factors influencing pricing - Pricing Objectives - Methods of Pricing - Channels of Distribution: Definition - Need - Types of channels, channel conflicts- types - channel management

Learning Outcomes:

After completion of this unit, the student will be able to

- To familiarize students to the factors influencing pricing.
  L1
- To understand the objectives of pricing.
  L2
- Understanding the methods of pricing
  L2
- Describe the channels of distribution L2
- Analyze the channel management ways and handle channel conflicts
  L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT-V Promotion No of Hours: 12 hours

Nature and Importance of promotion - Promotion Mix - Managing Advertising, Sales Promotion, Personal Selling, Public Relations and direct marketing - Integrated Marketing Communication (IMC)-Role of technology in promotion –social media marketing –Recent trends – Green marketing

Learning Outcomes:

After completion of this unit, the student will be able to

- To familiarize students to the importance of promotion.
  L1
- To understand the concept of promotion mix.
  L2
- Understanding the different elements of promotion mix.
  L2

- Describe the role of technology in promotion.
  L2
- Analyze Integrated Marketing Communication (IMC) and recent trends in marketing
  L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

S. No.	Course Outcomes (COs)	Assessment
CO1	Have an insight into the basic marketing concepts, the role of marketing in the organization.	A1
CO2	Understand issues of marketing with an emphasis on learning to develop responsive marketing strategies that meet customer needs	A3
CO3	Get acquainted with the components of marketing mix, stages in new product development	A3 & A2
CO4	Analyze the objectives and methods for pricing products and selecting channel members	A3 & A2
CO5	Evaluate the techniques of promotion mix.	A2

Textbook(s):
1. Principles of Marketing by Philip Kotler, Gary Armstrong and Prafulla Agnihotri
2. Marketing Management by Ramaswamy and Namakumari

Additional Reading
Newspapers and Market reports

Reference Book(s):
1.TapanK.Panda, Marketing management text and cases: Indian Context, Excel Books, 2019
2. Michael D. Hutt, Dheeraj Sharma, Thomas W. Speh, B2B marketing: a south - Asian perspective, 11th ed, Cengage Learning, 2020

Journal(s):
Journal of Advertising.
Journal of Consumer Research.

		Programme Objectives(POs)							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**SUM**

CO1	**2**	**2**	**0**	**3**	**0**	**2**	**3**	**3**	**15**
CO2	**0**	**0**	**0**	**3**	**0**	**3**	**0**	**0**	**6**
CO3	**3**	**0**	**3**	**3**	**0**	**3**	**2**	**3**	**17**
CO4	**3**	**0**	**0**	**3**	**0**	**2**	**2**	**3**	**13**
CO5	**3**	**0**	**0**	**3**	**0**	**2**	**2**	**3**	**13**
Target Level	**11**	**2**	**3**	**15**	**0**	**12**	**9**	**12**	**64**

	Course Code: MMB712	L	T	P	J	S	C
	Course Title Human Resource Management	4	0	0	0	0	4
	Course Owner: Dept. of HRM	Syllabus version				1.0	
	Course Prerequisite(s) Organisational Behaviour and Management Theory and Practice	Contact hours				56	
	Course Co-requisite(s)	Date Approved					
	Alternate Exposure;						

Course Description

The purpose of this course is to help students to understand the basic principles and techniques of Human Resource Management. The course takes a practical view that integrates the contributions of the behavioral sciences with the technical aspects of implementing the HR function in the real world. This basic understanding of HRM is essential for the student when he enters diverse workplaces. The key objective of this course is to give an understanding that HR Management is more than just accepting employment applications and keeping records; it is a central and strategic organizational activity of increasing complexity and importance.

Course Objectives:

1. Comprehend in-depth the theoretical framework and the basic principles of HRM.
2. Comprehend in-depth functions of HRM (Job analysis, manpower planning, and recruitment, selection, on boarding, training & development, appraisal, compensation).
3. Apply the principles and techniques of HRM gained through this course to the discussion of major personnel challenges and the solution of typical case problems

Unit I: Introduction **No. of Hours: 10**

Introduction - Fundamentals of HRM - The Nature And Scope Of HRM - Evolution Of HRM

Models of HRM -The Formbrun -The Harvard Model - The Guest -The Warwick-Dave Ulrich Model

Functions and Role of HR Manager - Skills for HR Professionals - Challenges of HRM.

Learning Outcomes: After completion of this unit, the student will be able to

1. Identify the difference between the traditional view of human resource management (HRM) and the present view. **L1**

2. Describe the HR challenges and Skills **L2**
3. Understanding alternative approaches to managing human resources and appreciating the diversity of factors that motivate workers **L5**

Pedagogy tools: Blended learning, Case, video lectures, self-reading, corporate reports, and online tools for right engagement. (Mentee-Mentor, Kahoot)

Unit II:Procurement **No. of Hours: 12**

Procurement - Job Analysis - Process of Job Analysis, Job Description and Job Specification, Job Design Steps in job design, contemporary issues in Job Design - Job Evaluation - Methods of Job Evaluation Human Resource Planning, Importance, HR Planning Process - Recruitment - Nature, Sources of Recruitment - Latest Methods of Recruitment - Selection - Significance of Selection - Selection Process, Barriers of selection – On boarding process

Learning Outcomes: After completion of this unit, the student will be able to:

1. Describe the process of workflow analysis and identify why it is important to HRM. **L2**
2. Briefly discuss the major challenges and constraints involved in the recruiting process. **L3**
3. Understands various steps in the selection process and why it is so important to the organization. **L1**

Pedagogy tools: Caselet, video lectures, self-reading, TED talks, Online dashboards for recruitment and selection, Guest lectures.

Unit III: Development **No. of Hours: 12**

Development: Training - Need, Training Process – Designing the Training Program - Methods of Training, the Difference between Training and Development Career Development, Roles for Career Development - Performance Appraisal – Objectives Methods of Performance Appraisal.

Learning Outcomes: After completion of this unit, the student will be able to:

1. Understands various steps in the selection process and why it is so important to the organization. **L1**
2. Describe the concepts of gamification, digital learning, and micro-learning, and the reasons that they have become more critical in today's organizations. **L5**
3. Identify the difference between performance management and performance appraisals. **L2**

4. Identify some of the common problems, and how to avoid the problems, with performance appraisals. **L2**

Pedagogy tools: Caselet, video lectures, self-reading, Online survey and assessment, HR executive Interviews.

Unit IV: Compensation and Maintenance **No. of Hours: 12**

Compensation and Maintenance: Compensation - Meaning, Components of Compensation, Ideal Compensation SystemFactors Influencing Employee Compensation, Pay Rates, Basic and Supplementary PayExecutive Remuneration, Components of Executives pay, Trends in Executives' Pay

Employee Safety, Need for safety, Safety Standards -Types of Accidents, Health - Physical and Mental Health, Work Stress.

Learning Outcomes: After completion of this unit, the student will be able to:

1. List various factors determining pay rates **L1**
2. Understand the difference between basic and supplementary compensation **L2**
3. Analyze the role of the supervisor in employee safety and minimize accidents at the workplace **L4**

Pedagogy tools: Caselet, Video lectures, Self-reading, Minor Survey and Report Writing, Report Analysis and Trend Analysis on Compensation, Industrial Visit to know about the safety standards

Unit V: Integration and Separation **No. of Hours: 12**

Integration and Separation - Employee Wellbeing - Happiness Factor, Quality of Work Life.

Collective Bargaining - Process of Bargaining - Separation - Types of Separations - Rightsizing - Exit Interview

Learning Outcomes: After completion of this unit, the student will be able to:

1. Understands how QWL program helps for organization effectiveness **L4**
2. Discuss the impact of downsizing on the organization and employees **L3**
3. Describe the laws that impact union and management relations **L2**

Pedagogy tools: Caselet, Video lectures, Self-reading, Roleplays, Group discussions, Discussions with Union/Welfare officer for industry exposure

On successful completion of this course, students will be able to:

	Course Outcomes (COs)	**Assessment**

CO1	Understand the fundamentals, evolution & challenges of HRM	A1,A2,A3
CO2	Explore the role of HRM in procurement of human resources	A2, A3
CO3	Evaluate training needs, methods of appraisal and perceptual errors	A3
CO4	Analyze the basic factors in designing the compensation	A1, A3
CO5	Evaluate the process of integration and separation for quality of work life	A1, A3

Textbook(s):

1. Gary Dessler & BijuVarkkey, "Human Resource Management", Pearson, New Delhi, 16th edition.
2. George W Bohlander, Scott A Snell, “Principles of Human Resource Management”, Cengage Learning, 2017.16th edition.
3. Aswathappa, K., Human Resource and Personnel Management: Text & Cases, TMGH
4. Subba Rao, P., Personnel and Human Resource Management (Text & Cases), Himalaya Additional Reading
5. Edwin B Flippo, "Personnel Management", Tata McGraw Hill Publishing, New Delhi, 1984
6. John H. Bernardin, "Human Resource Management - An Experiential Approach", Tata McGraw Hill, New Delhi, 2013
7. Mirza, Saiyadain, "Human Resource Management", Tata McGraw Hill, New Delhi, 2013 •Gary Journal(s)
8. Harvard Business Review, Harvard Business School Publication USA
9. People Matters online Magazine
10. Human Capital Magazine
11. Vikalpa, Indian Institute of Management, Ahmedabad

	Programme Objectives												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	1	2	3
C01	1	1	0	2	2	1	0	1							
C02	2	3	1	2	2	0	1	2							
C03	1	2	1	2	2	0	1	0							
C04	1	1	0	2	2	0	2	2							
C05	1	2	3	2	1	0	2	2							

0=NoRelevance;1=LowRelevance;2=MediumRelevance;3=High Relevance

	Course Code: Change the Code	L	T	P	J	S	C
	Course Title: Organizational Communication	3	0	0	0	0	3
	Course Owner Dept of HRM	Syllabus version				1.0	
	Course Prerequisite(s): Organizational Behavior, Management Theory and Practice	Contact hours				49	
	Course Co-requisite(s):	Date Approved					
	Alternate Exposure:						

Course Description

The focus of this paper is to make the students understand organizational communication, the impact of interpersonal relationships on interpersonal communication, to gain a perspective on the Management process and its dependence on communication.

Course Objectives

1. To understand the fundamentals of interpersonal communication and interpersonal relationships.
2. To explore the communication-process model to understand the variables of organizational communication.
3. To evaluate the three models of interpersonal communication for effective communication.
4. To analyze the dynamics of power, barriers to communication, and interpersonal influence within the context of the organizational hierarchy.

UNIT-1 Introduction **No of Hours: 10**

Functions of Communication – Control, Motivation, Emotional Expression, Information – Communication Process – Formal and Informal Communication – Directions of Communication – Downward, Upward and Lateral – Formal Small Groups Network and Grapevine – Oral, Written and Nonverbal Communication – Channel Richness and Choice of Communication.

Communication and Management - The Paradox of Human Communication - Problems with Multiple Messages – Problems with Differences in Language and Meaning – The Management Process and Communication – Planning, Organizing, Directing, Controlling -Interdependence of Management and Communication.

Communication as a process – Source-Encoder, Message, Channel, Receiver-Decoder – The Nature of the Human Communication Process – Semantic Noise and Semantic Receivers -

Achieving effectiveness in Human Communication - The Concept of Richness

Learning Outcomes:

After completion of this unit, the student will be able to

1. Understand the fundamentals of communication · L2
2. Analyse the significance of communication in management · L4
3. Analyse communication as a process · L4

Pedagogy tools:

Blended learning, Lectures, experiential exercise, role play, videos, presentations, and guest lectures will comprise the delivery of the course.

Case Method - Classroom presentations and Case Reports. Lectures are designed to supplement and go beyond the assigned readings.

UNIT - II Management of Interpersonal Communication **No of Hours: 12**

Intrapersonal Foundations for Communication – Managing Motivation to Influence Interpersonal Communication – The Need for Inclusion, The Need for Control, The Need for Affection -

Interpersonal Perception Upon Communication – Interpersonal Perception and Superior-Subordinate Relations;

The Role of Emotions in Interpersonal Communication – Fear in Interpersonal Communication, Anger in Interpersonal Communication.

Learning Outcomes:

After completion of this unit, the student will be able to

1. Understand the intrapersonal variables of communication · L2
2. Evaluate the role of motivation, perception, and emotions in interpersonal communication · L4

Pedagogy tools: Blended learning, Lectures, experiential exercise, role play, videos, PowerPoint presentations, guest lectures will comprise the delivery of the course.

Case Method - Classroom presentations and Case Reports.

Lectures are designed to supplement and go beyond the assigned readings.

UNIT - III Models for Understanding Interpersonal Relationships **No of Hours:12**

Exchange Theory as a Model for Interpersonal Communication;

Johari Window as a Model for Interpersonal Communication;

Transactional Analysis as a Model for Interpersonal Communication

Learning Outcomes:

After completion of this unit, the student will be able to

1. Understand the various models of understanding Interpersonal relationships · L2
2. Apply the models for understanding interpersonal relationships · L3

Pedagogy tools: Blended learning, Lectures, experiential exercise, role play, videos, PowerPoint presentations, guest lectures will comprise the delivery of the course.

Case Method - Classroom presentations and Case Reports.

Lectures are designed to supplement and go beyond the assigned readings.

UNIT - IV Barriers to Communication **No of Hours: 10**

Power Differences as a Barrier to Communication – Power Tactics – Taking Counsel, Manoeuvrability, Complete Communication, Compromise, Negative Timing

Language as a barrier to communication

Communication which Provokes Defensiveness – Evaluative, Dogmatic, Communication which implies Superiority, and Manipulative Communication.

Gateways to Communication – Interpersonal Trust - Listening - Feedback - Nonverbal Communication – Non-Directive Counselling.

Learning Outcomes:

After completion of this unit, the student will be able to

1. Identify the barriers to effective communication · L3
2. Understand the different approaches to communication that provokes defensiveness · L2

Pedagogy tools: Blended learning, Lectures, experiential exercise, role play, videos, PowerPoint presentations, guest lectures will comprise the delivery of the course.

Case Method - Classroom presentations and Case Reports.

Lectures are designed to supplement and go beyond the assigned readings.

UNIT - V: Communication for Interpersonal Influence **No of Hours: 5**

Interpersonal Influence – The Influence Process – Influence of Behavior through Shaping, Influencing Behavior through Modelling, Influencing through Counselling and Coaching, Personal Influencing, Influencing through participation, Influencing through Changing the Work Environment

Resistance to Change – The Process of Changing Attitudes and Behavior – Lewin's Three-Step Change Model

Organizational Limitations to Interpersonal Influence

Learning Outcomes:

After completion of this unit, the student will be able to

1. Understand the process of influencing · L2

2. Understand the concept of resistance to change · L2

3. Analyse the process of changing attitudes and behavior · L4

Pedagogy tools: Blended learning, Lectures, experiential exercise, role play, videos, PowerPoint presentations, guest lectures will comprise the delivery of the course.
Case Method - Classroom presentations and Case Reports.
Lectures are designed to supplement and go beyond the assigned readings.
On successful completion of this course, students will be able to:

	Course Outcomes (COs)	**Assessment**
CO1	Understand the fundamentals of interpersonal communication and interpersonal relationship	A1,A2,A3
CO2	Explore the communication-process model to understand the variables of organizational communication	A1,A2, A3
CO3	Evaluate the three models of interpersonal communication for effective communication	A1, A3
CO4	Analyze the dynamics of power, barriers to communication and interpersonal influence within the context of the organizational hierarchy	A1,A2, A3

Textbook(s):

1. Wofford, Gerloff, and Cummins, Organizational Communication – The Keystone to Managerial Effectiveness, McGraw Hill, 1977

Additional Reading:

1. Bovee & Thill, Business Communication, Pearson Education, 2019
2. Lesikar & Flatley, Basic Business Communication – Skills for Empowering the Internet Generation, 9th Edition, McGraw-Hill, 2019

Journal(s):

1. Asia Pacific Journal of HRM, Asia Pacific Institute of Management, New Delhi.
2. GITAM Journal of Management, GITAM University, Visakhapatnam.
3. Harvard Business Review, Harvard Business Publishing Co., USA.
4. HRD Times, National HRD Network, Hyderabad.

Website(s):

	Programme Objectives								**PSOs**						
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
CO1	3	1	0	0	0	0	0	0							
CO2	3	3	1	1	3	0	3	2							
CO3	1	1	1	0	3	0	3	0							
CO4	0	0	3	0	3	1	1	2							

1-Low, 2- Medium and 3- High Correlation

	Course Code	Course Title	L	T	P	J	S	C
	MMB 716	Innovation and Entrepreneurship	3					3
	Course Owner	Dept. of Entrepreneurship	Syllabus version				1.0	
	Course Pre-requisite(s)	Venture Development	Contact hours				45	
	Course Co-requisite(s)	Business Environment	Date Approved					
	Alternate Exposure							

Course Description

The process of converting ideas into a viable business proposition is a critical factor in today's economy. Entrepreneurship is a structured and dynamic process that involves creativity, risks, and meticulous planning. This course aims to lay a foundation and basic understanding of the Entrepreneurial framework and develop the competency to think and act entrepreneurially. Entrepreneurship in practice involves acquiring the necessary skills, competencies, and action-based activities.

Course Objectives:

This course aims to enable the students to know how the innovations, opportunities, and ideas convert into a new business.

1. To know various theories of entrepreneurship and trends.
2. To generate new business ideas from various sources.
3. To identify various issues and challenges in starting a new venture.
4. To know the elements of a business plan and designing a business model.
5. To compare and contrast the entrepreneurship practices in the family business and social enterprise

On successful completion of this course, students will be able to:

UNIT - I Title-Entrepreneurship Theory & Identification of Trends No of Hours :8

Entrepreneurship Theory & Identification of Trend - Internal & External business environment, Theory of Entrepreneurship, Evolution of Entrepreneurship, Approaches to Entrepreneurship, Entrepreneurial process, Entrepreneurial mindset, Entrepreneurial characteristics, Trends in Entrepreneurship Research , Corporate Entrepreneurship and Innovation, Intrapreneurship .

Learning Outcomes:

After completion of this unit, the student will be able to

- Describe various aspects of the entrepreneurial process and approaches L1

- Analyse the environmental factors promoting entrepreneurship L3
- Differentiate various types of entrepreneurships L1
- Recognize the traits and mind-set of an entrepreneur L4
- Evaluate the trends in entrepreneurship research.
  L5

Pedagogy tools: : Blended learning, Case discussion, Group Discussion, video lectures, self-reading

UNIT - II Title :Innovation, Opportunity IdentificationNo of Hours:8

Innovation and Opportunity Identification - Opportunity Identification - Entrepreneurial imagination and creativity,**Design Thinking - Ideation and Idea Selection -** Innovation and the Entrepreneur - The Innovative Process, Types of innovation, Principles of Innovation,Frugal Innovation, sources of innovative ideas, Parameters for internal evaluation of an idea, Minimum Viable Product.

Learning Outcomes:

After completion of this unit, the student will be able to

- Identify new business opportunities L3
- Recognize various types of innovations
  L3
- Critically evaluate the benefit of innovation in various scenarios
  L2
- Identify the problem in the given business scenarios to find a solution
  L5
- Evaluate an idea's Minimum Viability requirements
  L4

Pedagogy tools: : Blended learning, Case discussion, Group Discussion, video lectures, self-reading

UNIT - III :Title New Venture Creationand legal issues of entrepreneurNo of Hours : 10

Title New Venture Creation and legal issues of entrepreneur -New venture creation process - Challenges of new venture start-ups, Why New-Ventures fail, New- Venture Evaluation Process, Critical factors for New-Venture Development -Funding innovation, Importance of business valuation and different stages of funding, Debt vs Equity Financing, Different types of funding sources - Bootstrapping, Crowdfunding, Venture Capital, Business Angels, succession and exit strategy.Intellectual Property, Legal Challenges in Entrepreneurial ventures – an overview, Patents, copyrights, trademarks, IP infringement and its legalities, Legal Structures for Entrepreneurial Ventures.

Learning Outcomes:

After completion of this unit, the student will be able to

- Explain the components of a new venture motivations L3

- Examine the process, prospects and funds of a new venture L4
- Identify the causes of success and failure factors of a new venture L4
- Analyse the feasibility reports of a new venture L4
- Recognize the legal challenges in a new product development L3

Pedagogy tools: Blended learning,Case discussion, Group Discussion, video lectures, self-reading

UNIT - IV Title Business plan and Business ModelsNo of Hours :10

Business Plan and Business Models : Entrepreneurial ventures and Business Plan preparation for New Ventures – Pit falls in business planning, Benefits of business plan and Elements of a Business Plan-Executive summary-marketing plan, production and operations plan, organizational plan -Business Model Generation Principles, types of business models, Business Model Generation in Practice - Canvas, Patterns, Design, Strategy, Process -Contemporary Business models in era of Disruption.

Learning Outcomes:
After completion of this unit, the student will be able to

- Analyse different types of business plans and components of a business plan L3
- Recognize varieties of business models and revenue streams L3
- Analyse the recent trends in business model innovations L4
- Create a business model canvas L4
- Prepare a business plan format L5

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT – VTitle Family Business and Social EntrepreneurshipNo of Hours :9
Family Business and Social Entrepreneurship: Family Business – Family Business models and practices, Succession Plan and transfer of power, Financial considerations and valuation of the family business, adopting to current business environment, new technologies and global expansion - Social Entrepreneurship - Social Capital -Drivers and Challenges of Social Entrepreneurship - Empowerment of Beneficiaries, Business Models for Social Enterprises, Scaling Up of the social enterprises, Sustainability of Social Enterprise in practice.

Teaching Guide Lines :Aravind Eye Hospital Model- Grameen Bank Model of Bangladesh- - Barefoot College.

Learning Outcomes:
After completion of this unit, the student will be able to

- Critically differentiate business management practices and family business management L3
- Analyse the family business management theories and factors L4
- Analyse the relation between succession plan and the business growth of a family business L4

- Recognize social problems and ideas for social entrepreneurship L3
- Evaluate scaling techniques and sustainability of social enterprise L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Understand various aspects of the entrepreneurial process and trends in entrepreneurship.	L2
CO2	Identify new business opportunities and outline the legal aspects of entrepreneurship in practice.	L4 ,L5 &L6
CO3	Examine the process and prospects of a new venture.	L4, L5 &L6
CO4	Develop a business plan and design a business model.	L5 &L6
CO5	Appraise the entrepreneurship process in the family business and social enterprise.	L5&L6

Textbook(s):

1. Kuratko, D. ***Entrepreneurship: Theory, process, and practice*** (International Edition; 9th ed.): Cengage Learning. 2013./ Latest Edition.
2. Tim Mazzarol, Sophie Reboud, Entrepreneurship and Innovation, Theory, Practice and Context. 4th Edition, Springer, http://www.springer.com/series/10099

Additional Reading

Reference Book(s):

1. 1.Osterwalder, A., &Pigneur, Y. 2010. Business Model Generation: A Handbook for Visionaries, Game Changers, And Challengers Wiley.

Journal(s):

1.Journal of Business Venturing

Website(s): /*Documentaries*

- Bloomberg Game Changers (e.g. Zuckerberg, Brin& Page; Jobs, Musk, etc)

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Sum**
CO1	**1**	**0**	**1**	**1**	**1**	**1**	**1**	**1**	**7**
CO2	**1**	**2**	1	**2**	2	**2**	2	**2**	**14**
CO3	**1**	**1**	**1**	**2**	**2**	1	2	2	**12**
CO4	**2**	1	**2**	2	**2**	1	**2**	**2**	**14**
CO5	**0**	**0**	**1**	**1**	**1**	**1**	**2**	**1**	**7**
Target Level Max.	5	4	6	8	8	6	9	8	54

SEMESTER 3

S.№.	Code	Level of course	Title of Course	Theory	Practical/ Viva Voce	Credits	Internal Assessment Marks	External Assessment Marks	Total Marks
1	MMB801	Foundation	Strategic management	2	2	3	100	0	100
2	MAN801	Foundation	Big Data analytics	4		3	50	50	100
3	MAN803	Foundation	Predictive Analytics and Machine Learning for Business Managers	3		3	50	50	100
4	MAN805	Foundation	Visual Analytics	3		3	50	50	100
5		Elective 1		3		3	50	50	
6		Elective 2		3		3	50	50	
7		Elective 3		3		3	50	50	
8	MAN891	Summer Intership	6-8 weeks duration			3	100		100
		Total		**29**	**2**	**24**	**550**	**250**	**800**
	PCDs	**University**	**Soft Skills 2**		**2**	**1**	**50**		**50**
	PCDs	**Skill Set**	**Current Business Affairs (CBA) -2**	**2**		**1**	**50**		**50**
			TOTAL CREDITS (including PCDs)			**26**	**100**		**100**

BA -BA Electives (Semester 3)					
Sl. No.	**Business Analytics Electives for MBA - BA**	**Credits**	**Internal**	**External**	**Functional**
1	AI & Machine Learning for Managers	3	100	0	Industry
2	Data Driven Change Management	3	50	50	HR
3	Supply Chain Analytics	3	50	50	OR
4	Data Analytics with R	3	100	0	Industry
5	Data Analytics with SPSS	3	100	0	Industry
6	Competency Mapping & Performance Analytics	3	50	50	HR
7	Data Analytics with Python	3	100	0	Industry
8	Marketing Analytics	3	50	50	Marketing
9	Finance & Risk Analytics	3	50	50	Finance
10	Credit Risk Analytics	3	50	50	Finance

	MAN322	**Big Data Analytics**	L	T	P	J	S	C
			3		2			4
	Course Owner	Department of Business Analytics & Fintech	Syllabus version				1.0	
	Course Pre-requisite(s)	Java Programming, Fundamentals of Linux	Contact hours				60	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Big data is a term used to describe a massive amount of structured and unstructured data collected over the years from different sources. Analysis of such data may provide great insights for a business. However, traditional data management functions are not capable for handling such data and requires specialized tool. Hadoop is a popular platform for carrying out big data analytics. This course offers basic level content related to theory and practice of big data analytics using Hadoop ecosystem.

Course objective (CO)

1. To acquaint the students with the concepts of big data
2. To provide hands on experience in working with Hadoop
3. To provide hands on experience parallel processing
4. To provide hands on experience related to data warehousing for big data
5. To provide hands on experience related to NoSQL for big data

UNIT - I	Introduction to big data analytics	No of Hours:12
Concept, Features of big data, big data challenges, Hadoop and its features, Hadoop Ecosystem, Hadoop Components, Hadoop Architecture, Hadoop Cluster, Installation methods, HDFS		
Learning Outcomes:		
To understand and practice		
Understanding big data analytics and various processing strategies		L1
Know about various tools for big data analytics		L1
To understand computer networks with spl emphasis on Hadoop clusters		L1
To understand network file systems using HDFS		L1
Dealing with data through local and network file system (NFS)		L1
Pedagogy tools: video lectures, online learning materials, lab practice		
UNIT - II	**Hadoop Mapreduce**	**No of Hours:12**
Concept, YARN components, YARN, architecture, YARN mapreduce application execution flow, YARN workflow, Java for Mapreduce programming; Mapreduce examples; Mapreduce for data analytics: analyzing numerical and categorical data sets; Mapreduce for statistical analysis; Hadoop streaming.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand mapreduce paradigm for programming		L2
Write mapreduce programs		L2
Analyze data sets using few in-build and user defined scripts		L2

Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - III	**Introduction to Apache Pig**	**No of Hours:12**
Installation, Pig Components & Execution, Pig data types, Data models in Pig, Programming in Pig.		

Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand both local and parallel computing environments for data processing		L3
Parallel processing using Apache PIG		L3
Analyze few data sets using Apache Pig programming concepts		L3
Pedagogy tools: video lectures, self-reading		
UNIT - IV	**Introduction to Apache Hive**	**No of Hours:12**
Installation, Architecture and components, data types and data models, HIVE partitioning and bucketing, HIVE tables, HIVE QL: joining tables, dynamic partitioning. Introduction, Architecture and components, Run modes, configuration, data models, HIVE data loading techniques.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand SQL for big data analytics		L4
Practice SQL on big data sets using Apache Hive		L4
Pedagogy tools: Blended learning, video lectures, self-reading		

UNIT - V	Introduction to Apache Spark	No of Hours:12
Installation, Interactive analysis, RDD programming; Spark SQL, Handling data sets and Data Frames in Spark		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the spirit of parallel processing and distributed data		L5
Learn about Resilient Distributed Dataset (RDD) using Spark		L5
Handle data sets and data frames using Spark		L5
Pedagogy tools: video lectures, self-reading		

Course Outcomes (CO)

1. To understand the concept of big data and processing the same using software tools
2. To lean MapReduce paradigm and know how to use it for big data analytics
3. To learn local and parallel data processing using Apache Pig
4. To learn and practice SQL like operations for big data using APACHE Hive
5. To understand suitability of NoSQL for big data analytics using APACHE HBase

Textbook(s):

1. Kamakshaiah Musunuru, HADOOP Kichidi, Available at https://kamakshaiah.github.io/hadoop-kichidi/.

Additional Reading

Reference Book(s):

1. Tom White, Hadoop The Definitive Guide, 4th edition, O'Reilly Media, Inc.
2. Edline, Hadoop – 2 Quick start guide, Pearson.
Journal(s):
1.
Website(s):
1.

Practical Experiments

Topics	Type (Experiment, Project, Exercise) Choose an item.
Installation of VirtualBox and Ubuntu Linux	Lab Experiment
2 node Beowulf cluster using Ubuntu Linux	Lab Experiment
Hadoop installation	Lab Experiment
Distributed computing using Hadoop core/common libs	Lab Experiment
Handling data sets across LFS and HDFS	Lab Experiment
Data analysis using MapReduce programming (numerical & categorical)	Lab Experiment
Pig installation and practice of parallel computing and big data analysis using Pig Latin commands	Lab Experiment
Hive installation and practice of SQL (HQL)	Lab Experiment
Spark Installation and practice of RDDs	Lab Experiment

Pedagogy tools:	**Practical**	**Online Video Resources**	**Practical**	
	Practical	**Practical**	**Practical**	

Components	**Term End Examination**	**Internal Examination**													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Marks															
Total Marks															

Text Books	**Topics**
1: Kamakshaiah Musunuru, HADOOP Kichidi, Available at https://kamakshaiah.github.io/hadoop-kichidi/.	**All**

Additional Reading	
Reference Book(s):	**Topics**
1 Tom White, Hadoop The Definitive Guide, 4th edition, O'Reilly Media, Inc. **2.** Edline, Hadoop – 2 Quick start guide, Pearson.	**All**

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**2**	**2**	**1**	**1**	**1**	3	3								
CO2	**3**	**3**	**3**	**1**	**1**	**1**	3	3								
CO3	**3**	**3**	**3**	**1**	**1**	**1**	3	3								
CO4	**3**	**3**	**3**	**1**	**1**	**1**	**3**	**3**								
CO5	**3**	**3**	**3**	**1**	**1**	**1**	3	3								

1-Low, 2- Medium and 3- High Correlation

	Course Code	**Predictive Analytics and Machine Learning**	L	T	P	J	S	C
			3					3
	Course Owner	Dept of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

Predictive analytics is the use of statistics and modeling techniques to determine future performance based on current and historical data. hine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed.

COURSE OBJECTIVES

- Understand different categories of Machine Learning
- Understand different algorithms in Machine Learning

UNIT - I	Introduction to Predictive Analytics	No of Hours: 9
Overview of Predictive Analytics: What is Predictive Modeling? Supervised and Unsupervised Learning, Parametric and Non-Parametric Models, BI, Predictive Analytics Vs BI, Predictive Analytics Vs Statistics, Predictive Analytics Vs Data Mining, Who uses Predictive Analytics? Challenges in using Predictive Modeling.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concepts of Predictive analytics		L2
Distinguish between the supervised and unsupervised learning		L2
Differentiate the concepts like BI, statistics, data mining with predictive analytics		L3
Know the challenges in Predicting Modeling		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II	**Predictive analytics Techniques**	**No of Hours: 9**
Trend lines and Regression Analysis, Forecasting Techniques, Monte Carlo simulation – Concept		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the regression analysis and Forecasting		L2
Solve the real-life forecasting problems		L4
Apply Monte Carlo simulation for prediction		L4
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - III	Introduction to Machine Learning	No of Hours: 9
Basics of Machine Learning, Categories of Machine Learning, Steps in Machine Learning, Machine Learning process, Train and Test Data, Validation Techniques (Cross-Validation)		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the basis of Machine Learning and its categories		L2
Know the steps and process in Machine Learning		L2
Understand the terms like Training, Testing and Validation		L2
Describe the different methods of validation		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - IV	**Unsupervised Learning - I**	**No of Hours: 6**
Clustering: Distance measures, Different clustering methods (Distance, Density, Hierarchical), Iterative distance-based clustering; Dealing with continuous, categorical values in K-Means		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the basics of unsupervised learning		L2
Understand the methods of clustering		L2
Apply the clustering techniques for real-life problems		L4
Analyze the way of clustering of continuous and categorical data		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - V	**Unsupervised Learning – II**	**No of Hours: 9**

Constructing a hierarchical cluster, K-Medoids, K-Mode and density-based clustering, Measures of quality of clustering, Dimensionality Reduction/ Feature Selection	
Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand the hierarchical, k-medoids and k-mode clustering algorithms	L2
Understand the measures used for checking the quality of clustering	L2
Describe the procedures involved in dimensionality reduction / Feature Selection	L2
Apply these techniques on real – life problems	L4
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

On successful completion of this course, students will be able to:

CO	**Course Outcomes**	**Assessment**
CO1	Understand the concepts of Machine Learning	A1, A2, A4
CO2	Use a tool to implement regression methods	A3, A5
CO3	Use a tool to implement decision trees algorithms	A3, A5
CO4	Use a tool to implement unsupervised learning	A3, A5
CO5	Understand different feature selection methods	A1, A4

Text book

1. Alberto Cordoba, Understanding the Predictive Analytics Lifecycle (Wiley and SAS Business Series)
2. Dean Abbott, Applied Predictive Analytics: Principles and Techniques for the Professional Data Analyst
3. Jac Fitz-enz and John Mattox II, Predictive Analytics for Human Resources (Wiley and SAS Business Series)
4. Vince Reynolds, Analytics: Data Analytics for Business Insights, Predictive Analysis, Statistics and More.

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
Internal	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
C01	0	1	0	0	1	1	1	3	7
C02	0	3	0	0	2	1	2	3	11
CO3	0	3	0	0	2	1	2	3	11
CO4	0	3	0	0	2	1	2	3	11
CO5	0	1	0	0	1	1	1	3	7
Target Level Max.	0	11	0	0	8	5	8	15	47

	MAN 805	**Visual Analytics**	L	T	P	J	S	C
			2		2			3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Data Visualization is the presentation of data in a pictorial or graphical format. Today analysts are required to deal with large amount of data. Visualization helps in presenting the data in pictorial or graphical format. Such visual representation will help in providing better insights to the decision maker. Tableau and Power BI are popular visualization tools to create visual data.

Course Objectives

- To understand the concept and benefits of visualization
- Understand the usage of different visual encoding
- Provide hands on working with Tableau
- Hands on experience with Power BI
- Story telling through Data Visualisation

UNIT – I	Introduction to Visualization	No of Hours:9
Concept and importance of data visualization, Choosing appropriate visual encodings – ordering of items, number of distinct values, structure of visualization, Positioning – Placement and Proximity, Graphs and Layouts, Colors, Size, Text and Typography, Shape, Lines		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Choose appropriate visual encodings		L1
Understand structure of visualization		L2
Understand placement and proximity		L4
Understand importance of data visualization		L3
Understand Graphs and Layouts		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT – II	**Charts in Tableau**	**No of Hours:9**
Introduction to Tableau, Connecting to Data Source: Text Files, Excel, Access, other databases, merging multiple data sources, Univariate Charts, Bivariate Charts, Multivariate Charts and Maps		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Connect to different tableau data source		L3
Merge multiple data sources in tableau		L3
Create univariate charts		L3
Create bivariate charts		L3
Create multivariate charts and maps		L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT – III	**User defined fields and Customization**	**No of Hours:9**
Using predefined fields, calculating percentages, applying if-then logic, applying logical functions, showing totals and percentages, discretizing data, manipulating text, aggregate data, Customization in Tableau		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Calculate percentage in tableau		L3
Apply if-then logic		L3
Show total and percentages in tableau		L4
Aggregate data		L4
Customize in tableau		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT – IV	**Data Visualization with Power BI**	**No of Hours:9**
Introduction to Power BI, Primary tools of Power BI, Reports in BI, Charts in BI, Slicers, Map Visualizations		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Use power BI		L3
Deal with primary tools of power BI		L3
Generate reports in BI		L4
Create reports in BI		L4

Visualize maps		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT – V	**Dashboards and Customization with Power BI**	**No of Hours:9**
Dashboard Vs reports, Creating a dashboard, Dashboard Tiles, Pinning Tiles, Custom Visualization		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Create dashboards		L2
Create reports		L2
Deal with dashboard tiles		L2
Create customized visualization		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

Course Outcomes:

On successful completion of this course, students will be able to:

- Choose appropriate visual encodings
- Create charts and maps in Tableau
- Customize in Tableau
- Create reports in BI
- Create dashboards in Power BI

Practical Experiments

Topics	Type (Experiment, Project, Exercise) Choose an item.
Create different types of charts	Lab Experiment
Work with different features of Tableau	Lab Experiment
Data Visualization with Power BI	Lab Experiment
Work with Dashboards using Power BI	Lab Experiment

Pedagogy tools:	**Practical**	**Online Video Resources**	**Practical**	
	Practical	**Practical**	**Practical**	

Components	**Term End Examination**	**Internal Examination**													
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	
Marks															
Total Marks															

Text Books	**Topics**
Visual Analytics with Tableau by Alexander Loth and Mastering Power BI by Chandraish Sinha	**All**
Additional Reading	

Reference Book(s):	**Topics**
The Definitive guide to DAX by Alberto Ferrari	**All**

	Programme Objectives (Pos)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**2**	**1**	**1**	**0**	**0**	3	3								
CO2	**2**	**2**	**1**	**1**	**0**	**0**	3	3								

CO3	**2**	**2**	**1**	**1**	**0**	**0**	3	3								
CO4	**2**	**2**	**1**	**1**	**0**	**0**	**3**	**3**								
CO5	**2**	**2**	**1**	**1**	**0**	**0**	3	3								

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	Course Code	**Artificial Intelligence and Machine Learning**	L	T	P	J	S	C
			2		2			3
	Course Owner	Dept of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

Artificial Intelligence has its foundation in Boolean algebra. With the introduction of computers, AI has gained prominence, where attempts were made to make computers think and reason like humans. It has come a long way from playing games to intelligent robots. This program aims to introduce the basic concept AI, Knowledge base and Machine Learning.

Course objectives:

- To understand AI/ML role in Business/Management
- To understand and practice various algorithms related to Artificial Intelligence.
- To understand and practice various algorithms related to Supervised Machine Learning.
- To understand and practice various algorithms related to Unsupervised Machine Learning.
- To use algorithms on few business use cases and solve few relevant business problems using AI/ML

UNIT - I		No of Hours: 9
Graph Theory, Strategies for State Space Search and Control Strategies: Breadth First Search, Depth-First Search, Iterative Deepening Depth First Search, Bi-Directional Search methods. Practice: solving few business problems or use cases using Python/any other popular programming language.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the Strategies of State Space Search and Control		L2
Understand the logic of Graph theory		L2
Analyze the applicability of each strategy to real life problem		L4
Practice the relevant business problems /cases on state space search strategies		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II		**No of Hours: 9**
Heuristic Search: Hill climbing, Simulated Annealing, AO* Algorithm. Recursive methods: Best First Search Depth Fist Search, Binary search, Pattern-Matching. Knowledge based agents and knowledge representation: methods and techniques. Practice: solving few business problems or use cases using Python/any other popular programming language used for AI.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concept of Heuristic Search		L2
Understand the logics in Recursive Methods		L2

Understand the Knowledge based agents and Knowledge representation	L2
Analyze and solve the business problems in that area	L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - III		**No of Hours: 9**
Introduction to numerical optimization: convex vs non-convex, smooth, and non-smooth problems, noisy vs. exact cost functions. Various types of optimizers. Practice: on particle swarm optimization, Genetic algorithms.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand the concept of Convex and non-convex problems	L2
Understand the concept of smooth and non-smooth problems	L2
Understand the concept of noisy and exact cost function problems	L2
Describe the different types of optimizers	L2
Solve the real-life problems using particle swarm optimizer and Genetic algorithm	L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV		**No of Hours: 9**
Supervised machine learning algorithms: Linear models, discriminant analysis, SVM, Nearest Neighbors, Naïve bayes, Feature selection, Neural networks. Practice: Solve few business use cases using Python libraries.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concept of Supervised Machine Learning algorithms		L2
Solve the classification problems using discriminant analysis, SVM and Nearest Neighbor, Neural Network approaches		L3
Understand the procedure of feature selection		L2
Solve the business problems using supervised machine learning algorithms through python programming		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V		**No of Hours: 9**
Unsupervised learning algorithms: Gaussian Mixture Models (GMM), Clustering, Covariance estimation, Novelty and outlier detection, Density estimation, Neural networks. Practice: Solve few business use cases using Python libraries.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concept of Unsupervised Machine Learning algorithms		L2
Solve the clustering problems using GMM, and Neural Networks		L3
Understand the concepts of Covariance Estimation, Outlier Detection, and Density estimation		L2
Solve the business cases / problems on Outlier detection		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
Course Outcomes: 1.Distinguish different state space uninformed search techniques 2. Distinguish different state space heuristics search techniques 3. Explain the concept of numerical optimization 4. Build a supervised machine learning model for a business problem 5. Build a unsupervised machine learning model for a business problem		
Textbook(s):		
Online resources and instructor led material.		
Additional Reading		
Reference Book(s):		

1. Saroj Koushik, Artificial Intelligence, 2016, Cengage Learning 2. Tom Mitchell. Machine Learning, 2017, McGraw Hill 3. Stuart J. Russell, Peter Norvig, Artificial Intelligence, A Modern Approach, 3rd Edition, Pearson.
Journal(s):Journal of Artifical Intelligence
Website(s):
7. https://archive.ics.uci.edu/ml/index.php 8. https://www.kaggle.com/ 9. https://data.gov.in/

Practical Experiments

Topics	Type(Experiment, Project, Exercise) Choose an item.
Practice the relevant business problems /cases on state space search strategies	Programming Exercise
Analyze and solve the business problems in that area	Programming Exercise
Solve the real-life problems using particle swarm optimizer and Genetic algorithm	Programming Exercise
Solve the classification problems using discriminant analysis, SVM and Nearest Neighbor, Neural Network approaches	Programming Exercise
Solve the business problems using supervised machine learning algorithms through python programming	Programming Exercise
Solve the clustering problems using GMM, and Neural Networks	Programming Exercise
Solve the business cases / problems on Outlier detection	Programming Exercise

	Programme Objectives (POs)												PSOs			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**1**								
CO2	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**								
CO3	**3**	**1**	**0**	**0**	**0**	**3**	**0**	**3**								
CO4	**3**	**1**	**0**	**0**	**0**	**3**	**3**	**3**								
CO5	**3**	**1**	**0**	**0**	**0**	**3**	**3**	**3**								

1-Low, 2- Medium and 3- High Correlation

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	MANXXX	**Data Driven Change Management**	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure	Analytical Tools, Business Statistics, Business Strategy, Change Management						

Course Description:

This course is designed to introduce change management concepts into an organizational context and to provide a focus on data-driven decision-making. The change management in various leadership functions, including strategic planning and resource allocations in modern organizations leverages business analytics tools and techniques to identify and maximize the efficiency and effectiveness of a company's value-added activities. Students are encouraged to use and combine different tools in their analysis of corporate problems, assess the influence of uncertainty on their recommendations, and learn to communicate information from quantitative analysis including the communication of uncertainty. The course examines models, tools, techniques, and theory of data-driven decision- making and change management that can improve the quality of leadership decisions through case studies. Learning activities in the course will examine how decisions and strategies are developed and how tacit or explicit knowledge can be identified, captured, structured, valued and shared for effective use. The course provides an introduction to theoretical and practical applications of data-driven change management and decision-making for change agents in organizations to address existing challenges or stay prepared for dynamic business environment.

Course Objectives:

Upon successful completion of the course the participant:

- knows the basic issues and specificity of data-driven decision making and change management in organizations
- is able to co-design and adopt data-driven change management projects.
- is able to evaluate the effectiveness of various change management strategies and tactics on the organizational level.
- has an overview of the recent research and best practice on data-driven decision making in organizations.
- is able to express, present and demonstrate innovative ideas on change management in organizations.

UNIT - I		No of Hours:7
Change Management, Change Management Frameworks, Change Management Success Stories, Change Management Failures, Data Driven Change Management Strategies.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Articulate the need for Change Management		L3
Critique the outcomes of change management		L4
Formulate change management strategies		L5
Plan for change management in various scenarios		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II		**No of Hours:8**
Managing Organizational Change, Change recipients, Change elements, Navigating Change, People Analytics, Change Analytics Capabilities		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Appraise change recipients and elements		L4
Recommend steps for navigating change		L5
Design analytics capabilities for change management		L6
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - III		**No of Hours:8**

Data Driven Decision Making, Data Driven Strategies, Common pitfalls of data driven decision making, Building a data driven business culture, Intelligent Systems, Measuring financial impact

Learning Outcomes:	
After completion of this unit, the student will be able to	
Determine data driven strategies	L4
Analyze and appraise data driven decision making	L5
Forecast and plan for change management impact	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	
UNIT - IV	**No of Hours:8**
Use Case: Capgemini's Intelligent Data Driven Change Management (IDCM) and IDCM platform "*InsideBoard"*, Managing corporate transformation: Transformed role of leadership, CTOs to CIOs, Perils of dynamic and real time information, Use Case: GE's Two Decade Transformation – Explore the role if the change management was done in the context of Data Driven Change Management.	
Learning Outcomes:	
After completion of this unit, the student will be able to	
Formulate and Assess Change Management Models	L5
Facilitate change management	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	
UNIT - V	**No of Hours:5**
Capstone Project Presentations/Case Studies: Documenting evidences of Data Driven Change Management, Data Driven Change Management Tools, Identifying the best change management strategies, Developing a model for data driven change management.	

Learning Outcomes:	
After completion of this unit, the student will be able to	
Research, Summarize and appraise Data Driven Change Management	L4
Integrate the best change management strategies	L5
Model and simulate data driven change management	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

Course Outcomes:

1. Discuss the need for change management
2. Explain the strategies for change management
3. Analyze and appraise data driven decision making
4. Distinguish different Change Management Models
5. Developing a model for data driven change management

Text Books:

The Analytics Culture the Analytics Revolution by Franks, Bill: Wiley

The Big Data-Driven Business by Russell Glass, Sean Callahan: Wiley

Creating a Data-Driven Organization by Carl Anderson: O'Reilly

Data Driven by Jeremy David Curuksu: Springer

Becoming A Data-Driven Organisation Unlock The Value Of Data by Martin Treder: Springer

Journals

- Harvard Business Review, Harvard Business School Publication Co. USA
- Vikalpa, Indian Institute of Management, Ahmedabad
- GITAM Journal of Management

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
CO1	**3**	**3**	**0**	**1**	**0**	**0**	**0**	**0**	**7**
CO2	**3**	**3**	**3**	**2**	**1**	**0**	**3**	**1**	**16**
CO3	**3**	**3**	**3**	**2**	**1**	**0**	**3**	**1**	**16**
CO4	**3**	**3**	**3**	**2**	**1**	**0**	**0**	**1**	**13**
CO5	**2**	**2**	**2**	**2**	**2**	**0**	**1**	**0**	**11**
Target Level Max.	**14**	**14**	**11**	**9**	**5**	**0**	**7**	**3**	**63**

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	Course Code	Supply Chain Analytics	L	T	P	J	S	C
			3					3
	Course Owner	Dept. of Operations	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

With rapid development of analytics, and associated tools supply chain managers must be aware the usage of these techniques to achieve optimal resource allocation, transportation decisions and site selection. Therefore, with growing uncertainty in the business environment today's managers must know to model uncertainty in their global supply chain network. The current course aims to familiarize the students with the different analytics and tools available to achieve different kinds of optimization at the supply chain level.

Course Objectives

-Understand the basics of supply chain management
- Understand the various optimization techniques in supply chain management
- to be able to apply the techniques to real time supply chain problems
- Able to make inferences as supply chain managers
- to be able to generate insights using Analytics for Supply Chain

UNIT - I	Basics of Supply Chain Management	No of Hours:9
Introduction to supply chain management, Supply Chain- evolution, Analytics in supply Chain management, supply chain planning, different views of supply chain, supply chain strategy, supply chain drivers, strategic fit in supply chain, demand forecasting in supply chain		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the need of analytics in supply chain		L2
● Understand supply chain planning		L2
● Understand drivers of supply chain		L2
● Understand importance of demand forecasting		L2
Pedagogy tools: Videos, Case-lets		
UNIT - II	**Forecasting Models in Supply Chain**	**No of Hours:9**
Bullwhip Effect and Time Series Analysis, Exponential Smoothing Method of Forecasting, Measures of Forecasting errors, Tracking Signal and Seasonality Models, forecasting using multiple characteristics in Demand Data and Inventory Management in Supply Chain		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the usage of time series analysis in supply chain		L2
● Understand the usage of exponential smoothing in supply chain		L2
● Describe measures of forecasting errors		L2
● Understand the applications of Seasonality Models in Supply Chain Management		L2
Pedagogy tools: Videos, Case-lets, Problem solving, Excel		

UNIT - III	**Inventory Management& Location Decisions**	**No of Hours:9**
Inventory Management in Supply Chain, Multi echelon Inventory Management, Multi echelon Inventory Management- 4 stations, Network Design in Supply Chain, Network Design of Global Supply Chain, Alternative Channels of distribution, Location decisions in supply chain		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Identify the importance of inventory management in supply chain		L2
● Perform multi-echelon inventory management		L3
● Understand network design		L3
● Understand the importance of location decisions in supply chain		L3
Pedagogy tools: MS Excel, Videos, Case-lets		
UNIT - IV	**Network Optimization**	**No of Hours:9**
Network Optimization models, Using Excel solver for network optimization, Uncertainty in Network Design, Network design in uncertain environment and flexibility, flexibility in supply chain		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the importance of network optimization		L3
● Evaluate the deployment of MS-Excel for network optimization		L3
● Understand the consideration of uncertainty in network design		L3
● Understand the significance of flexibility in supply chain operations		L3

Pedagogy tools: MS Excel, Videos, Case-lets.		
UNIT - V		**No of Hours:9**
Optimal level of product availability in supply chain, time value of money in supply chain, different types of analytics in supply chain, predictive modelling in supply chain, representation on uncertainty in supply chain		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the time value of money importance in supply chain		L2
● Understand the different types of analytics in supply chain		L5
● Understand the deployment of predictive modeling in supply chain		L5
● Understand the importance of maintaining optimal level of product		L5
Pedagogy tools: Mx-Excel, Videos ,Caselets		
Course Outcomes: 1.Distinguish different concepts of supply chain management 2. Explain different forecasting models in supply chain 3. Identify the importance of inventory management in supply chain 4. User MS-Excel for network optimization 5. Distinguish different types of analytics in supply chain		
Textbook(s):		
1. ***Supply Chain Management, 7/e, Sunil Chopra & Peter Meindl, Dharam Vir Kalra, Pearson India***		

Additional Reading
Reference Book(s):
1. An Introduction to Management Science Quantitative Approaches to Decision Making, By David R. Anderson/Dennis J. Sweeney/Thomas A. Williams/Jeffrey D. Camm/James J Cochran, Cengage Learning, India 2. Operations Management, William A Stevenson, McGRaw Hill India.

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**1**	**1**	**1**	**1**	**1**	**1**	**1**								
CO2	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**2**								
CO3	**2**	**2**	**3**	**3**	**3**	**1**	**2**	**2**								
CO4	**3**	**3**	**3**	**3**	**3**	**1**	**3**	**3**								
CO5	**3**	**3**	**3**	**3**	**3**	**1**	**3**	**3**								

1-Low, 2- Medium and 3- High Correlation

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	MAN227	**Data Analytics with R**	L	T	P	J	S	C
			2		2			3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

R is an open source programming language for statistical computing and graphics. Being open source, it has found huge acceptance among data scientists and is one of the popular tool for data science and machine learning business applications.

Course Objectives

1. Understand the programming concepts of R
2. To handle data on R platform
3. To be able to Descriptive Analytics using R
4. To be able to do Predictive Analytics using R
5. To Build Machine Learning models using R

UNIT - I	Elements of R	No of Hours:9
Concept of R, IDE of R, Mathematical Operators and Vectors, Assigning Variables, Special Numbers, Logical Vectors, Classes, Different types of numbers, Changing classes, Examining Variables, The workplace, Elements in R – Vectors, Matrices and Arrays, Lists, Conversion between vectors and lists, Combining lists, Data Frames		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Install the R and R studio		L1
Understand the mathematical operators		L2
Understand the Different types of numbers		L4
Change the class of objects		L3
Deal with matrices and arrays		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	Functions, Strings and Factors and Flow Controls	**No of Hours:9**
Environments, Functions, 185 Strings, Factors, Flow Controls - Conditional – if and else, Vectorized if, Multiple Selection, Loops – repeat loops, while loops, for loops, Advanced looping – replication, looping over lists, looping over arrays, Multiple – Input Apply, Instant vectorization, Split-Apply-Combine		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Create list		L3
Convert the lists into other types of data		L3
Do the basic data manipulation		L3
Create basic functions		L3

Construct the strings	L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT - III	Packages and Visualization	**No of Hours:9**

Loading packages, search path, libraries and installed packages, installing packages, maintaining packages, Visualization – The three plotting systems, Scatterplots – base graphics, lattice graphics, gg plots, Line Plots, Histograms, Box Plots, Bar Charts, Other plotting packages and systems

Learning Outcomes:

After completion of this unit, the student will be able to

Implement if and else statement	L3
Do multiple selection on data frames	L3
Implement different looping techniques	L4
Do the instant vectorization	L4
Can split the data frame	L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT - IV	Computing Statistics and Exploratory Data Analysis with R	**No of Hours:9**

Summarizing data, Calculating relative frequencies, Tabulating Factors and creating contingency tables, Testing categorical variables for independence, Calculating Quantiles of a dataset, Converting data into z-scores, t-test, testing sample proportions, testing normality, comparing means of two samples, testing correlation for significance, Variations, Missing Values, Covariation, Patterns and Models

Learning Outcomes:

After completion of this unit, the student will be able to

Summarize the data	L3
Create contingency tables	L3
Normalize the dataset	L4
Testing on sample data	L4
Do the regression analysis	L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading	

UNIT - V	Machine Learning and Model Building with R	**No of Hours:9**
Types of machine learning algorithm, supervised learning algorithms – Linear regression in R, Logistic Regression in R Unsupervised Learning in R -Clustering with R, Recommendation Algorithms, Steps to generate recommendations in R, Model Building: Model basics, Type of Models, Visualizing models – Predictions, Residuals, Model Building, Communicating results – Basics of R Markdown		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Deal with R packages		L2
Visualize the given dataset		L2
Create different plots		L2
Deal with packages meant for visualization		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

Course Outcomes:

- Differentiate different programming elements of R
- Write programs in R with flow control
- Work with R packages
- Perform statistical analysis using R
- Build machine learning model using R

Textbook(s):

1. Abraham Silberschatz, Henry F Korth, Database System Concepts, McGraw Hill Education

Additional Reading

Reference Book(s):

1. A. Hoffer Jeffrey, V. Ramesh, Topi Heikki, Modern Database Management, Pearson
2. Andrew Couch, Microsoft Access Plain & Simple

Journal(s):

1. Journal of Business Analytics, Taylor & Francis

Website(s):

1.

Practical Experiments

Topics	Type(Experiment, Project, Exercise) Choose an item.
Creating data frames in R	Lab Experiment
Creating matrices and arrays	Lab Experiment
Creating and Calling Functions	Lab Experiment
Constructing and printing strings	Lab Experiment
Looping over lists and arrays	Lab Experiment
Tabulating Factors and creating contingency tables	Lab Experiment
Normalizing the data	Lab Experiment
Testing the normality	Lab Experiment
Classification algorithms with R	Lab Experiment
Clustering algorithms with R	Lab Experiment
Dealing with R packages	Lab Experiment
Data visualization	Lab Experiment

Text Books	**Topics**
1: Gardener, M (2013), Beginning R, New Delhi: Wiley India.	**All**

Additional Reading	

Reference Book(s):	**Topics**
1: Teetor, P. (2014), R Cookbook, Mumbai: O' Reilly India / Shroff Publishers. 2.Cotton, R. (2014), Learning R, Mumbai : O' Reilly India / Shroff Publishers.	**All**

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	

CO1	**0**	**2**	**2**	**1**	**1**	**3**	1	1								
CO2	**0**	**2**	**2**	**1**	**1**	**3**	2	1								
CO3	**0**	**2**	**2**	**1**	**1**	**3**	2	3								
CO4	**0**	**2**	**2**	**1**	**1**	**3**	**2**	**3**								
CO5	**0**	**2**	**2**	**1**	**1**	**3**	2	3								

1-Low, 2- Medium and 3- High Correlation

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	MAN	**Data Analysis through SPSS**	L	T	P	J	S	C
			2		2			3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

SPSS is a Windows based program that can be used to perform data entry and analysis and to create tables and graphs. SPSS is capable of handling large amounts of data and can perform all of the analyses covered in the text and much more. SPSS is commonly used in the Social Sciences and in the business world, so familiarity with this program should serve you well in the future.

Course Objectives

1. 1.Understand the SPSS interface
2. To handle data on SPSS platform
3. To be able to Descriptive Analytics using SPSS
4. To be able to do Predictive Analytics using SPSS
5. To Build Machine Learning models using SPSS

UNIT - I	Introduction to SPSS	No of Hours:9
Data entering and filtering - Defining variables, understanding data measurement, assigning values and codes to the strings, understanding measures of a data. Data preparation for further analysis – Testing outliers, missing values, normality, computing variables in case of multi item measurement, Charts, graphs and legacy dialogs.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Enter Data on SPSS. Define Variables etc		L1
Understand Data Measurement, assign values/codes etc		L2
To be able to Interprete the output		L4
To be able to handle missing values		L3
To be able to draw charts / graphs using SPSS		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	**Correlation and Regression**	**No of Hours:9**
Introduction, Concept, types,Preparing and running correlation analysis. Introduction, Concept, Preparing data and running linear Regression analysis. Introduction, Concept, testing assumptions, running multiple Regression analysis, interpretation of the results.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concept of correlation and why we calculate it		L3
To be able to run correlation analysis on SPSS and interprete the results		L3
Understand the concept of Regression and its relevence		L3
To be able to run Linear Regression Analysis on SPSS and interpret the outcome		L3

To be able to run Multiple Regression Analysis on SPSS and interpret the outcome	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - III	T-Test and ANOVA	No of Hours:9

Introduction, Concept, types, Preparing and running t-test, interpretation of the results. Introduction, Concept, Preparing data and running ANOVA, interpretation of the results. Running Post-hoc tests and interpretation of the results. Students will be able to work and learn with real-life hands-on assignment / model using raw dataset

Learning Outcomes:

After completion of this unit, the student will be able to

Understand what is T test and where it is used	L3
To be able to run T test on SPSS and interpret the results	L3
Uderstand the concepts of ANOVA and Post-hoc tests	L4
To be able to run ANOVA and Post-hoc tests and interpret the results	L4
To be able to build models using real time raw datasets	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - IV	Factor Analysis	No of Hours:9

Introduction, Concept, Use, Concept of Orthogonal Rotation and principal Component. Running Alkin-Mayor Test, interpretation of the results. Running Factor Analysis, Scree plot, Concept of Rotated Solutions, Eigen value and factor loading. Clubbing the items under factors, removal of variables based on factor loading, naming the factors. Running factor Analysis on SERVIQUAL Scale

Learning Outcomes:

After completion of this unit, the student will be able to

Understand the concept of PCA	L3
To be able to run PCA and interprete results	L3
Understand Factor Analysis	L4
To be able to run Factor Analysis and interpret results	L4
To be able to run Fcator Analysis on SERVIQUAL Scale	L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading	

UNIT - V	**Validation of Questionnaire**	**No of Hours:9**
Concept, importance, Soft Sciences, Introduction to Scale, process of Scale development, Introduction to preparation of a Questionnaire, Pilot study, importance of running pilot study. Running a reliability Analysis, Cronbach's Alpha, Inter-Item correlation, Delete an item, maximization of Alpha value, Interpretation of the results		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand Scales and process of Scale developement		L3
To be able to build a questionnaire		L3
To be able to run Reliability Analysis on SPSS		L3
Understanding Alpha value and to be able tomaximise Alpha value when there is a need		L3
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

Course Outcomes:

1. Distinguish different elements in SPSS
2. Perform Correlation and Regression in SPSS
3. Perform T-Test and ANOVA in SPSS
4. Perform Factor Analysis in SPSS

5. Validate questionnaire in SPSS

Textbook:

Performing Data Analysis using IBM SPSS by AJ Guarino
SPSS Statistics for Data Analysis and Visualisation by Jesus Salcedo and Keith McCormick

References:

Data Analysis using SPSS by Lokesh Jasrai

Practical Experiments

Topics	Type(Experiment, Project, Exercise) Choose an item.
Building charts and graphs	Lab Experiment
Correlations- Simple- patrtial	Lab Experiment
Correlation- Multiple	Lab Experiment
Regression- Simple Linear	Lab Experiment
Regression- Multiple	Lab Experiment
T test	Lab Experiment
ANOVA and Post-hoc tests	Lab Experiment
Building models with real time raw data	Lab Experiment
Principal Component Analysis	Lab Experiment
Factor Analysis	Lab Experiment
Reliability Analysis	Lab Experiment
Text Books	Topics
1: Performing Data Analysis using IBM SPSS by AJ Guarino SPSS Statistics for Data Analysis and Visualisation by Jesus Salcedo and Keith McCormick	All
Additional Reading	
Reference Book(s):	Topics
Data Analysis using SPSS by Lokesh Jasrai	All

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
Internal	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Sum**

C01	**0**	**2**	**2**	**1**	**1**	**0**	3	3	
C02	**0**	**2**	**2**	**1**	**1**	**0**	3	3	
CO3	**0**	**2**	**2**	**1**	**1**	**0**	3	3	
CO4	**0**	**2**	**2**	**1**	**1**	**0**	**3**	**3**	
CO5	**0**	**2**	**2**	**1**	**1**	**0**	3	3	
Target Level Max.									

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GITAM INSTITUTE OF MANAGEMENT (GIM)
Gandhi Institute of Technology and Management (GITAM)
(Declared as Deemed to be University u/s 3 of UGC Act. 1956)
Visakhapatnam – 45.

Course Code: MAN 842	**Course Title: DATA ANALYSIS WITH PYTHON**	
Semester: IV	**Course Type: Elective**	**Credits: 3**
Home Programme(s):MBA	**Batch / Academic Year: 2021-2023**	
Course Leader:		

Course description and Course Objectives

Python is an open source high level interpreter based language. Python is interactive and object oriented language with wide range of applications. Python is commonly used in the area of data science and web based analytics.

Course Objectives

- Understand the analytics features of python
- Get hands on experience in build data applications with python

Course outline and indicative content

Unit I (8 sessions) (CO1 & L2)

Introduction to Python: Keywords and Identifiers, Statements and Comments, Input-Output and Import, Operators, Python namespace, Data types - Numbers, Strings, Lists, Tuples, Set, Dictionaries, Arrays, Matrix, Flow Control: If – else, for loop, while loop, break and continue, Pass statement, Looping technique

Unit II (8 sessions) (CO2 & L2)

Functions and OOP Concepts: Defining and calling a function, Types of Function, Recursion, Python Modules, Packages, OOP Concepts: OOP concepts in Python – Class, Inheritance, Multiple Inheritance, Operator Overloading

Unit III (8 sessions) (CO3 & L2, L3)

IPython, NumPy and Pandas:IPython Basics, code development in IPython, IPython features, NumPy Basics, NumPyArrays, Vectorized Computation, Indexing and sorting arrays, Structured arrays, Pandas Basics, Pandas data structures, Descriptive statistics, Handling missing data, Hierarchical Indexing, Vectorized string operations, working with time series

Unit IV (8 sessions) (CO4 & L4)

Working with Data: Reading and writing data in text format, binary data formats, interacting with web, interacting with database, Combining and merging data sets, Reshaping and Pivoting, Data Transformation, Data Aggregation, Pivot tables and Cross Tabulation

Unit V (8 sessions) (CO5 & L3)

Data Visualisation: Introduction to Matplotlib, line plots, scatter plots, visualizing errors, Density and contour plots, Histograms and Binnings, Text and Annotation, Three dimensional plotting in Matplotlib

On successful completion of this course, students will be able to:

CO	Course Outcomes	Assessment
CO1	Understand the language elements of Python	A1, A2
CO2	Understand the OOP concepts in Python	A1, A4
CO3	Write programs in python	A1, A4, A5
CO4	Use python for data analysis	A3
CO5	Use python for data visualization	A5

Assessment methods

Task		Task type	Task mode	Weightage (%)
A1	Mid exam	Individual	written	20
A2	Coursera	Individual	Presentation/Q&A/viva	10
A3	Project	Group	Presentations/Report with Q&A/Viva	20
A4	End-term examination	Individual	Written (short/long)	30
A5	Practical	Individual	Working on System	20

Mapping Cos – Blooms Levels – Assessment Tools

Knowledge dimension / Cognitive dimension	L1. Remember	L2. Understand	L3. Apply	L4. Analyze	L5. Evaluate	L6. Create
Factual knowledge						
Conceptual knowledge		CO1 (A1, A4) CO2 (A1, A4) CO3 (A1, A4)				
Procedural knowledge		CO1(A2)	CO3(A5) CO5(A5)	CO4(A3)		
Meta cognitive knowledge						

Learning and teaching activities

Classroom Lectures, Application cases and exercises, Demonstration, Lab Sessions

Teaching and learning resources

Computer Lab, Python Software, Textbooks, Ebooks, Reference Materials, Web resources

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
Internal	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
C01	0	3	0	0	1	1	2	3	10
C02	0	3	0	0	1	1	2	3	10
CO3	0	3	0	0	1	1	2	3	10

CO4	**0**	**3**	**0**	**0**	**1**	**1**	**2**	**3**	**10**
CO5	**0**	**3**	**0**	**0**	**1**	**1**	**2**	**3**	**10**
Target Level Max.	**0**	**15**	**0**	**0**	**5**	**5**	**10**	**15**	**50**

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	Course Code	**Marketing Analytics**	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

With rapid sharing of data across different social media platforms, companies are now focusing on deploying several tools to analyze the same to develop targeted marketing and positioning strategies. This course introduces different multivariate methods to students that can be used in practice for segmenting, attracting and retaining different customers in different product and services.

Course Objectives

1. Understand what is Marketing Analytics
2. Importantance of Marketing Analytics in modern day business landscape
3. Understand different types of multivariate techniques used in marketing
4. Understand the application of tools likeExcel, Rand Python for marketing analytics.
5. Able to make inferences and recommendations for marketers.

UNIT - I	Title: Analyzing Marketing Data and Environment	No of Hours:9
Need of Marketing Analytics, Data Preparation, Slicing and Dicing, Data Summary using Graph, Graph Aided Business Decision Making, Introduction to R for data analytics, Compare Sales Performance		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the need of marketing analytics		L2
● Understand Data cleaning and preparation		L2
● Understand use of Graphical tools for basic data analysis		L2
● Understand using R for basic data analysis		L2
Pedagogy tools: MS Excel, R-studio, Videos, Case-lets		
UNIT - II	**Title: Segmenting, Targeting and Positioning: Product Analytics**	**No of Hours:9**
Item Exploration, Exploratory Factor Analysis, Cluster Analysis, Product Design, Attribute Selection, Test Marketing, Demand Forecasting		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the usage of exploratory factor analysis		L2
● Understand the usage of cluster analysis		L2
● Describe product design through attribute selection		L2
● Understand the concept of test marketing		L2
Pedagogy tools: MS Excel, R-studio, Videos, Case-lets, Conjoint Analysis, Logistic Regression, Least Squares Regresion, Moving Average, Naïve Method.		

UNIT - III	**Pricing & Place Analytics**	**No of Hours:9**
Linear and Non-linear pricing, Price Optimization, Price Bundling, Discounted Pricing, Price Skimming, Revenue Management, Markdown Pricing, Designing Retail Outlet, Online Product Assortment, Allocating Retail Space and Sales Resources, Catalog/Email Marketing		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Identify different pricing methods		L2
● Perform price optimization		L3
● Understand retail outlet design		L3
● Understand the importance of catalog/ email marketing		L3
Pedagogy tools: MS Excel, R-studio, Videos, Case-lets, Market Basket- -Analysis, RFM Analysis		
UNIT - IV	**Promotion Analytics**	**No of Hours:9**
Media Selection Model, Measure the effect of advertisement, Google AdWords Bid and CPC, Viral Marketing, measuring consumer responses, measuring consumer value		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the importance of media selection models		L3
● Evaluate the impact of advertisement		L3
● Understand the importance of Google AdWords		L3
● Understand the significance of viral marketing		L3
● Understand and evaluate consumer value		L3

Pedagogy tools: MS Excel, R-studio, Videos, Case-lets, Regression Analysis, Structural Equation Modelling, CLV Modelling.		
UNIT - V	**Qualitative Data Analysis**	**No of Hours:9**
Analyzing customer reviews, Twitter reviews analysis, Sentiment Analysis		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Extract data from online reviews		L2
● Use R and Python for web scrapping		L5
● Using R for analyzing customer sentiments		L5
● Able to make suggestions to marketers		L5
Pedagogy tools: R-studio, Python, MS Excel, Tablaeu, SPSS		

On successful completion of this course, students will be able to:

CO	Course Outcomes	Assessment
CO 1	Understand the business problems in the domain of marketing those analytical applications can address	A1, A4
CO 2	Provide an overview of analytics landscape especially in the retail sector	A1, A4
CO 3	Understand the role of predictive modeling in influencing customer behavior	A1, A4
CO 4	Understand technology trends in Marketing analytics	A1, A4, A2
CO 5	Learn how to plan and implement Analytics projects	A3

Textbook(s):
1 Marketing Analytics : A Practical guide to improving Consumer Insights Using Data Techniques By Mike Grisby
Additional Reading
2. **Reference Book(s):*Marketing Research: An Applied Orientation, 7/e,NareshMalhotra&Satyabhushan Dash, Pearson India***
Journal(s):
1. Journal of Marketing Analytics, Springer.
Website(s):
10. https://archive.ics.uci.edu/ml/index.php 11. https://www.kaggle.com/ 12. https://data.gov.in/

	Programme Objectives (POs)											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
CO1	**2**	**1**	**1**	**1**	**1**	**0**	**3**	**3**				
CO2	**2**	**2**	**2**	**1**	**1**	**0**	**3**	**3**				
CO3	**2**	**2**	**3**	**3**	**3**	**0**	**3**	**3**				
CO4	**3**	**3**	**3**	**3**	**3**	**0**	**3**	**3**				
CO5	**3**	**3**	**3**	**3**	**3**	**0**	**3**	**3**				

3

1-Low, 2- Medium and 3- High Correlation

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	MAN	**Finance & Risk Analytics**		T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus versio				1.0	
	Course Pre-requisite(s)	Corporate Finance	Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Financial Modelling/Analytics using Excel brings the practical aspects of corporate finance for finance professionals for managerial decision making. This course takes the students through the practical implementation of theories that have been learnt and exposes them to various nitty-grities of the real world finance managers. Microsoft Excel being common tool used by most of the organizations, is often underutilized by the trainee managers due to lack of exposure and therefore, this course prepares them to be industry ready and with indepth understanding of the core concepts and their applications. By the end of this course, students will understand how excel can serve as a prominent decision-making tool for modelling various business scenarios. This course has been designed to help students take better business decisions as finance managers.

Course Objectives

- To equip participants to appreciate and indulge in the Financial Analytics and Financial Modelling using excel.
- To provide necessary understanding of the capabilities of excel in order to solve real world finance problems.
- To implement the basic financial models learnt in corporate finance courses.
- To explores key ideas, principles, and frameworks that can add value to the financial reporting and analysis and decision making in organizations.

UNIT - I		No of Hours:9
Preparation of a dynamic stock valuation template that covers essential stock valuation techniques. CAPM, 3 – Factor APT Models, GORDON's DDM, Google Spreadsheet, Live Data extraction from Google Spreadsheet.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Apply concepts of corporate finance using MS-Excel		L4
Illustrate the integration of models for decision making		L5
Construct and develop a stock valuation model		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II		**No of Hours:9**
a.) Creating a dynamic template for taking capital budgeting decision making based on constraints. Implementing multiple project assessments and selection and multiple decision-making criteria. b.) Creating a dynamic and realistic template for arriving at an optimal capital structure. Bond Ratings, Spread Measures, Risk-Free Return assessments.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Demonstrate capital budgeting techniques		L4
Analyze capital structure		L5
Construct a dynamic model to estimate optimal capital structure		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - III		No of Hours:9
Creating a 10-stock dynamic portfolio that maximizes risk-adjusted returns. Sharpe Ratio, Treynor's Ratio, Portfolio Beta, Equi-weighted portfolios, Portfolio Optimization, Asset Allocation, etc.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Calculate Risk and Return for multi-asset/asset class portfolio	L4
Compare the decision-making criteria for optimum portfolio allocation	L5
Develop a dynamic 10-asset portfolio optimization model	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV		**No of Hours:9**
Preparation of Projected Financial Statements and coming up with a valuation of firm based on forecasted cash flows. Integrating scenario analysis, Forecasting Techniques, Valuation Techniques.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Compare and contrast financial statements		L4
Prepare projected financial statements		L5
Construct dynamic forecasting and valuation model		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V		**No of Hours:9**
a.) Preparation of a dynamic template for Options valuations. Option Valuation Techniques. BS Model template for Option Pricings. b.) Creating a dynamic template for personal financial planning by wealth managers / financial advisors. Personal Financial Planning. Asset& Risk Classes. Portfolio Rebalancing.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Detail options pricing valuation techniques.	L4
Integrate options valuations techniques	L5
Develop a dynamic template for personal financial planning	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

Course Outcomes

1. Use MS Excel to apply the concepts of corporate finance
2. Build a dynamic model to estimate optimal capital structure
3. Build a dynamic 10-asset portfolio optimization model
4. Build dynamic forecasting and valuation model
5. Build a dynamic template for personal financial planning

Text Books:

- Thomas W. Golden, Steven L. Skalak, And Mona M. Clayton"Forensic Accounting Investigation" ISBN:978-0-471-46907-0, John Wiley & Sons, Inc., Hoboken, New Jersey [available as eBook]
- Study material from National Forensic Science University, Gujrat for MBA in Forensic accounting
- Study material from the Wharton University of Pennsylvania in Accounting Analytics
-

Journals

- Harvard Business Review, Harvard Business School Publication Co. USA
- Vikalpa, Indian Institute of Management, Ahmedabad
- GITAM Journal of Management, GITAM Institue of Management, GITAM deemed to be University, Visakhapatnam

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
CO1	3	3	0	1	0	0	0	0	7
CO2	3	3	3	2	1	0	3	1	16
CO3	3	3	3	2	1	0	3	1	16
CO4	3	3	3	2	1	0	0	1	13
CO5	1	2	2	2	2	0	3	0	12
Target Level Max.	13	14	11	9	5	0	9	3	64

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	MAN304	**Credit Risk Analytics**	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Financial and Management Accounting	Contact hours				45	
	Course Co-requisite(s)	Corporate Finance	Date Approved					
	Alternate Exposure	Analytical Tools and Business Statistics						

Course Description

Credit Risk and Rating play a significant role in any organization's lifespan. It is determining the funding requirement of the business. Credit Risk Analytics provides a targeted training guide for risk managers looking to build or validate in-house models for credit risk management efficiently. This course walks you through the fundamentals of credit risk management. It shows you how to implement these concepts—understanding the essential tools required to perform credit risk analysis and modeling to manage a firm's financials more efficiently.

Course Objectives

- To understand the basic concepts of credit risk
- To understand how Credit risk and financial decision are interlinked
- To build the required skills and ability to apply principles of risk management for corporate decision making
- To analyse and appraise credit models
- To Design models of credit risk assessment

UNIT - I		No of Hours:9
Introduction to credit risk management process and techniques: Nature, Cause, Need of credit management, Credit events; Credit risk Assessment: process, factors of credit assessment, key understanding of Financial statement, methods of credit assessment; Credit quality: concept, factors,probability of default, classification, and application.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Articulate the need for Credit Risk Analytics		L3
Critique the risk management processes and techniques		L4
Formulate credit risk assessment models		L5
Plan for and model credit risk		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II		**No of Hours:9**
Evaluation of Credit decision: Introduction, Credit Evaluation, Qualitative Credit Assessment Processes,6C's template, CAMPARI template, ICE template; Credit matrix and score: concept, application to firm ,Consumer Credit ScoringCredit Ranking, Behavioral Ranking		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Appraise credit decision		L4
Recommend tools for credit decision making		L5
Design templates for credit decision making		L6
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

UNIT - III		**No of Hours:9**
Probability of Default Models (Discrete-Time Hazard Models); Linear model, Probit model, Logit, Complementary log-log model PIT (Point-in-Time) and TTC (Through-the cycle) estimates; Introduction to Probability of Default: Structural (Merton) model of default, Moody's KMV.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Determine default models	L4
Analyze and appraise different default models	L5
Forecast and plan for probability of default	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV		**No of Hours:9**
Credit Metrics estimation by VaR; Credit Scoring Models: Logit Model for Loan Default Analysis (both individual and corporate loan), Decision Tree for Loan Default Analysis, Altman Z Score (For Manufacturing Firm).		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Appraise and evaluate for Value at Risk		L4
Formulate and Assess Credit Metrics		L5
Perform and predict loan default analysis		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V		**No of Hours:9**
Managing Credit Risk in a Corporate Environment: Introduction, Monitoring and Collections, Capital Structure and Financial Distress, insurance against default, Credit derivatives, Bankruptcy.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Determine credit risk in business environment	L4
Estimate and manage credit risk	L5
Adapt and resolve credit risk	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

Course Outcomes:

1. Explain the need for Credit Risk Analytics
2. Design templates for credit decision making
3. Analyze different default models
4. Perform loan default analysis
5. Estimate credit risk

Text Books:

- Sylvain Bouteille, Diane Coogan-Pushner"The Handbook of Credit Risk Management: Originating, Assessing, and Managing Credit Exposures"ISBN: 978-1-118-42146-8, Wiley
- Naeem Siddiqi, "Intelligent Credit Scoring: Building and Implementing Better Credit Risk Scorecards"ISBN: 978-1-119-28233-4,Wiley
- Bart Baesens, Daniel Roesch, Harald Scheule"Credit Risk Analytics: Measurement Techniques, Applications, and Examples in SAS
  "ISBN: 978-1-119-27828-3, Wiley

Journals

- Harvard Business Review, Harvard Business School Publication Co. USA
- Vikalpa, Indian Institute of Management, Ahmedabad
- GITAM Journal of Management, GITAM Institue of Management, GITAM deemed to be University, Visakhapatnam

CO PO Mapping

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0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
CO1	3	3	0	1	0	0	0	0	7
CO2	3	3	3	2	1	0	3	1	16
CO3	3	3	3	2	1	0	3	1	16
CO4	3	3	3	2	1	0	0	1	13
CO5	2	2	2	2	2	0	1	0	11
Target Level Max.	14	14	11	9	5	0	7	3	63

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Semester 4

S.№.	Code	Level of course	Title of Course	Theory	Practical/ VivaVoce	Credits	Internal Assessment Marks	External Assessment Marks	Total Marks
1	MAN802	Foundation	Web and social media analytics	2	2	3	50	50	100
2	MAN804	Foundation	Business Intelligence	3		3	50	50	100
3	MMB892	Comprehensive	Management Research Project	3		3	50	50	100
4		Elective 1		3		3	50	50	100
5		Elective 2		3		3	50	50	100
6		Elective 3		3		3	50	50	100
		Total		**18**	**2**		**550**	**250**	**600**

			Open Elective	50			**1**	50	50	**100**
			Contemporary Course- 1	50			**1**	50		**50**
			Contemporary Course- 2	50			**1**	50		**50**
	PCDs	University	Club Activity				**2***			**P/F**
	PCDs	Skill Set	Business Simulations		2		**2**			50
	PCDs	Skill Set	Spreadsheet Modelling		2		**1**			50
			TOTAL CREDITS(including PCDs)				26			

MBA -BA Electives (Semester 4)					
Sl. No.	**Business Analytics Electives for MBA - BA**	**Credits**	**Internal**	**External**	**Functional**
1	Decision Science	3	50	50	Industry
2	Project Management Tools & Techniques	3	50	50	OR
3	Simulation Modelling	3	50	50	OR
4	Marketing Research	3	50	50	Marketing
5	Data Science with Python	3	100	0	Industry
6	Retail Analytics	3	50	50	Marketing
7	HR Analytics	3	50	50	HR
8	Accounting Analytics	3	50	50	Finance

	MAN802	**Web And Social Media Analytics**	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Marketing has evolved from its traditional form into digital marketing covering the world of social media, mobile and many more forms of digital technologies that are evolving, for example, the wearable devices being the next frontier. The pressure on the marketing departments and the marketing heads has always been the proper justification of spend with the return of investment that can be obtained. This equation becomes more complex as the marketing spend now gets divided into many platforms, channels, and mediums that are available both in the offline and online world. We see marketing as a new paradigm and WSMA for marketing will help all the marketers to streamline their efforts, and justify spending with measurable and meaningful metrics covering both the offline and online world. This analytics course has been created keeping in focus a marketing professional, and with the prerequisite that the professionals are already familiar with the basics of digital marketing concepts.

Course Objectives

1) Understand the concept of web analytics
2) Understand clickstream and emerging analytics like social, mobile and video
3) Apply web analytics metrics using a tool
4) Use different web metrics to understand a web site and its users
5) develop a working proficiency of statistical concepts used in Web Analytics for decision making

UNIT - I		No of Hours:9
Introduction to Web Analytics: Concept of web analytics, Importance and benefits of Web Analytics, Selecting a web analytic tool, Web Metrics – Visits and Visitors, Time on page and Time on site, Bounce Rate, Exit Rate, Conversion rate, Engagement, Attributes of metrics, Strategic elements related to web metrics – diagnosing root cause, leveraging customer reports, macro view of the site's performance Understanding Digital Data, Understanding Consumer Behavior, Digital Marketing - Biggest Business Use Case, Data Types and Data Generation		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand digital data		L1
Understand Consumer Behavior		L2
Understand digital maketing		L4
Understand data types		L3
Understand data generation		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II		**No of Hours:9**
Google trends and analysis, Google Ads, Understanding the Web Metrics – Basic, Understand the web metrics – Inferential, Understanding the web metrics – Advanced. Google Merchandise Store, WSMA - Business Case - Google Merchandise Store Evolution and Measurement		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Deal with google trends		L3
Deal with google ads		L3
Understand the Web Metrics		L3
Understanding the Web Metrics - inferential		L3

Understanding the web metrics – Advanced		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - III		**No of Hours:9**
Leveraging Qualitative Data, Testing and Experimentation: Lab Usability Studies, Usability Alternatives, Surveys, Web-enabled emerging user research options, Testing – A/B Testing, Multivariate Testing, Actionable Testing ideas, Controlled Experiments, Creating and Nurturing a testing culture, Competitive Intelligent Analysis – CI data sources, types and secrets, web traffic analysis, search and keyword analysis		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand what Lab usability studies are and usability alternatives	L3
Web enabled emerging user research options	L3
To be able to A/B testing, Myltivariate Testing/ generate actanable Testing Ideas	L4
Do controled experiments, creating and nurturing a testing culture	L4
To be able to do Web traffic Analysis	L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading	
UNIT - IV	**No of Hours:9**
. **Emerging Analytics:** Social Analytics – Data challenge, content democracy evolution, twitter revolution, analyzing offline customer experiences, analyzing mobile customer experiences, Measuring the success of blogs, Quantifying the impact of Twitter, Analysing performance of videos, Hidden web analytics traps – accuracy or precision, Dealing with data quality, Building action dashboard, Nonline marketing opportunity and multichannel measurement, Behaviour Targeting, Challenges in Online data mining and Predictive Analytics	
Learning Outcomes:	
After completion of this unit, the student will be able to	
To analyse customer experience through different platforms	L3
To analyse the performance of videos and hiden web analytics traps	L3
To be able to measure success of Blogs	L4
To be able to Quantify the impact of Twitter	L4
To understand the challenges in Online Data Mining and ways to overcome	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - V		**No of Hours:5**

Text Mining: Overview, Text Mining: Process Flow, Text Mining & Sentiment Analysis Process Flow, Text mining: Executing Hands-on, Text & Sentiment Analysis Hands-on..

Learning Outcomes:

After completion of this unit, the student will be able to

Understand what text mining is and its relevance	L2
Do text mining and interprete results	L2
What sentiment analysis is and its applications	L2
To be able to do Sentiment Analysis and interprete	L2

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

CO	Course Outcome	Assessment
CO1	Understand and appreciate the most widely used tools of web analytics which form the basis for rational and sound online business decisions	A1, A4, A2
CO2	Create an effective online marketing strategy for clients across industries	A3
CO3	Optimize accounts and effectively allocate budget	A1, A4
CO4	Develop skills in analysis and interpretation of data	A1, A4
CO5	Handle challenging problems using appropriate analysis tools	A3

Textbook(s): Web Analytics 2.0 by Avinash Kaushik
1. Social Media Analytics ny Matthew Ganis
Reference Book(s):

Ask Measure Learn: Using Social Media Analytics To Understand And Influence Customer Behaviour By Lutz Finger and Soumitra Dutta

CO PO Mapping								
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**
CO1	1	3	0	0	0	0	3	3
CO2	1	3	0	0	0	0	3	3
CO3	1	3	0	0	0	0	3	3
CO4	1	3	0	0	0	0	3	3
CO5	1	3	0	0	0	0	3	3

1-Low, 2- Medium and 3- High Correlation

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	Course Code MAN804	Business Intelligence	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics & Fintech	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Many organizations struggle to provide the right information to the right people at the right time, to help them make the right decisions. People at all levels in an organization need access to critical business information, and to have the ability to analyze and share that information with suppliers, partners, and customers. With aggressive competitors and highly dynamic markets, "gut feelings" and "trial and error" are not effective for managing an enterprise. Business users throughout many organizations need Business Intelligence (BI) for quick-and-easy access to information, to make timely and accurate decisions. The BI is a systematic approach to automating and improving high-volume operational and managerial decisions. It promotes a shift from speculative guessing to informed and fact based decision making.

Course Objectives

1. Explain the role of computational support for decision making
2. Describe different components of BI architecture
3. Design a data warehouse schema for multidimensional analysis
4. Design a dashboard for a business
5. Analyze KPIs and find the causes of problems in a business scenario

UNIT - I	Title: Decision Support Systems	No of Hours: 9
Definition, Characteristics, Benefits and Limitations of DSS, Components of DSS, Classes of DSS, Decision Making and Decision Makers – Types of Decision Makers, Decision making Styles and DSS, Herbert Simon model of decision making, Rational and Bounded Rationality of Decision making, Decision Making in the Organization.		
Learning Outcomes:		
Discuss the characteristics of DSS		L2
Evaluate the type of DSS based on decision makers		L5
Describe the steps in HSM		L2
Discuss the concept of bounded rationality		L2
Analyze the working of DSS in organization		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	**Title: Business Intelligence Concepts**	**No of Hours: 9**
BI – Definition, BI architecture, BI Components, BI and DSS, BI platforms, the main components of BI platforms, their capabilities, competitive landscape of BI platforms, the building blocks of business reports, the types of business reports, the components and structure of business reporting systems.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Describe BI architecture		L2
Distinguish different BI components		L2
Distinguish different components of business reports		L3
Evaluate how to write a business report		L5

Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - III	**Title Introduction to Data Warehousing and OLAP**	**No of Hours: 9**
Characteristics of Data Warehouse, Advantages and Disadvantages of Data Warehousing, Data Mart, Aspects of Data Mart, ETL Process, Online Analytical Processing , Characteristics of OLAP, OLAP Tools, OLAP Data Modeling, OLAP Tools and the Internet, Difference between OLAP and OLTP, Multidimensional Data Model, Data Modeling using Star Schema and Snowflake Schema		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Distinguish between data warehouse and data marts		L2
Distinguish between OLTP and OLAP		L2
Design a data warehouse schema		L3
Distinguish different types of OLAP		L2
Discuss different OLAP operations		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - IV	**Title Visualizations and Dashboards**	**No of Hours: 9**
Importance of data visualization, types of basic and composite charts, Best practices in designing data visualizations. Dashboards - Characteristics of a dashboard, the types of dashboards, and the list attributes of metrics usually included in dashboards, guidelines for designing dashboard		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Evaluate different type of charts		L2
Describe the characteristics of dashboards		L2
Design a dashboard for a given problem		L4

Evaluate the effectiveness of a dashboard using metrics	L5
Pedagogy tools: Blended learning,Case let, video lectures, self-reading	

UNIT - V	**Title Business Performance Management Systems and BI Strategy**	**No of Hours: 9**

Concept of Business Performance Management (BPM), Components of BPM, BPM cycle, Usage of KPIs in BPM, Balanced scorecards, BI Maturity - levels of BI maturity, the factors that impact BI maturity within an organization, Challenges and the potential solutions for a pervasive BI maturity within an organization, BI Strategy - Critical success factors for implementing a BI strategy, BI framework, and BI implementation targets.

Learning Outcomes:

After completion of this unit, the student will be able to

Distinguish the components of BPM	L2
Understand BI framwwork	L2
Evaluate the BPM using KPI	L5
Evaluate BI maturity in an organization	L5

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

Course Outcomes:

1. Discuss the components of Decision Support Systems
2. Distinguish different Business Intelligence Concepts
3. Distinguish different OLAP operations
4. Distinguish different type of visualization methods for creating dashboards
5. Explain BI framework

Textbook(s):

1.Ramesh Sharda, Efraim Turban, Dursun Delen, Business Intelligence, Analytics, and Data Science: A Managerial Perspective, Pearson Education, New Delhi, 2019

Additional Reading
Reference Book(s):

1. Ramesh Sharda, Efraim Turban, Dursun Delen, Business Intelligence and Analytics: Systems for Decision Support, Pearson Education, New Delhi, 2018.
2.SK Shinde, Uddagiri Chandrasekhar, Data Mining and Business Intelligence, Wiley India, Noida, 2019
3. Steve Wexler, Jeffery Shaffer, Andy Cotgreave, The Big Book of Dashboards: Visualizing your data using real world business scenarios, Wiley, USA, 2017
Journal(s):
1.
Website(s):
1. https://archive.ics.uci.edu/ml/index.php 2. https://www.kaggle.com/ 3. https://data.gov.in/

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**1**	**2**	**0**	**1**	**0**	**1**	**0**	**3**								
CO2	**2**	**2**	**1**	**1**	**1**	**1**	**0**	**3**								
CO3	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**								
CO4	**0**	**2**	**0**	**0**	**0**	**1**	**0**	**3**								
CO5	**3**	**3**	**1**	**1**	**1**	**2**	**2**	**3**								

1-Low, 2- Medium and 3- High Correlatio

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	MAN 701	**Decision Science**	L	T	P	J	S	C
			3					3
	Course Owner	Dept of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

This course will introduce you to some deterministic and probabilistic models in Decision Science. The course will focus on mathematical modeling and strong emphasis will be given to model formulation. The deterministic models include linear programming problems, transportation problems and Assignment problems whereas Game theory, Simulation and Network models are covered in probabilistic models.

Course objectives:

- To familiarize students with the basic concepts, models and principles of the decision science theory.
- To develop skills in formulating and structuring decision-making problems as mathematical models.
- To understand the use of software for obtaining solutions of the models formulated and interpretation of results for better decision making.

UNIT - I	Introduction	No of Hours: 10
Nature and meaning of Operations Research, Management applications of Operations Research, main characteristics of Operations Research, scope of Operations Research, role of Operations Research in decision making. Introduction to Model Building, Formulation of a Linear Programming problem, some basic concepts/principles, solution by graphic method.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concept of Operations Research and its applications in Management		L2
Describe the characteristics of Operations Research, scope and role in decision making		L2
Build the model and formulate the LP problem		L4
Solve the LP problem using graphical method		L4
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II	**Linear Programming**	**No of Hours: 11**
Introduction to simplex method, slack & surplus variables, solution by Simplex method, sensitive analysis and duality. Analyzing the solutions through Excel-SOLVER.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the simplex method concepts		L2
Solve the LP problem using simplex method		L4
Conduct a sensitivity analysis on LP problem		L4
Analyze the solution using Excel -SOLVER		L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - III	**Transportation and Assignment Problems**	**No of Hours: 9**
Introduction, Basic feasible solutions by various methods: North-West, least Cost and Vogel's Approximation. Assignment Problems – Introduction, Solution by various methods, Hungarian method.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand the concepts in Transportation problem	L2
Solve the transportation problems using different approaches taught	L4
Understand the concepts in Assignment problems	L2
Solve the Assignment problems using different methods taught	L4
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV	**Game Theory and Simulation**	**No of Hours: 10**
Game theory: Introduction, Two Person Zero Sum Games, Pure Strategies, Dominance Principle, Graphical; Simulation: introduction, types of simulation, generation of random numbers, Monte Carlo Simulation, and waiting lines.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concepts in Game theory		L2
Apply the concepts in real-life problems		L3
Understand the term simulation and its types		L2
Generate the random numbers and apply Monte Carlo simulation to solve the real-life problem		L4
Understand the concept of waiting lines		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V	**Network Scheduling by PERT / CPM**	**No of Hours: 10**

Introduction, network and basic components, logical sequencing, rules of network construction, Critical Path Analysis, probability considerations in PERT, distinction between PERT and CPM.	
Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand the concepts of Network Scheduling	L2
Apply critical path analysis model to solve the real-life problem	L4
Understand the concepts in PERT	L2
Distinguish between PERT and CPM and its application	L3
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

On successful completion of this course, students will be able to:

	Course Outcomes	**Assessment**
CO1	Identify the roles and responsibilities of operations managers in different organizational contexts	A1, A3
CO2	Identify and formulate decision science models that represent real world problems	A1, A4
CO3	Understand the mathematical tools that are needed to solve decision making problems	A1, A2, A3
CO4	Use Excel-Solver software to solve the proposed models.	A3
CO5	Develop reports that describes the model and the solving technique, analyze the results and propose recommendations to the decision-making processes	A3, A4

Text Book

1. Quantitative Techniques in management (5e) – N D Vohra, TMH.

Reference Books

1. Introduction to Operations Research- Hillier, F. S. and Lieberman, G. J. (8th ed.), New York: McGraw-Hill.
2. Quantitative Techniques for Managerial Decisions- Sharma, McMillan.
3. Operations Research: An introduction-Taha, H., Pearson Education.
4. Introduction to Management Science – Anderson, Sweeney & Williams.
5. Quantitative methods for Business, Anderson et. al. 12e, Cengage
6. Quantitative Techniques in management (5e) – N D Vohra, TMH.
7. Operations Research Theory and Applications – J K Sharma.
8.

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Sum**
CO1	2	2	0	0	0	0	1	2	7
CO2	2	2	0	0	0	0	1	2	7
CO3	2	2	0	0	0	0	0	1	5
CO4	2	2	0	0	0	0	1	1	6
CO5	2	2	0	0	0	0	1	2	7
Target Level Max.	10	10	0	0	0	0	4	8	32

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	MOM 847	**PROJECT MANAGEMENT TOOLS AND TECHNIQUES**	L	T	P	J	S	C
			3					3
	Course Owner	Dept of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

Project management is becoming more important in today's world. Mastery of key tools and concepts could give a significant competitive advantage in the marketplace.

Course Objectives:

- Provide experience in using the concepts, techniques, and decision tools available to project managers.
- Enlarge a basic understanding of the importance of work breakdown structures and networks to planning, scheduling, and controlling projects.
- Create an awareness of potential conflicts and problems that can occur on projects.
- Identify appropriate behavior for successfully managing a project.

UNIT - I	Introduction	No of Hours: 9
Definition, Projects and Operations, Project Management- Project Management Body of Knowledge (PMBOK). Application area Knowledge, standards and Regulations, Understanding the Project Environment. Importance of Project management. Project Life Cycle-Project Initiation; Project planning, Project Execution, Monitoring and Control, Project Closure.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the Project Management Concepts		L2
Describe the standards and Regulations		L2
Know the importance of Project Management		L2
Understand the Project Life Cycle and its phases		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II	**PROJECT SCOPE MANAGEMENT**	**No of Hours: 9**
Conceptual development, the scope statement, Work Breakdown Structure (WBS)-Development of WBS, Organizational Breakdown Structure, Project Communications Management.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Describe the Scope statement		L2
Understand the concept of Work Breakdown Structure (WBS)		L2
Develop the WBS for a project		L4
Understand the nuances of Project Communications Management		L2

Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - III	**PROJECT PLANNING**	**No of Hours: 9**
Project Network Analysis-PERT/CPM, Time estimates in Critical Path Analysis, Floats, and Project Time – Cost Trade – off, Project Time Management		

Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the concepts in Project Network Analysis		L2
Solve the problems on PERT/CPM		L4
Understand the time estimates of Critical Path Analysis		L2
Know the behavior of Project-time cost trade-off		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - IV	**PROJECT RISK MANAGEMENT**	**No of Hours: 9**
Risk Management Process, Contingency Planning, Project Cost Management, Project Quality Management.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Know the process of risk management		L2
Understand the concept of Contingency planning		L2
Understand the concept of project cost management and Project Quality Management		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - V	**LEADERSHIP AND PROJECT MANAGEMENT**	**No of Hours: 9**
Leaders vs. Managers, Traits of effective project leaders, Project Champions, Project Stakeholder Management, Project Human Resource Management.		

Learning Outcomes:

After completion of this unit, the student will be able to

Distinguish between leaders and managers	L3
Understand the traits of effective project leaders	L2
Describe the project champions	L2
Understand the concepts of Project Stakeholder Management and Project HRM	L2

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

	Course Outcomes	Assessment
CO1	Demonstrate an understanding of the project environment, life cycle, and the project selection and approval process.	A1, A3, A4
CO2	Demonstrate the role of the Project Manager in the successful initiation and completion of a project.	A1, A2, A3, A4
CO3	Apply knowledge skills in forming and developing a project team.	A2, A3 & A4
CO4	Develop and integrate core management plans needed for a project.	A3, A4

Textbook(s):

Clifford F.Gray, Erik W. Larson, Gautam V.Desai, *Project Management: The Managerial Process*, 2010, Tata McGraw – Hill 6th Edition.

Additional Reading

Reference Book(s):

1. Jack R. Meredith & Samuel J.Mantel, 2010, *Project Management: A Managerial Approach*, 7th edition, Wiley India Edition.
2. Rory Burke, *Project Management: Planning and control Techniques*, 4th edition 2010, John Wiley & Sons.
3. Pinto Jeffrey K, Project Management-Achieving Competitive Advantage, Indian edition, Pearson.
4. Richman, Larry, *Project management step-by-step. New York: AMACOM, 2008.*

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
Internal	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**Sum**
C01	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**6**
C02	**3**	**2**	**2**	**0**	**2**	**3**	**2**	**3**	**17**
CO3	**0**	**3**	**0**	**3**	**0**	**0**	**2**	**3**	**11**
CO4	**3**	**0**	**0**	**3**	**0**	**2**	**2**	**3**	**13**
Target Level Max.	**9**	**5**	**2**	**6**	**2**	**5**	**6**	**12**	**47**

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	Course Code	Simulation and Modelling	L	T	P	J	S	C
			3					3
	CourseOwner	Dept of Operations	Syllabusversion				1.0	
	CoursePre-requisite(s)	Nil	Contacthours				45	
	CourseCo-requisite(s)	Nil	DateApproved					
	AlternateExposure							

Course Description

Simulation modelling solves real-world problems safely and efficiently. It provides an important method of analysis which is easily verified, communicated, and understood. Across industries and disciplines, simulation modelling provides valuable solutions by giving clear insights into complex systems.

Course Objectives

-To introduce with the various system simulation and modelling techniques, and highlight their applications.

-To introduce modelling, design, simulation, planning, verification and validation in the areas of simulation.

-To develop skills among the learners of system simulation.

-To make them able to solve real world problems, which cannot be solved by mathematical approaches.

UNIT - I	Simulation: Basics	No of Hours:9
Introduction to Simulation, Concept of System , Model and Simulation, time advance mechanism, components of a simulation model, program organization and logic, steps in a simulation study, simulation examples.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the role of simulation		L2
● Understand the importance of different components of a simulation model		L2
● Understand the steps in a simulation study		L2
● Understandthe program organization and logic		L2
Pedagogy tools: Videos, problems, cases		
UNIT - II	**Statistical Models in Simulation**	**No of Hours:9**
Statistical models in simulation, Input probability distribution functions for discrete systems, continuous distribution functions, empirical distribution functions, problem solving on statistical models in simulation		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the different input probability distribution functions		L2
● Understand the role of continuous distribution functions.		L2
● Describe empirical distribution functions		L2
● Able to solve problems on statistical models on simulation		L2
Pedagogy tools: Videos, Case-lets, Problem solving, Excel		

UNIT - III	**Queueing Systems**	**No of Hours:9**
Characteristics of a Queueing System, Performance measures, Analysis of a single server , simulation of a single server, computer representation of single server queueing system, generation of random numbers, issues and challenges in congruential generators, testing of random numbers, generation of random variates, input modelling, identifying distributions with data, estimation of parameters, Good ness of fit tests and assessing sample dependence, multivariate input models,		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Identify the importance of queueing systems		L2
● Understand the presentation of a single server		L3
● Understand the different attributes of input data modelling		L3
Pedagogy tools: MS Excel, Videos, Case-lets		
UNIT - IV	**Output Analysis &System Randomness**	**No of Hours:9**
Output analysis of a single system, obtaining a specified precision, comparison of alternative system configurations, confidence intervals for comparing more than two systems, problem solving, Introduction to simulation of manufacturing and material handling system**,**		
Learning Outcomes:		
After completion of this unit, the student will be able to		
● Understand the importanceof output analysis		L3
● Understand the role of confidence intervals for multiple systems		L3
● Understand the consideration of system randomness		L3

● Understand the significance of model validity and credibility	L3
Pedagogy tools: MS Excel, Videos, Case-lets.	

UNIT - V	**Monte Carlo Simulation**	**No of Hours:9**

Introduction to Monte Carlo Simulation, Inventory Control Simulation using Monte Carlo Technique, Problem solving using Monte Carlo simulation, Modeling of system randomness: Machine downtime, Verification of simulation models, model validity and credibility, issues in material handling systems

Learning Outcomes:	
After completion of this unit, the student will be able to	
	L2
● Understand the importance of Monte Carlo Simulation	L5
● Understand how to execute inventory control simulation	L5
● Understand the application and verification of simulation models	L5
Pedagogy tools: Ms-Excel, Videos ,Case lets	

Course Outcomes:

1. Discuss the role of simulation
2. Solve problems on statistical models on simulation
3. Solve problems related to queueing systems
4. Perform output analysis
5. Perform Monte Carlo Simulation

Textbook(s):

3. ***Discrete Event System Simulation, By Jerry Banks & others, Prentice Hall International, 4th Edition.***

Additional Reading
Reference Book(s):
3. System Modelling and Simulation - V.P. Singh 4. Introduction to Discrete Event Systems - Christos G. Cassandras

	Programme Objectives (POs)												**PSOs**			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**1**	**1**	**1**	**1**	**1**	**2**	**3**								
CO2	**2**	**2**	**2**	**1**	**1**	**1**	**2**	**3**								
CO3	**2**	**2**	**3**	**3**	**3**	**1**	**2**	**3**								
CO4	**3**	**3**	**3**	**3**	**3**	**1**	**2**	**3**								

1-Low, 2- Medium and 3- High Correlation

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	Course Code	Course Title	L	T	P	J	S	
	MMK 846	MARKETING RESEARCH						
	Course Owner	Dr.P.Giribabu	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

This course provides a comprehensive introduction to marketing research, and discusses key concepts, processes, and techniques, as well as their applications. Students gain an appreciation for the breadth and depth of the subject and its significance for a business enterprise. Besides an overview of marketing research, the course covers research with qualitative data, and methods used for analyzing research data to make decisions.

Course Objectives

1.Understand theoretical aspects of Marketing Research and its role in 21st century

2. Comprehend the planning and research process and designing the questionnaire.

3. Interpret measuring different scaling techniques in Marketing Research.

4. Evaluate different applications in Marketing Research and communicate through report writing

5. Apply recent research trends in different Marketing areas.

UNIT-I Title: Dynamics of Marketing Research No of Hours: 7

Introduction, Meaning of Research, Research Characteristics, Various Types of Research, Marketing Research and its Management, Nature and Scope of Marketing Research, Marketing Research in the 21st Century (Indian Scenario) Role of Research in Marketing, Practical tips for researchers

Learning Outcomes:

After completion of this unit the student will be able to

- Recognize the role of Research in Marketing L1
- Describe the research characteristics and its types L2
- Interpret the Marketing Research to Indian Scenario L3

Pedagogy tools: Blended learning, Case let, Video lectures, self-reading

UNIT-II Title: Planning the Research Process No of Hours: 8

Introduction, Stages in planning the market research, Interview Techniques, designing questionnaires and interview guides, Building Attitude Exploration into questionnaires

Learning Outcomes:
After completion of this unit the student will be able to

- Describe stages in Marketing Research L1&L2
- Illustrate the interview techniques in Marketing Research L3
- Design the Questionnaires L4
- Conducting Interviews L4

Pedagogy tools: Blended learning, Case let, Video lectures, self-reading

UNIT-III Title:Measurement and Scaling Techniques No of Hours: 10

Introduction, Importance of Measurement and Scaling in Marketing Research, Scales of Measurement: Fundamental Properties, Primary Scales of Measurement, Attitude Measurement Scales, Qualitative Research and its Implementation, Qualitative Research Methodology, Analysis and Interpretation of Qualitative Research Data.

Learning Outcomes:
After completion of this unit the student will be able to

- Identify the use of different scaling techniques in Marketing Research L1&L3
- Describe the qualitative research and its implementation L1&L2
- Analyze and interpret the qualitative Research data L3&L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

UNIT-IV Title: Applications of Marketing Research No of Hours: 10

Advertising Research- Introduction, Purpose, populations involved in audience and advertisement research, procedures for advertisement research, Publication considerations in advertisement research. Social Research- - Introduction, Purpose, populations involved in social research, procedures for social research

Report Writing and Presentation, Interpretation of Marketing Research Reports, Applications of Marketing Research.

Learning Outcomes:
After completion of this unit the student will be able to

- Recognize the Advertising Research and its procedure L1
- Describe the Social research and its procedure L2

- Interpret different Marketing Reports L3
- Evaluate different applications in Marketing Research L5

Pedagogy tools: Blended learning, Case let, Video lectures, self-reading

UNIT-V Title: Recent Trends in Marketing Research No of Hours: 10

Online Marketing Research, Recent Trends in Marketing Research, Research in Lifestyle Retail, Marketing Research and Social Marketing, Rural Marketing Research, Trends in Services Marketing Research, Brand Equity Research, International Marketing and Branding Research

Learning Outcomes:
After completion of this unit the student will be able to

- Describe and apply the recent research trends in Marketing areas L2&L3
- Interpret the International Marketing and Branding Research L3
- Differentiate Social and Rural Marketing Researches L4

Pedagogy tools: Blended learning, Case let, Video lectures, self-reading

On successful completion of this course, students will be able to:

	S. No.	Course Outcomes (COs)	Assessment
	CO1	Understand theoretical aspects of Marketing Research and its role in 21st century.	A1,A4
	CO2	Understand the planning the Research process and designing the questionnaire.	A1,A4
CO3		Analyse measuring and different scaling techniques in Marketing Research.	A1,A3,A4
CO4		Evaluate different applications in Marketing Research and communicate through report writing	A2,A4
CO5		Apply personal and interpersonal recent research trends in different Marketing areas.	A1,A4

Text Books:

- Naresh K. Malhotra et.al., "Marketing Research – An Applied Orientation", 5th Edition, Pearson, UK, 2017
- Nigel Bradley, "Marketing Research - Tools and Techniques", 3rd Edition, Oxford University Press, NewDelhi, 2013.

References:

- Donald R. Cooper & Pamela S Schindler, "Marketing Research – Concepts and Cases" Tata McGraw Hill, New Delhi, 2006.
- G. Berry, "Marketing Research", 4th Edition, Tata McGraw Hill, New Delhi

Journals

- GITAM Journal of Management
- Harvard Business Review, Harvard Business School Publication Co. USA
- Vikalpa, Indian Institute of Management, Ahmedabad

Websites

https://www.marketresearch.com

https://www.toolsrush.com

	Programme Objectives (POs)								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**SUM**
CO1	3	0	0	2	0	0	2	2	9
CO2	0	2	0	2	0	0	0	2	6
CO3	3	3	0	0	0	3	2	2	13
CO4	2	2	0	3	2	2	2	1	14
CO5	0	0	0	2	3	2	3	2	12
Total	8	7	0	9	5	7	9	9	54

1-Low, 2- Medium and 3- High Correlation

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	MAN842	**Data Science with Python**	L	T	P	J	S	C
			2		2			3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)		Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Python is an open source high level interpreter based language. Python is interactive and object oriented language with wide range of applications. Python is commonly used in the area of data science and web based analytics.

Course Objectives

1. Understand the programming concepts of python
2. To handle data on py
3. thonTo be able to Descriptive Analytics using python
4. To be able to do Predictive Analytics using python
5. To Build Machine Learning models using python

UNIT - I	Introduction to Python	No of Hours:9
Keywords and Identifiers, Statements and Comments, Input-Output and Import, Operators, Python namespace, Data types - Numbers, Strings, Lists, Tuples, Set, Dictionaries, Arrays, Matrix, Flow Control: If – else, for loop, while loop, break and continue, Pass statement, Looping technique		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Deal with input-output of Python		L1
Deal with data types in Python		L2
Deal with arrays		L4
Deal with matrix		L3
Deal with flow control		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - II	**Functions and OOP Concepts**	**No of Hours:9**
Defining and calling a function, Types of Function, Recursion, Python Modules, Packages, OOP Concepts: OOP concepts in Python – Class, Inheritance, Multiple Inheritance, Operator Overloading		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Call a function		L3
Deal with Python Modules		L3
Deal with Python packages		L3
Define function		L3
deal with OOP concepts		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

UNIT - III	**IPython, NumPy and Pandas**	**No of Hours:9**

IPython Basics, code development in IPython, IPython features, NumPy Basics, NumPyArrays, Vectorized Computation, Indexing and sorting arrays, Structured arrays, Pandas Basics, Pandas data structures, Descriptive statistics, Handling missing data, Hierarchical Indexing, Vectorized string operations, working with time series

Learning Outcomes:

After completion of this unit, the student will be able to

Deal with NumPy	L3
Deal with IPython	L3
Deal with Pandas	L4
Handle missing data	L4
Work with time series	L4

Pedagogy tools: Blended learning,Case let, video lectures, self-reading

UNIT - IV	**Working with Data**	**No of Hours:9**

Reading and writing data in text format, binary data formats, interacting with web, interacting with database, Combining and merging data sets, Reshaping and Pivoting, Data Transformation, Data Aggregation, Pivot tables and Cross Tabulation

Learning Outcomes:

After completion of this unit, the student will be able to

Deal with text and binary data	L3
Interact with web	L3
Interact with database	L4
Transform data	L4

Pivot tables and Cross Tabulation		L4
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		
UNIT - V	**Data Visualization**	**No of Hours:9**
Introduction to Matplotlib, line plots, scatter plots, visualizing errors, Density and contour plots, Histograms and Binnings, Text and Annotation, Three dimensional plotting in Matplotlib		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Use matplotlib for plots		L2
Create Density and contour plots		L2
Create Histograms and Binnings		L2
Create 3 dimensional plot		L2
Pedagogy tools: Blended learning,Case let, video lectures, self-reading		

Course Outcomes

1. Work with different programming constructs of Python
2. Apply OOP concepts of Python
3. Work with Python libraries
4. Perform data analysis with Python
5. Perform data visualization with Python

Textbook:

Wes McKinney (2013), *Python for Data Analysis*, Mumbai: O'Reilly - Shroff Publishers & Distributors Pvt. Ltd.

References:

1) Kenneth A Lambert (2015), *Fundamentals of Python*, New Delhi: Cengage Learning
2) Davy Cielen, Arno D.B. Meysman, Mohamed Ali,*Introducing Data Science: Big Data, Machine Learning and More, Using Python Tools*, New Delhi: Wiley India
3) Guttag, John V (2016), *Introduction to Computation and Programming with Application to Understanding Data*, New Delhi: Prentice Hall of India
4) Will Richert, Luis Pedro Coelho, *Building Machine Learning Systems with Python*, Mumbai: PACKT / Shroff Publishers.

Practical Experiments

Topics	Type(Experiment, Project, Exercise) Choose an item.
Work with Arrays	Lab Experiment
Work with Flow Controls	Lab Experiment
Work with OOP concepts	Lab Experiment
Work with Data	Lab Experiment
Work with Visualization	Lab Experiment
Text Books	Topics
Wes McKinney (2013), *Python for Data Analysis*, Mumbai: O'Reilly - Shroff Publishers & Distributors Pvt. Ltd.	All
Additional Reading	
Reference Book(s):	Topics
1) Kenneth A Lambert (2015), *Fundamentals of Python*, New Delhi: Cengage Learning 2) Davy Cielen, Arno D.B. Meysman, Mohamed Ali,*Introducing Data Science: Big Data, Machine Learning and More, Using Python Tools*, New Delhi: Wiley India 3) Guttag, John V (2016), *Introduction to Computation and Programming with Application to Understanding Data*, New Delhi: Prentice Hall of India 4) Will Richert, Luis Pedro Coelho, *Building Machine Learning Systems with Python*, Mumbai: PACKT / Shroff Publishers.	All

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									

Internal	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
C01	0	2	2	1	1	3	2	3	
C02	0	2	2	1	1	3	2	3	
CO3	0	2	2	1	1	3	2	3	
CO4	0	2	2	1	1	3	2	3	
CO5	0	2	2	1	1	3	2	3	
Target Level Max.									

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	Course Code	**HR Analytics**	L	T	P	J	S	C
			3					3
	Course Owner	Dept of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Nil	Contact hours				45	
	Course Co-requisite(s)	Nil	Date Approved					
	Alternate Exposure							

Course Description

We are on the threshold of most exciting and promising phase of the evolution of human resources and human capital management. Today there is a shift of the attention towards predictability. The course is designed to study about predictive management, that is, managing today and tomorrow. It is also known as HCM: 21. It is holistic predictive management model and operating system for human resources function. HCM: 21 is a four-phase process that starts with scanning the market place and ends with an integrated measurement system. In the middle it addresses workforce and succession planning in a new way and shows how to optimize and synchronize the delivery of HR services.

Course Objectives

- To understand the importance of Analytics in HRM
- To understand the Concepts and models in predictive analytics that come handy in solving realtime HR problems/cases.
- To understand, apply and appreciate HCM: 21.
- To analyse predictive management model and its process and HCM:21 process
- To make a detailed study of case studies from Government and private companies.

UNIT - I	Meaning of Analytics	No of Hours: 9
Classification; Importance HCMs; Role and Perspective of HCMs.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the meaning of Analytics		L2
Understand the classification and importance of HCM		L2
Describe the Role and Perspective of HCMs		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II	**HCM Model**	**No of Hours: 9**
The Employee Value Proposition; Compensation, Attracting, Motivating and retaining employees now and in the future.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the key concepts of Employee value proposition		L2
Understand the terms compensation, Attraction, Motivation		L2
Describe the ways and means to retain the employees in an organization		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - III	**The new face of work force planning**	**No of Hours: 9**
The workforce planning; segmentation of skills, the business playbook; the contents and process of creating a playbook.		

Learning Outcomes:	
After completion of this unit, the student will be able to	
Understand the concept of workforce planning	L2
Understand the segmentation process	L2
Create a business playbook	L4
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

UNIT - IV	**Quality employee engagement**	**No of Hours: 9**
Employee Engagement Definition and Measurement; Engagement Drivers; Disorder and Disengagement; Behaviour Based Signs of Departure, Event based Signs of Departure, Databased Signs of Departure;		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Understand the basis of employee engagement and its measurements		L2
Describe the drivers of engagement		L2
Understand the concepts based on Departure		L2
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		

UNIT - V	**Meaning of Metrics**	**No of Hours: 9**
Our Human Capital Performance Metrics; The Second Generation and Third Generation Metrics Connecting the Metrics; Predictive Analytics for Human Capital Management		
Learning Outcomes:		

After completion of this unit, the student will be able to	
Understand the Human Capital Performance Metrics and its derivatives	L2
Understand the concept of Predictive Analytics for HRM	L2
Solve the real-life cases in HRM	L4
Measure the Human Capital Performance	L4

Pedagogy tools: Blended learning, Case let, video lectures, self-reading

On successful completion of this course, students will be able to:

	Course Outcome	**Assessment**
CO 1	Explain the significance of human capital metrics in creating value proposition for the organization	A1, A3,A4
CO 2	Analyze the application of analytics to make various HR decisions	A1,A2, A3,A4
CO 3	Create a business playbook	A2
CO 4	Design a HRIS based on organization needs	A1, A2
CO 5	Implement HRIS in an organization using concepts of Project management	A1, A4

Textbook(s):HR Analytics:Strategic Decision Making by Nishant Uppal

Textbooks, E-books, Reference Materials, Web resources, Computer Lab

Journal(s):International Journal of Human Resource Management, Tailor & Francis online

Practical Experiments

	Programme Objectives (POs)												PSOs			
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**1**	**2**	**3**	
CO1	**2**	**2**	**2**	**1**	**2**	**1**	**2**	**3**								
CO2	**3**	**3**	**3**	**1**	**2**	**1**	**2**	**3**								
CO3	**3**	**3**	**3**	**1**	**2**	**1**	**2**	**3**								
CO4	**3**	**3**	**3**	**1**	**2**	**1**	**2**	**3**								
CO5	**3**	**3**	**3**	**1**	**2**	**1**	**2**	**3**								

1-Low, 2- Medium and 3- High Correlation

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	MAN	**Accounting Analytics**	L	T	P	J	S	C
			3					3
	Course Owner	Department of Business Analytics	Syllabus version				1.0	
	Course Pre-requisite(s)	Accounting for Managers	Contact hours				45	
	Course Co-requisite(s)		Date Approved					
	Alternate Exposure							

Course Description

Accounting Analytics explores how financial statement data and non-financial metrics can be linked to financial performance. This course walks you through the fundamentals of accounting analytics in tracking 'dirty profits' reporting. It shows you how will explore the many areas in which accounting data provides insight into other business areas, including consumer behavior predictions, corporate strategy, risk management, optimization, and more. By the end of this course, students will understand how financial data and non-financial data interact to forecast events, optimize operations, and determine strategy. This course has been designed to help students make better business decisions about the emerging roles of accounting analytics.

Course Objectives

- To understand the basic concepts of accounting analytics and its role in business decision
- To build the required skills and ability to apply principles of accounting data analysis for corporate decision-making.
- To develop an ability to detect financial fraud based on principles of accounting.
- To Design models of data analysis in a broader sense

UNIT - I		No of Hours: 7
Introduction to Accounting data: Nature, source, Need of analysis, accounting transactions; Forensic accounting: Introduction, role in fraud detection and forensic audit.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Discuss the importance of Accounting Information System (AIS)		L2
Assess accounting based fraudulent activities		L4
Establish ground rules of forensic accounting		L5
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - II		**No of Hours:8**
Ratios and Forecasting: Review of Financial Statements, Dupont Analysis, Profitability and Turnover Ratios, Liquidity Ratios, Common size of balance sheet, common size of income statement; numerical cases based on lab assessment for ratio and forecasting.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Analyze financial ratios and financial statements		L4
Deduce meaningful inferences for decision making		L5
Develop forecasting models and appraise forecasting techniques		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - III		**No of Hours:8**

Earning Management: Overview, key factors of revenue and expenses recognition, red flags revenue recognition in pre and post cash collection. Expenses recognition: Capitalizing Vs expenses, red flags expenses recognition, Reserve, write off; numerical cases based on lab assessment for forensic auditing of earning and expense reporting.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Discover areas of concern in the reporting and auditing process		L4
Illustrate forensic auditing skills		L5
Design forecasting, reporting and auditing tools		L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading		
UNIT - IV		**No of Hours:8**
Fraud Prediction Models: Process, advantage, Discretionary accruals, Discretionary expenditure, Beneish M-score model. Statistical tools for fraud prediction: Testing of normality, Benford's law. numerical cases based on lab assessment for Fraud prediction.		
Learning Outcomes:		
After completion of this unit, the student will be able to		
Analyze and illustrate the process of fraud detection and prediction		L4
Appraise fraud prediction models		L5
Design and develop fraud detection and prediction models		L6
Pedagogy tools: Blended learning, Case, video lectures, self-reading		
UNIT - V		**No of Hours:5**

Linking Non-financial Performance to Financial Results: Overview, need of linking, steps of linking, key drivers of performance; Impact of Linking in various drivers: customer satisfaction, employee satisfaction, economic value, increase in key financial indicators. Cases based on lab/project assessment for linking non-financial performance to financial results in the different industry predictions.	
Learning Outcomes:	
After completion of this unit, the student will be able to	
Analyze the KPIs of financial performance	L4
Critically evaluate the financial indicators	L5
Design & develop tools to assess performance using financial & non-financial indicators	L6
Pedagogy tools: Blended learning, Case let, video lectures, self-reading	

Course Outcomes

1. Discuss the importance of Accounting Information System
2. Analyze financial ratios and financial statements
3. Design forecasting, reporting and auditing tools
4. Design fraud detection and prediction models
5. Design tools to assess performance using financial & non-financial indicators

Text Books:

- Thomas W. Golden, Steven L. Skalak, And Mona M. Clayton"Forensic Accounting Investigation" ISBN:978-0-471-46907-0, John Wiley & Sons, Inc., Hoboken, New Jersey [available as eBook]
- Study material from National Forensic Science University, Gujrat for MBA in Forensic accounting
- Study material from the Wharton University ofPennsylvania in Accounting Analytics
-

Journals

- Harvard Business Review, Harvard Business School Publication Co. USA

- Vikalpa, Indian Institute of Management, Ahmedabad
- GITAM Journal of Management, GITAM Institute of Management, GITAM deemed to be University, Visakhapatnam

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping									
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
CO1	3	3	0	1	0	0	0	0	7
CO2	3	3	3	2	1	0	3	1	16
CO3	3	3	3	2	1	0	3	1	16
CO4	3	3	3	2	1	0	0	1	13
CO5	1	2	2	2	2	0	3	0	12
Target Level Max.	13	14	11	9	5	0	9	3	64

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