

INSTITUTE OF SCIENCE, TECHNOLOGY & ADVANCED STUDIES (VISTAS)
(Deemed to be University Estd. u/s 3 of the UGC Act, 1956)
PALLAVARAM - CHENNAI
ACCREDITED BY NAAC WITH 'A' GRADE
Marching Beyond 30 Years Successfully
INSTITUTION WITH UGC 12B STATUS

MBA (LOGISTICS AND SUPPLY CHAIN MANAGEMENT)

Curriculum and Syllabus Regulations 2024

(Based on Choice Based Credit System (CBCS))

Effective from the Academic year 2024-2025

Department of MBA

School of Management Studies & Commerce

Vision and Mission of the Department

Vision

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

Mission

1. To provide an accessible and inclusive learning environment for diverse group of students and other stakeholders to learn by synergizing education, research, innovation and outreach efforts.
2. To foster self-discipline, strong values, ethics and sense of duty among the students to make them good citizens, leaders, professionals and entrepreneurs.
3. To create the future business leaders through innovative and analytical ability, decision making capability and integration of technology in education.
4. To provide exposure to global business standards by design thinking,rational judgement and competencies necessary to manage global and multinational ventures.

Program Educational Objectives (PEOs)

PEO1: To provide exceptional quality education that prepares the students to meet global standards and competitive environment.

PEO2: To inculcate team spirit and develop leadership capabilities among students, empowering them to emerge as business leaders and contribute to organizational development.

PEO3: To impart ethical and moral values so as to inculcate the significance of Environmental, Social and Governance practices among students to create better citizens and society.

PEO4: To equip the students with technology proficiency, nurture entrepreneurial skills to think strategically by encouraging them to become professionals.

PEO5: To motivate students to participate in community development initiatives and participate Industry research projects.

Program Outcomes (POs)

PO 1	Apply knowledge of management theories and practices to solve business problems.
PO 2	Foster Analytical and critical thinking abilities for data-based decision making.
PO 3	Ability to develop Value based Leadership ability.
PO 4	Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of Business
PO 5	Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.
PO 6	Create, select and apply appropriate modern tools & techniques for analyzing, interpreting and solving business complexities.
PO 7	Develop an aptitude for creativity, innovation and entrepreneurship.
PO 8	Adapt life-long learning and professional development to enrich knowledge and Competencies

Program Specific Outcomes (PSOs)

PSO 1	Apply supply chain management principles to integrated supply chain activities to articulate and deliver customer-oriented quality outcomes within legal and ethical frameworks.
PSO 2	Develop operations to source and utilise appropriate technology to support the implementation of logistics strategies and manage logistics resources to improve supply chain operations.
PSO 3:	Utilize state-of-the-art distribution practices to implement strategic and operational concepts and techniques that underpin distribution of goods and services for domestic and international markets.

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

S.NO	NAME & ADDRESS	DESIGNATION
1.	**Dr. P. R. Ramakrishnan** Dean School of Management Studies & Commerce VISTAS	Chairperson
2.	**Dr. R. Magesh** Professor and Head Department of Management Studies Anna University, Chennai	External Expert
3.	**Mr. Prince Lazarus** Member- Confederation of Indian Industry CII, Chennai	CII Faculty
4.	**Dr.J.Balasubramanian** Head, Business Analytics, Ashok Leyland, Chennai.	Industry Expert
5.	**Ms. Anitharaj Johnes George** Senior Talent Acquisition Analyst SPI global, Pondicherry	Alumni
6.	**Dr. S. Preetha** School of Management Studies, VISTAS	Professor
7.	**Dr. G. Rajini** School of Management Studies, VISTAS	Professor
8.	**Dr. P. G. Thirumagal** School of Management Studies, VISTAS	Associate Professor
9.	**Dr. G. Madhumita** School of Management Studies, VISTAS	Associate Professor
10.	**Dr. S. Sudha** School of Management Studies, VISTAS	Professor

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

CHOICE BASED CREDIT SYSTEM (CBCS)

MBA (LOGISTICS AND SUPPLY CHAIN MANAGEMENT) REGULATIONS 2024

(Applicable to all the candidates admitted from the academic year 2024-25 onwards)

1. DURATION OF THE PROGRAMME

1.1 Two years (Four semesters)

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

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

2. ELIGIBILITY FOR ADMISSION

2.1 The details of Eligibility for Admission

Passed bachelor's degree of minimum 3 years duration.

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

3. MEDIUM OF INSTRUCTION

The medium of instruction for all PG programme is English.

4. CREDIT REQUIRMENTS AND ELIGIBILITY FOR AWARD OF DEGREE

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

5. COURSE

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

6. COURSE OF STUDY AND CREDITS

The Course Components and Credit Distribution shall consist of:

The total number of subjects of study shall be 30 out of which 14 shall be core subjects, 10 will be Electives, 6 practical including Internship in Third semester and Project Work in the Final Semester with a Viva-voce altogether.

Candidates shall take 8 subjects (6 Core Theory + 2 Practical) in the Firstsemester, 9 subjects (5 Core Theory + 2 Electives + 2 Practical) in the SecondSemester, 10 subjects (2 Core Theory + 7 Elective Theory + 1 Internship) in the ThirdSemester and 3 subjects (1 Core + 1 Elective + Project work) in the Fourth Semester**.**

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

Project:

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

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

For each course, credit isassigned based on the following:

Contact hour per week	**CREDITS**
1. Lecture hour	**1 Credit**
1 Tutorial hour -	**1 Credit**

1. Practical hours- 1 Credit (Laboratory / Seminar / Project Work / etc.)

7. REQUIREMENTS FOR PROCEEDING TO SUBSEQUENT SEMESTER

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

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

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

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

7.5. **Transfer of Students and Credits:** The strength of the credits system is that it permits inter- Institutional transfer of students. By providing mobility, it enables individual students to develop their capabilities fully by permitting them to move from one Institution to anotherin accordance with their aptitude and abilities.

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

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

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

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

8. EXAMINATION AND EVALUATION

8.1. EXAMINATION

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

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

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

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

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

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

8.3.2 For the End Semester examination, passing minimum shall be 50% (Fifty Percentage) of the

Maximum marks prescribed for the Course/Practical/Project and Viva-Voce.

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

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

9. Question Paper Pattern for End Semester Examination

Duration: 3 Hours Max. Marks: 100

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

Total Marks for each subject 100 Marks University Exam 60 Marks

Internal Assessment 40 Marks

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

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

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

11. RETOTALLING, REVALUATION AND PHOTOCOPY OF THE ANSWER SCRIPTS

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

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

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

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

13. CLASSIFICATION OF SUCCESSFUL STUDENTS

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

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

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

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

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

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

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

GPA for a Semester: = ∑iCiGi ÷ ∑iCi That is, GPA is the sum of the multiplicationof grade points by the credits of the courses divided by the sum of the credits of the courses in a semester.

Where, Ci= Credits earned for course i in any semester,
Gi = Grade Points obtained for course i in any semester

n = Semester in which such courses were credited.

CGPA for the entire programme: = ∑n∑iCniGni ÷∑n∑iCni That is, CGPA is the sum of the multiplication of grade points by the credits of the entire programme divided by the sum of the credits of the courses of the entire programme

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

Overall Performance – PG		
CGPA	**GRADE**	**CLASS**
5.00 - 5.99	D	Second Class
6.00 - 6.99	C	First Class
7.00 - 7.49	B	
7.50 – 7.99	B+	First Class with Distinction*
8.00 - 8.49	A	
8.50 – 8.99	A+	
9.00 - 10.00	O	First Class - Outstanding*

14.2. Letter Grade and Class CGPA

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

15. RANKING

- Students who pass all the examinations prescribed for the Program in the FIRST APPEARANCE ITSELF ALONE are eligible for Ranking / Distinction.
- In the case of Students who pass all the examinations prescribed for the Program with a break in the First Appearance are only eligible for Classification.
- Students qualifying during the extended period shall not be eligible for RANKING.

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

16.1. A Student who for whatever reasons is not able to complete the programs within the normal period

(N) or the Minimum duration prescribed for the programme, may beallowed two years period beyond the normal period to clear the backlog to be qualified for the degree. (Time Span = N + 2 years for the completion of programme)

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

17. REVISION OF REGULATIONS, CURRICULUM AND SYLLABI

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

Overall credit distribution / Course Components with credits

S.No	Semester	Total number of Subjects	Core / Elective / Lab / Internship / Project Work	Credit Distribution		Total Credits	Total Credits for the Semester
				Credits	No. of Subjects		
1	I	8	6 Core	4	6	24	**26**
			1 Practical - Professional Upskilling 1	1	1	1	
			1 Practical (MOOC)	1	1	1	
2	II	8	5 Core Theory	4	5	20	**28**
			2 Elective Theory	3	2	6	
			1 Practical - Professional Upskilling II	1	1	1	
			1 Practical – Supply Chain Management I	1	1	1	
3	III	10	2 Core Theory	3	2	6	**31**
			7 Elective Theory	3	7	21	
			1 Internship	4	1	4	
4	IV	3	1 Core Theory	4	1	4	**17**
			1 Elective Theory	3	1	3	
			1 Project Work	10	1	10	
						Total	**102**

MBA (LOGISTICS AND SUPPLY CHAIN MANAGEMENT)
REGULATIONS 2024

SEMESTER I

Code	Course	Hour / Week			C	Maximum Marks		
		L	T	P		CA	SEE	Total
24CMBS11	Management Concepts and Organizational Behavior	4	0	0	4	40	60	100
24CMBS12	Business Data Analysis for Management Science	3	1	0	4	40	60	100
24CMBS13	Managerial Economics	4	0	0	4	40	60	100
24CMBS14	Accounts and Finance for Logisticians	3	1	0	4	40	60	100
24CMBS15	Introduction to Logistics and Supply Chain Management	4	0	0	4	40	60	100
24CMBS16	Fundamentals of Business Analytics	4	0	0	4	40	60	100
24PMBS11	Practical - Professional Upskilling1	0	0	2	1	40	60	100
24PMBS12	Practical – MOOC	0	0	2	1	40	60	100
		22	2	4	**26**			

SEMESTER II

Code	Course	Hour / Week			C	Maximum Marks		
		L	T	P		CA	SEE	Total
24CMBS21	Marketing Management	4	0	0	4	40	60	100
24CMBS22	Human Resources Management	4	0	0	4	40	60	100
24CMBS23	Operations Management	4	0	0	4	40	60	100
24CMBS24.	Global Supply Chain and Trade Management	4	0	0	4	40	60	100
24CMBS25	Procurement , Inventory and Materials Management	4	0	0	4	40	60	100
24EMBS….	Elective I	3	0	0	3	40	60	100
24EMBS….	Elective II	3	0	0	3	40	60	100
24PMBS21	Practical - Professional Upskilling II	0	0	2	1	40	60	100
24PMBS22	Practical - Supply Chain Management I	0	0	2	1	40	60	100
		26	**0**	**4**	28			

SEMESTER III

Code	Course	Hour / Week			C	Maximum Marks		
		L	T	P		CA	SEE	Total
24CMBS31	Digital Entrepreneurship	3	0	0	3	40	60	100
24CMBS32	Business Research Methods and SPSS	3	0	0	3	40	60	100
24EMBS….	Elective III	3	0	0	3	40	60	100
24EMBS….	Elective IV	3	0	0	3	40	60	100
24EMBS….	Elective V	3	0	0	3	40	60	100
24EMBS….	Elective VI	3	0	0	3	40	60	100
24EMBS….	Elective VII	3	0	0	3	40	60	100
24EMBS….	Elective VIII	3	0	0	3	40	60	100
24EMBS….	Elective IX	3	0	0	3	40	60	100
24IMBS31	Practical – Internship	0	0	8	4	40	60	100
		27	0	8	31			

SEMESTER IV

Code	Course	Hour / Week			C	Maximum Marks		
		L	T	P		CA	SEE	Total
24CMBS41	Universal Human Values	4	0	0	4	40	60	100
24EMBS….	Elective X	3	0	0	3	40	60	100
24RMBS41	Project	0	0	20	10	100	200	300
		7	0	20	17			

TOTAL CREDITS: 102

LIST OF COURSES
CORE COURSES

Code	Course	Hour / Week			C	Maximum Mark		
		L	T	P		CA	SEE	Tota
24CMBS11	Management Concepts and Organizational Behavior	4	0	0	4	40	60	100
24CMBS12	Business Data Analysis for Management Science	3	1	0	4	40	60	100
24CMBS13	Managerial Economics	4	0	0	4	40	60	100
24CMBS14	Accounts and Finance for Logisticians	3	1	0	4	40	60	100
24CMBS15	Introduction to Logistics and Supply Chain Management	4	0	0	4	40	60	100
24CMBS16	Fundamentals of Business Analytics	4	0	0	4	40	60	100
24CMBS21	Marketing Management	4	0	0	4	40	60	100
24CMBS22	Human Resources Management	4	0	0	4	40	60	100
24CMBS23	Operations Management	4	0	0	4	40	60	100
24CMBS24.	Global Supply Chain and Trade Management	4	0	0	4	40	60	100
24CMBS25	Procurement, Inventory and Materials Management	4	0	0	4	40	60	100
24CMBS31	Digital Entrepreneurship	3	0	0	3	40	60	100
24CMBS32	Business Research Methods & SPSS	3	0	0	3	40	60	100
24CMBS41	Universal Human Values	4	0	0	4	40	60	100

ELECTIVE COURSES

Semester	Code	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
II	24EMBS..	Elective I	3	0	0	3
II	24EMBS..	Elective II	3	0	0	3
III	24EMBS..	Elective III	3	0	0	3
III	24EMBS..	Elective IV	3	0	0	3
III	24EMBS..	Elective V	3	0	0	3
III	24EMBS..	Elective VI	3	0	0	3
III	24EMBS..	Elective VII	3	0	0	3
III	24EMBS..	Elective VIII	3	0	0	3
III	24EMBS..	Elective IX	3	0	0	3
IV	24EMBS..	Elective X	3	0	0	3

LIST OF ELECTIVE COURSES

FUNCTIONAL AREAS	COURSES	Hour / Week			Credits
		Lecture	Tutorial	Practical	
LOGISTICS	New Policy for Logisticians	3	0	0	3
	Green Logistics	3	0	0	3
	Materials and Store Management	3	0	0	3
	Advanced AI for Supply chains and Logistics	3	0	0	3
	AR/VR in Logistics	3	0	0	3
	Case studies of successful startups/Unicorns in Logistics	3	0	0	3
	Blockchain and Smart Contracts	3	0	0	3
	Applied GIS and Spatial Data Analytics	3	0	0	3
	Freight Transport Management And MMT	3	0	0	3
	Warehousing Facilities and Automation Management	3	0	0	3
	National Logistics Infra-Structure Trends and Global Scenario	3	0	0	3
SUPPLY CHAIN MANAGEMENT	SCM Tech-Trends and Digital Supply Chains for Industries	3	0	0	3
	Innovation in Waste Management	3	0	0	3
	Digital Innovation and Technology in SCM	3	0	0	3
	Lean Six Sigma in Logistics and Supply Chain	3	0	0	3
	Advanced Supply Chain Strategies and Operations	3	0	0	3
	Supply Chain Network Design	3	0	0	3
	Supply Chain Contracts	3	0	0	3

	Case studies - PM Gati Shakti NMP.	3	0	0	3
	Data Science and Machine Learning for Supply Chain Management	3	0	0	3
	Overview of Blockchain Applications in Logistics and Supply Chain Industries	3	0	0	3
	Retail and E-Commerce Supply Chain Management	3	0	0	3
	SCM for E Commerce Management	3	0	0	3
	Supply Chain Sustainability	3	0	0	3
	Supply Chain Modelling-Analytics -Supply Chain Interface	3	0	0	3
	Data And Information Systems In Logistics and Supply Chains	3	0	0	3
	Supply Chain Contract Management And Legal Perspectives	3	0	0	3
	Robotic Process Automation in Logistics and Supply Chain Management	3	0	0	3
Entrepreneurship	Technology Appreciation and Intellectual Property Rights	3	0	0	3
	Innovation Technology Management	3	0	0	3
	Indian Models in Entrepreneurship	3	0	0	3
	Entrepreneurial Marketing	3	0	0	3
General Management	Strategic Management of Services	3	0	0	3
	Design Thinking	3	0	0	3
	Indian Knowledge System	3	0	0	3
	Understanding Self: Indian Perspective	3	0	0	3
Operations Management	Quality Toolkit for Managers	3	0	0	3
	Operations Strategy	3	0	0	3

	Management of Manufacturing Systems	3	0	0	3
	Sourcing Management	3	0	0	3

PRACTICAL COURSES

Semester	Code	Course	Hour / Week			Credits
			Lecture	Tutorial	Practical	
I	24PMBS11	Practical - Professional Upskilling 1	0	0	2	1
I	24PMBS12	Practical -MOOC	0	0	2	1
II	24PMBS21	Practical - Professional Upskilling II	0	0	2	1
II	24PMBS22	Practical –Supply Chain Management - I	0	0	2	1
III	24IMBS31	Practical - Internship	0	0	8	4
IV	24RMBS41	Project	0	0	20	10

SEMESTER I

24CMBS11	MANAGEMENT CONCEPTS AND ORGANIZATIONAL BEHAVIOUR	4	0	0	4

COURSE OBJECTIVES

- To study about the fundamentals of management, evolution of management thought
- To understand about the functions of management and the roles of manager.
- To understand the group and individual behaviour in an organizational setting.

UNIT I	**INTRODUCTION TO MANAGEMENT**	**12 hours**
	Concept of Management - Nature and scope of Management-Evolution of Management Thought – Classical, Neo Classical & Modern Theories – Applying Management Theory in Practice- Managerial Roles – Nature and Determinants of Organizational Behaviour -OB Model – Contributing Disciplines of OB.	
UNIT II	**FUNCTIONS OF MANAGEMENT**	**12 hours**
	Planning – Types of plans – Planning process – Management by Objectives (MBO)- Decision Making Process & Style. Organising - Organisation Design & Structure – Delegation , Authority & Power, Line & Staff Organisations. Controlling- Process of Control, Types of Control- Techniques - Staffing.	
UNIT III	**FOUNDATIONS OF ORGANISATIONAL BEHAVIOUR**	**12 hours**
	Nature & Determinants of Organizational Behaviour – Learning and its theories – Values – Personality – Myers Briggs Type Indicator (MTBI) – Big Five Personality Model – Emotions- Perception- Affective events theory – Emotional Intelligence – Components of Attitude.	
UNIT IV	**WORK MOTIVATION AND GROUP BEHAVIOUR**	**12 hours**
	Early Theories (Mc. Gregory's Theory X & Y - Abraham Maslow's Need Hierarchy Theory - Herzberg's Two Factor Theory) & Contemporary Theories (Mc. Clelland's 3 Needs Theory - Alderfer's ERG Theory - Adam's Equity Theory & Vroom's Expectancy Theory- Goal Setting Theory), Application of Motivation Theories & workers participation management. - Types of Groups - Group Decision Making – Types of teams – Creating effective Teams.	

UNIT V	LEADERSHIP AND ORGANISATIONAL DEVELOPMENT	12 hours
	Basic Approaches (Trait Theories, Behavioural Theories & Contingency Theories) & Contemporary Issues in Leadership. Conflict - Levels of conflict, resolving conflicts; power and politics: sources of power, use of power-Organisational Development - Effects of culture, changing Organisational culture -Forces of change, Resistance to change, the change process.	
TOTAL: - 60 hours		

TEXT BOOKS

1. Harold Koontz, Heinz Weihrich, Essentials of Management: An International, Innovation and Leadership Perspective, 10th edition, McGraw Hill(2019).

2. Robbins.S.P. Fundamentals of Management, Prentice-Hall, India, 10th Edition, 2015.

3.Stephen P. Robbins , Timothy A. Judge , Neharika Vohra, Organizational Behaviour, Pearson Education; 18th Edition , 2018

REFERENCE BOOKS

1. Re Michael A. Hitt, J. Stewart Black, and Lyman W. Porter, Management, Pearson, 11thEdition, 2011.
2. Koontz &Weirich, Essentials of Management, McGraw Hill Publishing Company, New Delhi, 11th Edition, 2020.
3. Stoner, Freeman & Gilbert, Management, Prentice Hall India, 6th Edition,2018.

WEB LINKS

1. https://deb.ugc.ac.in/Uploads/SelfLearning/HEI-P-U-0543/HEI-P-U-0543_SelfLearning_20210729103348.pdf
2. https://www.simplilearn.com/principles-of-management-by-henri-fayol-article
3. https://www.investopedia.com/terms/o/organizational-behavior.asp
4. https://www.shiksha.com/online-courses/articles/characteristics-of-organizational-behaviour-blogId-166537

COURSE OUTCOMES

CO1	Explain the evolution of Management thought and interpret the OB Model	**K 2**
CO2	Understand the Functions of Management	**K 2**
CO3	Appraise the foundations of organizational behaviour	**K 5**
CO4	Assess work motivation and group behaviour in organizations	**K 5**
CO5	Examine the process of communication, classify leadership styles and analyze organizational change	**K 4**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	-	-	-	-	-	2
CO2	2	2	-	2	1	-	-	-	-	1	2
CO3	1	3	2	-	2	3	2	3	3	2	1
CO4	1	3	2	-	2	3	2	3	3	2	1
CO5	2	2	1	1	3	2	1	2	2	2	2

24CMBS12	BUSINESS DATA ANALYSIS FOR MANAGEMENT SCIENCE	3	1	0	4

COURSE OBJECTIVES

- To acquaint the student with the applications of Statistics and Operations Research to business and industry.
- To help them to grasp the significance of analytical techniques in decision making.

UNIT I	INTRODUCTION TO STATISTICS	12 hours
Introduction to Statistics - Collection of Data - Measures of Central Tendency & Dispersion in Frequency Distribution.		
UNIT II	**CORRELATION AND REGRESSION**	**12 hours**
Correlation coefficient - Karl Pearson and Spearman Rank Correlation coefficient -Linear Regression equations.		
UNIT III	**HYPOTHESIS TESTING**	**12 hours**
Hypothesis Testing –Test for Single Mean & Two Mean– Chi-Square test, F test – ANOVA.		
UNIT IV	**INTRODUCTION TO OPERATIONS RESEARCH**	**12 hours**
Operations Research – Linear programming (LP) – Formulation – Graphical Solution- Replacement Model- simple problems only – CPM and PERT models		
UNIT V	**TRANSPORTATION AND ASSIGNMENT**	**12 hours**
Transportation Model – Initial Solution: Northwest Corner Rule, Least Cost Method, Vogel's Approximation method – Assignment Problem.		
TOTAL: 60 hours		

TEXT BOOKS

1. N.D. Vohra, Business Statistics, Tata McGraw-Hill Education, 2nd Edition, 2021.
2. Hamdy A. Taha, Operations Research-An introduction, PearsonEducation, Prentice Hall of India, 10th Edition ,2019.

REFERENCE BOOKS

1. S P Gupta and Gupta P K, Business Statistics, Sultan Chand & Sons,2023.
2. N D Vohra , Hitesh Arora, Quantitative Techniques in Management , McGraw Hill,6th Edition, 2021

WEB LINKS

1. https://machinelearningmastery.com/statistical-hypothesis-tests/
2. https://www.wiley.com/enin/Quantitative+Methods%3A+An+Introduction+for+ Business +Management-p-9780470496343

COURSE OUTCOMES

CO1	Explain and evaluate various measures of central tendency and measures of Dispersion.	**K2**
CO2	Calculate correlation, regression and rank correlation	**K4**
CO3	Construct hypotheses and test them by applying statistical tools.	**K3**
CO4	Formulation of a Linear programming problem.	**K5**
CO5	Evaluate the initial solution for the Transportation Model.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO3	**3**	**1**	**-**	**2**	**2**	**1**	**-**	**1**	**1**	**2**	**-**
CO4	**1**	**3**	**2**	**-**	**3**	**3**	**2**	**3**	**3**	**2**	**1**
CO5	**-**	**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	**-**

24CMBS13	MANAGERIAL ECONOMICS	4	0	0	4

COURSE OBJECTIVES

- To study the concept of Managerial Economics by applying a series of basic economics principles.
- To gain knowledge on issues related to optimal pricing strategies, demand forecasting, and optimal financing, appropriate hiring decisions, and investment decisions, among others, can be successfully tackled with managerial economics tools and to analyze how to incorporate a global perspective to their managerial economics box of tools.

UNIT I	INTRODUCTION	12 hours

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

UNIT II	DEMAND DECISIONS	12 hours

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

UNIT III	OUTPUT DECISIONS	12 hours

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

UNIT IV	PRICE-OUTPUT DECISIONS	12 hours

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

UNIT V	ECONOMIC THEORY	12 hours

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

TOTAL : 60 hours

TEXT BOOKS

1. H L Ahuja, Managerial Economics (Analysis of Managerial Decision Making), Sultan Chand and Sons, 9th Edition, 2018.
2. Thomas J. Webster Pace , Managerial Economics: Tools for Analyzing Business Strategy, Lexington Books,1st Edition, 2017.

REFERENCE BOOKS

1. D N Dwivedhi , Managerial Economics, Vikas Publishing House , 8th Edition,2015.
2. C. Dhingra, Essentials of Managerial Economics - Theory, Applications and Cases SultanChand, New Delhi,1st Edition, 2004.

WEB LINKS

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

COURSE OUTCOMES

CO1	Define the basic elements of managerial economics aspects of the firm.	**K1**
CO2	Discuss the demand analysis decisions methods as to forecasting.	**K2**
CO3	Apply the managerial decision functions of the firm.	**K3**
CO4	Examine and elaborate the basic theories related to business practices.	**K4**
CO5	Appraise on the decision as to environment and given	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2	-	-	-	-	-	-	1
CO2	2	-	-	3	1	-	-	-	-	-	2
CO3	3	1	-	2	2	1	-	1	1	2	-
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	-	1	3	-	1	2	3	2	2	3	-

24CMBS14	ACCOUNTS AND FINANCE FOR LOGISTICIANS	3	1	0	4

COURSE OBJECTIVES

- To analyze in a new and more creative way when analyzing or forecasting financial information, new tools common to financial statement analysis and how to use them in practical applications.
- To understand how managing finance can help solve business problems and increase the ability for better financial decisions.
- To familiarize with sources of finance and skills for better dividend and liquidity decisions

UNIT I	INTRODUCTION TO ACCOUNTING AND RATIO ANALYSIS	12 hours

Introduction to Management Accounting-Need and Importance — Accounting concepts & conventions – Accounting Standards - Overview of IFRS and GAAP. Mechanics of Accounting: Double entry system of accounting - Financial Statements- Profit & Loss account & Balance sheet. Financial statement Analysis- Comparative Analysis, Common size & Trend Analysis - Analysis of financial statement: Ratio analysis – Classification of ratios, Advantages & Disadvantages.

UNIT II	ANALYSIS OF FINANCIAL STATEMENTS AND BUDGETING	12 hours

Fund flow statements advantages and disadvantages- Cash Flow statement - Marginal costing – Cost Volume Profit analysis – Break Even analysis – BEP, P/V ratio, MS - Budgeting – Different types of budgeting – Cash budget – Flexible budget - Statutory disclosures in IFRS – Corporate reporting practices in India- Challengesin financial reporting.

UNIT III	FINANCIAL MANAGEMENT AND INVESTMENT DECISION	12 hours

Introduction – Nature of Financial management –Objectives of financial management - Financial Decisions- Organization of Finance function – Agency Problem - Capital budgeting – meaning – Different methods – Payback, Net Present Value, Internal rate of return, Profitability index and average rate of return.

UNIT IV	COST OF CAPITAL AND FINANCING DECISION	12 hours

Sources of finance - Cost of Capital – Meaning and Significance – Components – Cost of Equity, Cost of Debt, Cost of Preferred capital, Cost of retained earnings and weighted average cost of capital - Financial, Operating and Combined Leverages – Meaning of Capital Structure - Determinants of capital structure.

UNIT V	DIVIDNED DECISION AND LIQUIDITY DECISION	12 hours

Dividend decision – Dividend policy - Dividend theories – Walter and Gordon model of dividend – Stability of dividend – Share split – Buyback of shares - Working capital – Concepts – Types – Determinants.

TOTAL : 60 hours

TEXTBOOKS

1. R.S.N.Pillai & Bagavathi – Management Accounting, Chand & Co. Ltd., New Delhi, 6TH Edition 2010.
2. T.S.Reddy & Y.Hari Prasad Reddy – Financial and Management Accounting, Margham publications, 12TH edition 2016.

REFERENCE BOOKS

1. M.Y.Khan & P.K.Jain – Management Accounting, Tata McGraw Hill publishing company Ltd., 10th edition 2004.
2. I M Pandey - Financial Management, Vikas Publishing, 11th Edition, 2018

WEB LINKS

1. https://corporatefinanceinstitute.com/resources/knowledge/finance/analysis-of-financial- statements/
2. https://www.aafmindia.co.in/financial-statement-analysis-tools-limitation-uses-process
3. https://www.accountingtools.com/articles/2017/5/14/financial-statement-analysis

COURSE OUTCOMES

CO1	State the importance of common accounting standards and financial statements through ratio analysis.	**K1**
CO2	Discuss about the fund flow, cash flow and Budgeting.	**K2**
C03	Demonstrate about the basic financial concepts and analyze of different capital budgeting decisions.	**K3**
CO4	Formulate the various cost of capital and capital structure concepts.	**K5**
CO5	Evaluate the dividend and liquidity decisions of the companies.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	2	-	-	-	-	-	-	1
CO2	2	-	-	3	1	-	-	-	-	-	2
CO3	3	1	-	2	2	1	-	1	1	2	-
CO4	1	3	2	-	2	3	2	3	3	2	1
CO5	-	1	3	-	1	2	3	2	2	3	-

24CMBS15	INTRODUCTION TO LOGISTICS AND SUPPLY CHAIN MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To learn the different stages of supply chain management process and to understand the sourcing activities, vendor management and drivers of the supply chain.
- To know the latest trends in supply chain management and logistics industry.

UNIT I	INTRODUCTION TO SUPPLY CHAIN MANAGEMENT	12 hours

Supply Chain Concepts: Objectives of a Supply Chain, Stages of Supply chain, Value Chain Process, Cycle view of Supply Chain Process, Key issues in SCM, logistics & SCM, Supply Chain Drivers and obstacles, Supply chain strategies, strategic fit, best practices in SCM, Obstacles of streamlined SCM.

UNIT II	CONCEPT OF LOGISTICS	12 hours

Logistics: Evolution, Objectives, Components and Functions of Logistics Management, Distribution related Issues and Challenges; Gaining competitive advantage through Logistics Management, Transportation Functions, Costs, and Mode; Network and Decision, Containerization, Cross docking

UNIT III	SUPPLY CHAIN PERFORMANCE	12 hours

Bullwhip effect and reduction, Performance measurement: Dimension, Tools of performance measurement, SCOR Model. Demand chain management, Global Supply chain- Challenges in establishing Global Supply Chain, Factors that influences designing Global Supply Chain Network.

UNIT IV	WAREHOUSING	12 hours

Concept and types, Warehousing strategy, Warehouse facility location & network design, Reverse logistics, Outsourcing- Nature and concept, Strategic decision to Outsourcing, Third party logistics(3PL), Fourth party logistics(4PL).

UNIT V	SUPPLY CHAIN AND CRM	12 hours

Supply Chain and CRM- Linkage, IT infrastructure used for Supply Chain and CRM, Functional components for CRM, Green supply chain management, Supply Chain sustainability.

TOTAL : 60 hours

TEXT BOOKS

1. Ashley McDonough. Operations and Supply Chain Management: Vibrant Publishers,1st Edition, 2020.
2. F.Robert Jacobs,Ravi Shankar, Richard.B Chase, Operations and Supply Chain Management, Mc Graw Hill, 17th Edition 2023.

REFERENCE BOOKS

1. Sahay, B.S.; Supply Chain Management, Laxmi Publications, 2nd Edition, 2007
2. S.L Ganapathy And S.Knandi , Logistics Management, Oxford University Press; Illustrated Edition,2015

WEB LINKS

1. https://backup.pondiuni.edu.in/sites/default/files/Logistics%20Supply%20Chain%20Mgt200813.pdf
2. https://www.geektonight.com/supply-chain-management-pdf/

COURSE OUTCOMES

CO1	Understand Supply chain based on the participants.	**K2**
CO2	Understand the implementation of logistics based on the drivers.	**K2**
CO3	Interpret the facility location methods.	**K3**
CO4	Examine the demand forecasting.	**K4**
CO5	Measure the various methods of sourcing.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	3	1	-	2	2	1		1	1	2	-
CO4	1	3	2	-	2	3	2	3	3	2	1
CO5	-	1	3	-	1	2	3	2	2	3	-

24CMBS16	FUNDAMENTALS OF BUSINESS ANALYTICS	4	0	0	4

COURSE OBJECTIVES

- To understand the fundamental concepts of business analytics., its types and the roles and responsibilities of business analyst.
- To learn about the latest trends in Business Intelligence, Data Mining, Data Warehouses, data visualization.
- To understand the basic fundamentals of various software used in business analytics .

UNIT I	BUSINESS ANALYTICS	12 hours

Introduction – Evolution – Categories of Business Analytical methods and models - Business Analytics in practice - Types of Analytics – Business Analytics Process – Tools – Framework –Applications – Roles and Responsibility of Business Analytics – Careers in Business Analytics.

UNIT II	DESCRIPTIVE ANALYTICS	12 hours

Introduction – Data, Information and Knowledge – Business Intelligence – Data Warehouse –Dashboard – Reporting – Data Visualization – Descriptive Statistics

UNIT III	PREDICTIVE ANALYTICS	12 hours

Introduction – Regression – Time Series Analysis and Forecasting – Statistics Vs Data Mining –Data Mining – Data MiningTasks (Descriptive, Predictive) – Learning methods (Unsupervised, Supervised) – Simulation

UNIT IV	PRESCRIPTIVE ANALYTICS	12 hours

Introduction – Optimization – Classification of optimization problems – Operations Research Techniques for Analytics – Mathematical Model – Linear programming – Transportation Problems

UNIT V	ANALYTICAL SOFTWARES	12 hours

Software such as Excel, R, Python, SPSS, Tableau, Power Bi – Applications of Analytics Such as Descriptive, Predictive and Prescriptive using spread modelling such as Excel

TOTAL : 60 hours

TEXT BOOKS

1. S. Christian Albright and Wayne L. Winston, Business Analytics: Data Analysis and Decision Making, Cengage Learning Publication, 6th Edition, 2019
2. James R. Evans., Business Analytics – Methods, Models and Decisions, Pearson Publications, 3rd Edition, 2020.
3. Ramesh Sharda, Dursun Delen, Efraim Turban, Business Intelligence and Analytics – Systems for Decision Support, Pearson, 10th Edition, 2018.
4. Essentials of Business Analytics: An Introduction to the methodology and its application, Bhimasankaram Pochiraju, ridharSeshadri.2019. https://link.springer.com/book/10.1007/978-3-319-68837-4.

REFERENCE BOOKS

1. Carlo Vercellis, Business Intelligence: Data Mining and Optimization for Decision Making, John Wiley & Sons Ltd., 2009.
2. Taha Hamdy. Operation Research -An Introduction, Prentice-Hall, 9th edition, 2012.
3. Banks, J., Carson, J. S. and Nelson, B. L. , Discrete Event System Simulation, 4th edition, Pearson EducationAsia, 2006.

WEB LINKS

- https://intellipaat.com/blog/what-is-business-analytics/
- https://intellipaat.com/blog/what-is-business-analytics/#Business_Analytics_Tools
- https://www.analyticsvidhya.com/blog/2019/05/practical-introduction-prescriptive- analytics/
- https://cloud.google.com/learn/what-is-predictive-analytics#:~:text=Predictive%20analytics%20is%20an%20advanced,data%20enable %20increased%20data%20mining

COURSE OUTCOMES

CO1	Identify the different types of Analytics	**K1**
CO2	Understand the decision-making models for Analytics.	**K2**
CO3	Relate the Predictive analytics with the machine learning language	**K3**
CO4	Formulate about the linear optimization and its related AnalyticsTechniques	**K4**
CO5	Appraise and learn the hands-on tools related to business analytics.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	3	1	-	2	2	1		1	1	2	
CO4	1	3	2	-	2	3	2	3	3	2	1
CO5	-	1	3	-	1	2	3	2	2	3	

24PMBS11	PRACTICAL – PROFESSIONAL UPSKILLING I	0	0	2	1

COURSE OBJECTIVES

- To improve the leadership quality, Effective Communication Skills, team management, quantitative analyzing knowledge, ordering, sequencing and logical thinking knowledgeto meet their professional career.
- To improve the communication by understanding the elements of communication, presentation skills, understanding the audience, Personality factors, improve the skill in seminars and conferences presentation.

UNIT I	EFFECTIVE COMMUNICATION SKILLS	6 hours

Importance of the language – Word Usage and Jargon's – Tenses and the effectiveness – Basics of grammar (Noun/Verb/Adverb/Conjunction) – Business English vs. Colloquial - Pronunciation and its importance – Verbal Communication - Non-verbal communication — Mannerisms and Empathy — What's stopping you from communicating effectively

UNIT II	PRESENTATION SKILLS AND LISTENING SKILLS	6 hours

Meaning—Importance of Presentation—Concept of 5 w's and one H —understanding the audience—Types of presentations—How to make effective presentations - Use of slides, PPT's. and visuals—Rules for slide presentation—precautions-seminars and conferences- Steps to eliminate Stage fear.

Engaged Listening - Grooming & Work Ethics - Assumptions/Perceptions vs. Reality - Reflection on your experience & improvement - Team Bonding/Building activities – Listening Skills - Attitude &
Behaviour

UNIT III	LEADERSHIP SKILLS AND PERSONALITY DEVELOPMENT	6 hours

Telephone etiquette - Giving clear and concise information - Listening Skills with Assessments - Intonations & its Importance - Mock sessions (Telephonic) – WHY-WHY Analysis and its importance.

SWOT Analysis - Time Management – Sympathy vs. Empathy - Conflict resolution and negotiation - Self-awareness - Self-regulation - Procrastination and how to overcome it

UNIT IV	ADAPTABILITY AND PROBLEM SOLVING	6 hours

Scenario based situation Handling - Embracing change - Critical thinking and analytical skills - Creativity and innovation - Building a professional network - Integrity and honesty - - Professional development and continuous learning

UNIT V	QUANTITATIVE APITUDE	6 hours

Percentage – Profit Loss -Discount – Ratio Proportion – Time & Work – Time, Speed & Distance. Problems relating to ages- Permutation & Combination-Probability - Mensuration Clocks and Calendars- Boats-Simple Interest –Compound Interest- Fractions and Decimals – Square roots – Functions. Logical and Reasoning questions for interview.
TOTAL : 30 hours

TEXT BOOKS

1. B N Ghosh , Managing Soft Skills and Personality, Mc Graw Hill Publications, 2017.
2. Barun Mitra , Personality Development a nd Soft Skills, 2nd Edition, Oxford Publication, 2016.
3. Sudhir Dixit, Time management , Manjul Publishing House 2018.

REFERENCE BOOKS

1. Ashish Manjeshwar, The Power of Creation , Scripto Book Publishers 2023.
2. Neeru Vasishth,Vibhuti Vasisht, Principles and Practices of M anagement, Taxmann publication, 1st Edition, 2022.

WEB LINKS

- https://www.mindtools.com/arb6j5a/what-is-time-management
- https://usic.sheffield.ac.uk/blog/how-to-improve-your-presentation-skills

COURSE OUTCOMES

CO1	Recall the business communications with suitable grammatical terms.	**K6**
CO2	Identify the ways to develop presentation skills and listening skills	**K6**
CO3	Interpret the Leadership Skills and personality development	**K6**
CO4	Maximize the problem-solving ability	**K6**
CO5	Evaluate and develop aptitude level of the students	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	**3**	**1**	**-**	**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**-**	**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	
CO5	**1**	**3**	**2**		**2**	**3**	**2**	**3**	**3**	**2**	**1**

24PMBS12	PRACTICAL – MOOC	0	0	2	1

COURSE OBJECTIVES

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

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

The students will appear for a final practical exam conducted by VISTAS

TOTAL: 30 hours

COURSE OUTCOMES

CO1	Understand the latest developments in the field of study.	**K2**
CO2	Explain the students with latest information about the field of study	**K2**
CO3	Apply the skills in the business world	**K3**
CO4	Formulate the various skills gained through this course	**K4**
CO5	Summarize the concepts for application	**K2**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	3	1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

SEMESTER II

24CMBS21	MARKETING MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To understand the basics of market, marketing, marketing environment and business environment and its domain knowledge
- To analyze the core concepts in marketing concepts, critical thinking, problem solving an analysis.
- To apply the market segmentation, Target market and Market Positioning strategies in the current market scenario.
- To understand the concepts of Global market.

UNIT I	INTRODUCTION TO MARKETING MANAGEMENT	12 hours

Understanding the term Marketing with a global context -Importance of Marketing-Scope of Marketing- Marketing Philosophy – Holistic Marketing Philosophy - Core Concepts - Company Orientation toward marketplace- Pillars of Marketing and Types of Marketing Models - Customer Value - Marketing Environment-Micro and Macro Environment.

UNIT II	CONSUMER MARKETS	12 hours

Consumer Markets: Model of Consumer Behavior, The Howard Sheth Model of Buying Behaviour - The Nicosia Model - The Engel-Kollat-Blackwell Model, - Factors Affecting Consumer Behaviour - Strategies in the adopt in process – Cross cultural consumer behaviour – Consumer behaviour in global markets.

UNIT III	MARKET SEGMENTATION	12 hours

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

UNIT IV	MARKETING PROGRAMME	12 hours

Marketing Programme: Decisions Involved in Product, Branding, Packaging, Product Extension Strategies - Product Line and Product Mix Decisions, New Product Development, Product Life Cycle. Pricing Products, Strategies, Distribution -Channels, Channel Management Decisions, Promotion Mix - Advertising, Sales Promotion, Public Relations, Personal Selling, Promotion Decisions		
UNIT V	**TAPPING INTO GLOBAL MARKETING**	**12 hours**
Tapping into Global Markets - Competing on a Global Basis - Deciding Whether to Go Abroad - Deciding Which Markets to Enter - How Many Markets to Enter - Developed versus Developing Markets - Evaluating Potential Markets - Deciding How to Enter the Market - Indirect and Direct Export - Licensing -- Joint Ventures - Direct Investment--Deciding on the Marketing Program -Global Similarities and Differences -Marketing Adaptation-Global Product Strategies -Global Communication Strategies-Global Pricing Strategies- Global Distribution Strategies. Case study: Marketing strategy Implementation; Market Segmentation / Targeting / Positioning. Product Levels, Pricing / Global Markets – Applications of AI in Marketing		
TOTAL : 60 hours		

TEXT BOOKS

1.Philip Kotler and Kevin Lane Keller, Marketing Management, Pearson Education India, 17th Edition, 2017.

2. K.S.Chandrasekar, Marketing Management Text and Cases, Tata McGraw. Hill, New Delhi, 2017.

REFERENCE BOOKS

1. Rajan Saxena, Marketing Management, McGraw-Hill,6th Edition 2019.

2. Ramaswamy V.S. Namakumari S, Marketing Management - The Indian Context, Sage Publications India Pvt Ltd; 6th Edition, , 2018.

WEB LINKS

- https://www.iedunote.com/marketing
- https://www.omniconvert.com/blog/consumer-behavior-in-marketing-patterns-types- segmentation.
- https://hbr.org/1986/05/customizing-global-marketing.
- https://www.economicsdiscussion.net/market ing-management/what-is-marketingmanagement/31788
- . https://www.indeed.com/hire/c/info/marketing-management
- https://online.york.ac.uk/what-is-global-marketing-and-why-is-it-important/

COURSE OUTCOMES

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

CO1	Relate the corporate function of marketing.	**K1**
CO2	Explain about the macro and microenvironment in the company's marketing function.	**K2**
CO3	Differentiate the consumer and institutional buyer behaviour.	**K4**
CO4	Compose the concepts of 4Ps Marketing Mix and understand its significance in the business scenario	**K5**
CO5	Describe the ways to tap the global market	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO6**	**PO 7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	1	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3	2	2	1	1	3	2	1	2	2	1	2
CO4	1	3	2		2	3	2	3	3	2	1
CO5		1	3		1	2	3	2	2	3	

24CMBS22	HUMAN RESOURCES MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To familiarize the students about the different aspects of managing people in the organizations from the stage of acquisition to development and retention
- To make students capable of applying the principles and techniques as professionals for developing human resources in an organization.
- To provide knowledge about management issues related to training, performance, compensation, human factors consideration and compliance with human resource requirements.

UNIT I	PERSPECTIVES IN HUMAN RESOURCE MANAGEMENT	12 hours

Evolution of Human Resource Management: Concept, Scope, Importance, Objectives - HR policy & procedures - The importance of human capital- Role of human resource manager - Challenges for human resource managers - Trends in human resource policies - Computer applications in human resource management - Human resource accounting and audit.

UNIT II	HUMAN RESOURCE PLANNING AND RECRUITMENT	12 hours

Importance of Human Resource Planning - Forecasting human resource requirement - Matching supply and demand - Internal and External sources of Human resource - Organizational attraction - Recruitment, Selection, Induction and Socialization - Theories
methods and process

UNIT III	TRAINING AND EXECUTIVE DEVELOPMENT	12 hours

Types of training methods –purpose- benefits- resistance. Executive development programmes – Common practices - Benefits – Self-development – Knowledge management

UNIT IV	PERFORMANCE MANAGEMENT	12 hours

Purposes of Performance Management, Performance evaluation - Feedback - the control process- importance- methods - grievances - causes- Redressal methods - Punishment and Promotion - Wage & Salary fixation, incentives, bonus, ESOPs. Insurance, Fringe Benefits

UNIT V	CONTEMPORARY ISSUES IN HRM	12 hours

Contemporary issues in HRM: Talent Management – Health & Safety issues, Work Life Balance, HRD in India, International HRM and emerging horizons of HRM - Applications of AI in HR

TOTAL : 60 hours

TEXT BOOKS

1. Talya Bauer, Berrin Erdogan, David Caughlin, and Donald Truxillo, Human Resource Management: People, Data, and Analytics, SAGE Publications,2nd Edition, 2020

2. Robert N. Lussier and John R. Hendon, Human Resource Management: Functions, Applications, and Skill Development, SAGE Publications, 4th Edition 2021

REFERENCE BOOKS

1. John Bratton and Jeffrey Gold , Human Resource Management: Theory and Practice , Palgrave Macmillan,2nd Edition, 2020.
2. Armstrong and Paul Thompson Michael, Strategic Human Resource Management: Theory and Practice, Kogan Page, 3rd Edition, 2020.

WEB LINKS

- https://open.lib.umn.edu/humanresourcemanagement/chapter/1-1-what-is-human- resources/
- https://www.hrdconnect.com/2019/05/22/what-is-hr-management-in-an-organisation/
- https://www.thebalancecareers.com/what-is-human-resource-management-1918143

COURSE OUTCOMES

CO1	Understand the importance of HRM as a field of study and as a central management function	**K 2**
CO2	Apply thee principles and methods of HRM gained through this course for managing human resources at the work places	**K3**
CO3	Develop knowledge about management training for executives.	**K 3**
CO4	Summarise the concepts of performance management and to apply it in practice	**K 5**
CO5	Analyze the contemporary issues in HRM	**K 6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	-	-				2
CO2		1	-	2	2	1		1	1	2	
CO3		1		2	2	1		1	1	2	
CO4	1	3	2		2	3	2	3	3	2	1
CO5		1	3	-	1	2	3	2	2	3	

24CMBS23	OPERATIONS MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To provide basic and foundational knowledge about production and operations management
- To concepts, strategies, tools and techniques to create the managerial excellenceamong the young vibrant managers and entrepreneurs to acquire operational knowledgeand skills.

UNIT I	INTRODUCTION TO OPERATIONS MANAGEMENT	12 hours

Operations Management – Nature, Importance, historical development, Scope of Operations Management, transformation processes, differences between services and goods, Applications in product and service industry- a system perspective, functions, challenges, current priorities, recent trends-Use of competitive advantage.

UNIT II	PLANT OPERATIONS AND FORECASTING	12 hours

Plant Location – Factors influencing location – Plant Layout – Types of Layouts - Facility Location – Theories, Steps in Selection, Location Models. Demand Forecasting – Need, Types, Objectives and Steps - Overview of Qualitative and Quantitative methods.

UNIT III	OPERATIONS PLANNING	12 hours

Capacity Planning – Long range, Types, Developing capacity alternatives, tools for capacity planning. Master Production Schedule -Material Requirement Planning-I & II, Enterprise Resource Planning.

UNIT IV	INVENTORY MANAGEMENT	12 hours

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

UNIT V	QUALITY MANAGEMENT	12 hours

Definitions of quality, The Quality revolution, quality gurus; TQM philosophies; Quality management tools, certification and awards. Lean Management - philosophy, PDCA, Continuous improvement. Six sigma - Applications of AI in Operations.

TOTAL: -- 60 hours

TEXT BOOKS

1.William J Stevenson, Operations Management, McGraw Hill, 13th Edition, 2022.

2.Jay Heizer, Barry Render, Chuck Munson, Amit Sachan Operations Management, Perason Education ,12th Edition, 2017

REFERENCE BOOKS

1. SN Chary, Production and Operations Management, McGraw Hill 6th Edition 2019.
2. Richard B. Chase, Ravi Shankar, F. Robert Jacobs, Operations and Supply Chain Management, McGraw Hill Education (India) Pvt. Ltd, 14th Edition, 2014.

WEB LINKS

https://corporatefinanceinstitute.com/resources/knowledge/strategy/operations-management/
https://managementhelp.org/operationsmanagement/
https://hbr.org/topic/operations-management

COURSE OUTCOMES

CO1	Define the fundamental concepts of operations and production.	**K1**
CO2	Understand the types of production systems	**K2**
CO3	Employ the fundamental concepts of layout and location	**K3**
CO4	Identify the demand using the different forecasting techniques	**K5**
CO5	Summarize the fundamental concepts of various planning	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	3	1		2	2	1		1	1	2	
CO3		1		2	2	1		1	1	2	
CO4	1	3	2		2	3	2	3	3	2	1
CO5		1	3		1	2	3	2	2	3	

24CMBS24	GLOBAL SUPPLY CHAIN AND TRADE MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To comprehend the critical factors influencing contemporary global supply chains
- To gain insight into the components of global trade and the organizations involved.

UNIT I	INTRODUCTION AND OVERVIEW OF GLOBAL SUPPLYCHAIN	12 hours

SCM Activities - Managing Flows Through the Supply Chain – Supply Chain Efficiency Frontier – Supply Chain Decision Phases - The Bullwhip Effect – Globalization – Outsourcing – Technology – Postponement - The Lean Supply Chains - Managing Supply Chain Disruptions- Supply Chain Security - Sustainability and Green Supply Chain – Customer Service.

UNIT II	ELEMENTS OF GLOBAL SUPPLY CHAIN	12 hours

Supply chain strategy – Network and System Design – Marketing – Operations – Sourcing – Logistics – Forecasting and Demand Planning – Inventory Management – Lean systems and six sigma quality – Supplier Relationship Management .

UNITII	ISSUES AND CHALLENGES IN GLOBAL SUPPLY CHAIN	12 hours

Global Market Forces – Technological forces – Global cost forces – Managing Supplier lead time and global Suppliers- Political and Economic forces – Risks in Global supply chain – Addressing global risks –International versus Regional Products – Local Autonomy vs Central Control – Miscellaneous Danger – Regional Differences in Logistics – Cultural – Infrastructure – Information System Availability – Human Resources .

UNIT IV	FACTORS DRIVING GLOBAL TRADE	12 hours

United Nations convention on contracts for International Sales of Goods, International Commercial Trade Terms – Carriage of Goods by Sea – Carriage of Goods by Land - Carriage of Goods by Air – MMT-Global Exchange Rate Management - Financing Exports: Letters of Credit – International Commercial Arbitration - Anti-Dumping **and** countervailing.

UNIT V	INTERNATIONAL CO-OPERATION	12 hours

The General Agreement on Trade and Tariff (GATT) & World Trade Organization (WTO)-- Most Favored Nation - Regional Economic Integration - Trade Blocks of NAFTA & European Union - Trade Arrangements in the Asia-Pacific Region - African Initiative – International Rail-Road Transportation - International Sea & Air Transportation - FTZ-SEZ

TOTAL : -- 60 hours

TEXT BOOKS

1. Nada R Sanders ,Global Supply Chain Management – A Global Perspective, Wiley Book,3rd Edition, 2020.

2. Peter Gillies & Gabriël Moens, International Trade and Business, – Cavendish Publishing,2nd Edition, 2006.
3. David Simchi- Levi , Edith Simchi-Levi , Ravi Shankar, Designing and Managing the Supply Chain,McGraw-Hill,4th Edition. 2022.

REFERENCE BOOKS

1. Alan E Branch , Global Supply Chain and International Logistics ,Routledge Publishing, 1st Edition, 2009.
2. Anders Grath ,The Handbook of International Trade and Finance, 4th edition, Kogan page,2016.

COURSE OUTCOMES

CO1	Relate Evolving trends in Global Supply Chain	**K1**
CO2	Outline the Components of the Global Supply Chain	**K2**
CO3	Identify the Challenges Within the Global Supply Chain	**K3**
CO4	Examine the Forces Influencing Global Trade	**K4**
CO5	Assess and formulate Global Supply Chain Collaboration and business networks	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PS08**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2	-	-	-			-	1
CO2	3	1		2	1	1		1	1	2	
CO3		1		2	1	1		1	1	2	
CO4	2	2	1	1	2	2	1	2	2	1	2
CO5		2	3	-	2	2	3	2	2	3	

24CMBS25	PROCUREMENT, INVENTORY AND MATERIALS MANAGEMENT	4	0	0	4

COURSE OBJECTIVES

- To Understand procurement concepts, including lifecycle, sourcing, and contracting
- To Develop strategic sourcing skills for optimizing procurement strategies and supplier relationships.
- To Comprehend inventory types, valuation methods, and control techniques for optimization.
- To Acquire knowledge of MRP and JIT systems for efficient inventory control and production management.
- To Gather knowledge on warehouse layout design and distribution management principles for effective operations.

UNIT I	INTRODUCTION TO PROCUREMENT MANAGEMENT	12 hours

Definition and importance of procurement management-Procurement process: requisition, sourcing, contracting, and payment-Types of procurement: direct, indirect, strategic, and operational-Supplier selection criteria and evaluation methods.

UNIT II	STRATEGIC SOURCING AND SUPPLIER RELATIONSHIP MANAGEMENT	12 hours

Strategic sourcing principles and frameworks-Supplier segmentation and portfolio management-Contract management and negotiation strategies-Supplier relationship management (SRM) techniques-Vendor analysis – Metrics for vendor performance -Best practices for fostering collaboration with suppliers.

UNIT III	INVENTORY MANAGEMENT PRINCIPLES	12 hours

. Inventory types and classification methods-Inventory costs and valuation methods-Inventory control techniques: EOQ, safety stock, and reorder point-ABC analysis and inventory optimization-Inventory performance measurement and KPIs.

UNIT IV	MATERIALS REQUIREMENT PLANNING (MRP) AND JUST-IN-TIME (JIT) SYSTEMS	12 hours

Overview of MRP and its role in inventory management-MRP process and key components: bill of materials,
master production schedule, and inventory records- JIT manufacturing andinventory control-Implementation challenges and benefits of MRP and JIT systems-Case.

UNIT V	WAREHOUSE OPERATIONS AND DISTRIBUTION MANAGEMENT	12 hours

Warehouse layout and design considerations-Storage systems and equipment selection-Warehouse operations: receiving, put-away, picking, packing, and shipping-Cross-docking

and distribution center management-Emerging trends in warehouse automation and technology.
TOTAL : -- 60 hours

TEXTBOOKS

1.. Peter Baily, David Farmer, Barry Crocker,and David Jesson ,Procurement Principles and Management, Pearson Education Publication, 11th Edition,2019.

2. Edward A. Silver,David F. Pyke, and Douglas J. Thomas, Inventory Management and Production Planning and Scheduling, Wiley Publication, 4th Edition,2019.

REFERENCE BOOKS

1. Sunil Chopra and Peter Meindl, aSupply Chain Management: Strategy, Planning, and Operation, Pearson Education, 7th Edition,2020.

1. Gwynne Richards, Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse, Kogan Page , 3rd Edition,2014.

WEBLINKS

- https://www.instituteforsupplymanagement.org/
- https://www.apics.org.

COURSE OUTCOME

CO1	Outline procurement management core concepts and lifecycle.	**K2**
CO2	Develop and relate strategic sourcing skills for optimizing procurement strategies.	**K1**
CO3	Identify inventory types, valuation methods and control techniques.	**K3**
CO4	Analyse application of MRP and JIT systems for efficient inventory control.	**K4**
CO5	formulate warehouse layout design and distribution management principles.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	3	1		2	2	1		1	1	2	
CO2		1		2	2	1		1	1	2	
CO3	3	1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24PMBS21	PRACTICAL – PROFESSIONAL UPSKILLING II	0	0	2	1

COURSE OBJECTIVES

- To improve the interpersonal skills, soft skills, effective team player and analyze strength and weakness to meet their professional career.
- To improve the leadership quality, team management, quantitative analyzing knowledge to meet their professional career.

UNIT I	ADVANCED WORKPLACE COMMUNICATION	6 hours

Engaged Listening - Grooming & Work Ethics - Assumptions/Perceptions vs. Reality - Reflection on your experience & improvement - Team Bonding/Building activities – Listening Skills - Attitude & Behaviour

UNIT II	PERSONALITY DEVELOPMENT	6 hours

SWOT Analysis - Time Management – Sympathy vs. Empathy - Conflict resolution and negotiation - Self-awareness - Self-regulation - Procrastination and how to overcome it

UNIT III	ADAPTABILITY AND PROBLEM-SOLVING	6 hours

Scenario based situation Handling - Embracing change - Critical thinking and analytical skills - Creativity and innovation - Building a professional network - Integrity and honesty - - Professional development and continuous learning.

UNIT IV	QUANTITATIVE APTITUDE I	6 hours

Percentage – Profit Loss -Discount – Ratio Proportion – Time & Work – Time, Speed & Distance. Problems relating to ages- Permutation & Combination-Probability.

UNIT V	QUANTITATIVE APTITUDE II	6 hours

Mensuration Clocks and Calendars- Boats-Simple Interest –Compound Interest- Fractions and Decimals – Square roots – Functions. Logical and Reasoning questions for interview.

TOTAL: 30 hours

TEXT BOOKS

1. Dr. R.S. Aggarwal ,A Modern Approach to Verbal & Non-Verbal Reasoning/QuantitativeAptitude, , Sulthan Chand & Company Ltd, 24th Edition, 2023.

2. Barun Mitra , Personality Development and Soft Skills,Oxford Publication, 2nd Edition,2016

REFERENCE BOOKS

1. Stephen R. covey , Seven habits of Highly Effective people, Simon &

Schuster publication , 12th Edition, 2020.
2. Neeru Vasishth, Vibhuti Vasisht, Principles and Practices of Management, Taxmann publication, 1st Edition 2022.

WEB LINKS

- https://www.thomas.co/resources/type/hr-guides/what-are-big-5-personality- traits
- https://leverageedu.com/blog/quantitative-aptitude/

COURSE OUTCOMES

CO1	Outline procurement management core concepts and lifecycle.	**K2**
CO2	Develop and relate strategic sourcing skills for optimizing procurement strategies.	**K2**
CO3	Demonstrate inventory types, valuation methods and control techniques.	**K2**
CO4	Analyse application of MRP and JIT systems for efficient inventory control.	**K4**
CO5	Formulate warehouse layout design and distribution management principles.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**3**	1		**2**	1	**1**		**1**	**1**	2	
CO2	**3**	1		2	**1**	**1**		**1**	**1**	2	
CO3	**2**	2	**1**	1	2	**2**	**1**	**2**	**2**	**1**	**2**
CO4	**1**	3	**2**		3	**3**	**2**	**3**	**3**	**2**	**1**
CO5		2	**3**	-	2	**2**	**3**	**2**	**2**	**3**	

24PMBS22	PRACTICAL – SUPPLY CHAIN MANAGEMENT - I	0	0	2	1

COURSE OBJECTIVES

- To gain practical insights and hands on experience in Excel Solver for Logistics Optimization
- To apply Data modelling and representation using Power BI
- To design live sessions with set example to conduct Reverse Auction in Digital Procurement.

- Introduction about the Applications of Excel Solver for Demand Supply
- Planning, Transportation and RouteDistribution-Practical Sessions.
- Application of Power BI
- Practical sessions
- Digital Procurement
- Reverse Auction
- Digital Procurement Applications
- Practical Sessions

COURSE OUTCOMES

CO1	Explain about Excel solver as critical tool to derive logistics solutions	**K2**
CO2	Identify Excel solutions for demand -source allocation for optimization solutions	**K2**
CO3	Apply Power BI for Data Modelling solutions with practical learnings	**K3**
CO4	Infer and construct Excel solutions for Digital Procurement Models	**K4**
CO5	Design Reverse Auction model for Online Web-based Digi-tech procurement process.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	3	1		2	2	1		1	1	2	
CO2	3	1		2	2	1		1	1	2	
CO3		1		2	2	1		1	1	2	
CO4	2	2	2	1	3	2	1	2	2	1	2
CO5	1	2	3		2	3	2	3	3	2	1

SEMESTER III

24CMBS31	DIGITAL ENTREPRENEURSHIP	3	0	0	3

COURSE OBJECTIVES

- To develop a digital entrepreneurship concept that addresses a specific social or environmental problem, considering factors such as market demand, sustainability, and impact measurement.
- To analyze the role of digital entrepreneurship, recognize which is the starting point of the fourth industrial revolution and the consequences it generated in the economic and social spheres.
- To analyse the concept of Industry 4.0 and know the integration methods that exist in a connected industry.

➢ To Identify the fundamental aspects of the enabling technologies that make up Industry 4.0

UNIT I	INTRODUCTION TO DIGITAL ENTREPRENEURSHIP	12 hours

Introduction – Defining Entrepreneurship, Digital Entrepreneurship, Intrapreneur —Types of Entrepreneurship- Functions and classifications of entrepreneurs - Characteristics of entrepreneur - Nature and importance of digital entrepreneur - Entrepreneur vs. professional manager – Comparison between Entrepreneurship, Digital Entrepreneurship, - The rise of entrepreneurship in digital spaces - Digital Entrepreneurship: New Opportunities and Challenges - Choosing a Digital Business Idea.

UNIT II	CONCEPT OF DIGITAL ENTREPRENEURSHIP	12 hours

Pillars of Digital Entrepreneurship - Digital Entrepreneur education - Role Market orientation in Digital entrepreneur -New Technology and entrepreneurship opportunities - Industry 4.0 and digital Innovation. Key actors, resources and emerging technologies to facilitate digital entrepreneurship. Digital Business Vs E business – Digital Business Structure - Global Digital entrepreneurship.

UNIT III	DIGITAL ENTREPRENEURIAL VENTURE	12 hours

Creating Digital Entrepreneurial Business: Generating Business idea, Team building - Sources of Innovation Creativity and Entrepreneurship - Challenges in managing innovation - Venture capital, Angels -Entrepreneurial strategy and scaling up - Business planning process - Drawing business plan - Business plan failures. Business Model Canvas – 9 blocks of Business Model Canvas - Role in social and sustainable development.		
UNIT IV	**DIGITAL MARKETING IN ENTREPRENEURSHIP**	**12 hours**
Unique selling proposition of the various business models - Online Business risk and challenges – Digital marketing and social networks – social media and e – commerce - Digital marketing business strategies for creating competitive advantage in digital entrepreneurship - Design thinking. Data driven decision-making for entrepreneurs		
UNIT V	**DIGITAL INNOVATION AND CHALLENGES**	**12 hours**
Online Business risk and challenges – Cyber security and online scams -safety precautions – Intellectual property for brand protection - Disruptive innovation, Innovator's dilemma, Blue Ocean strategy - Start-up ecosystem. Understanding start-up life. – Crowd sourcing – Crows funding of entrepreneurs - Analysing start-up failures: reasons and lessons.		
TOTAL : -- 60 hours		

TEXT BOOKS

1. Dick Whittington, Digital Innovation and Entrepreneurship, Cambridge University Press, 1st Edition, 2018.

2. Malecki, E. and Moriset., The Digital Economy: Business Organization,Production Processes and Regional Developments. London: Taylor & Francis,1st Edition,2008.

2. Hisrich R D, Peters M P, Entrepreneurship, 8th Edition, Tata McGraw-Hill, 2016.

3. Ng, I, Creating New Markets in the Digital Economy: Value and Worth. Cambridge: Cambridge University Press, 1st Edition,2014.

REFERENCE BOOKS

1. Chaffey D, Ellis-Chadwick F. , Digital marketing, Pearson Education, 6th Edition,2017.

2.Kotler P, Kartajaya H, Setiawan I, Marketing 4.0: Moving from traditional to digital. Wiley: Hoboken, New Jersey,2016

3. Bridge, S.O Neil K and Cronie. S , Understanding the Enterprise, Entrepreneurship and Small Business, London : Palgrave Macmillan,1998

WEB LINKS

1. https://csedvit.medium.com/history-of-social-entrepreneurship-9c601af1b411
2. https://coursera.org - Social Business Model and Planning for Social Innovation

COURSE OUTCOMES

CO1	Understand the concept of digital entrepreneurship, types and roles of digital entrepreneurship	**K2**
CO2	Understand the dynamics and new Technology adopted in digital entrepreneurial dimensions.	**K2**
CO3	Employ the concept of Digital Innovation	**K3**
CO4	Examine the ways to apply digital marketing tools and techniques in entrepreneurial venture.	**K4**
CO5	Interpret the standards of entrepreneurial growth & development.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	3	1		2	2	1		1	1	2	
CO2	3	1		2	2	1		1	1	2	
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24CMBS32	BUSINESS RESEARCH METHODS AND SPSS	3	0	0	3

COURSE OBJECTIVES

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

UNIT I	INTRODUCTION TO RESEARCH	12 hours

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

UNIT II	RESEARCH DESIGN AND MEASUREMENT	12hours

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

UNIT III	SAMPLING AND DATA COLLECTION	12 hours

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

UNIT IV	DATA PROCESSING AND ANALYSIS THROUGH SPSS	12 hours

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

UNIT V	REPORT DESIGN AND WRITING	12 hours

Introduction - Research Report - Different types – Criteria of Good Research -Structure of the research report – Title, Table of Contents – Synopsis, bibliography - Introductory Section –Research Design – Result Section – Recommendation & Implementation Section- - Bibliography – Citation rules Research ethics – Research databases –research metrics – Publication ethics – Use of plagiarism software – Turnitin – urkund and open source software tools.

TOTAL: 60 hours

TEXT BOOKS

1. Donald R. Cooper, Pamela S. Schindler: Business Research Methods, McGraw Hill Education; 11th Edition, 2017

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

3. William G. Zikmund , Business Research Methods, Cengage learning 8th Edition, 2015,

REFERENCE BOOKS

1.Alan Bryman and Emma Bell: 'Business Research Methods, Oxford UniversityPress, 3rd Edition, 2011.

2.Bryman, A and Bell, E. Business Research Methods. Oxford University Press, 3rd Edition,2015

WEB LINKS

1. https://research-methodology.net/sampling-in-primary-data-collection/#google_vignette
2.https://www.youtube.com/watch?v=Fn_IyDK2JA8&list=PLBd-6Jg4BqVNoGZEYXmd-cuXL4d8qyc0p

COURSE OUTCOMES

CO1	Demonstrate how research to be conducted in a systematic way	**K2**
CO2	Develop hypothesis and understand procedure for experimenting hypothesis	**K2**
CO3	Construct a questionnaire, interpret the results with the help of various statistical tools	**K4**
CO4	Analysis the data using the SPSS software	**K4**
CO5	Discuss the Researchers Ethical code and plagiarism software tools	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	1	-	-		-	2
CO2	2	-	-	3	1	1	-	-		-	2
CO3	2	2	1	1	3	3	2	1	2	1	2
CO4	2	2	1	3	3	3	2	1	2	1	2
CO5		1	3	-	1	1	2	3	2	3	

ELECTIVE COURSES – LOGISTICS

24EMBS..	NEW POLICY FOR LOGISTICIANS	3	0	0	3

COURSE OBJECTIVES

- To understand the goals and methods of major Indian development plans like PM GATI SHAKTI National Master Plan, SMART Cities, RCS - UDAN, Economic Corridor Development, Logistics Efficiency Improvement, and PMKSY.
- To explore how these plans are connected and how they work together to promote sustainable development and inclusive growth in India.

UNIT I	PM GATI SHAKTI NATIONAL MASTER PLAN	9 hours

Seven engines of PM Gati Shakti – Ministries involved – Six Pillars of Gati shakti – Comprehensiveness – prioritization – optimization – synchronization – Analytical – Dynamic – Nine Union Budgets – Unified Logistics interface platform – Open-source mobility stack – One Station One Product – Vande Bharat Trains – Integration of postal network – Multimodal connectivity.

UNIT II	SMART CITIES, REGIONAL CONNECTIVITY SCHEME (RCS) – UDAN	9 hours

National Smart cities mission – History – List of nominated cities – Selected cities Regional Connectivity Scheme (UDAN-RCS) - Bharat Mala, Sagar Mala, Dedicated Freight Corridors, Industrial corridor, Bharat Net, Digital India and Make in India, National e-Governance Plan, Startup India, and Standup India.

UNIT III	ECONOMIC CORRIDOR DEVELOPMENT	9 hours

National Highways: Construction & Achievements - Road Network in the Country - National Highway Network – Bharat Mala Pari yojana - Asset Monetization - economic corridor development across India – Examining on- ground progress and upcoming projects - What are economic corridors? – Sagar Mala - Port Modernization – New Ports –Port Modernization Major Ports & Non-Major Ports - India's Top 10 Airport Projects – Coastal Shipping.

UNIT IV	LOGISTICS EFFICIENCY IMPROVEMENT	9 hours

National Logistics Policy – Vision – Targets – Comprehensive logistics action plan - Logistics performance index – Six Pillars of LPI - International LPI – Global Rankings – Country scorecard – Aggregated Ranking – warehousing standards – Leads – Actions for states / UT – Unified Logistics platforms – E-Logs – Dashboard for ease of logistics services – Features and development plan – Training courses of IGOT Platform.

UNIT V	PRADHAN MANTRI KISAN SAMPADA YOJNA (PMKSY)	9 hours

About PMKSY – Objective - Financial Assistances – Benefits - Integrated Cold Chain and Value Addition Infrastructure - Creation/ Expansion of Food Processing and Preservation Capacities (Unit Scheme) – Infrastructure for Agro Processing Clusters - Food Safety & Quality Assurance Infrastructure - Human Resources and Institutions.

TOTAL: 45 hours

TEXT BOOKS

1. ManojKumar Tiwari, Towards Naya Bharat A Study of Infrastructure, Community and Development, National Book Trust India, 1st Edition, 2023.
2. Charels Henry Davis, Stanley Edwards Bates, National Highways- To BringAbout Good Roads Everywhere Hardcover , Legare Street Press, 2022

REFERENCE BOOKS

1.Professionals, The National Highways Act, 1956 Latest 2023 Edition Professional's.

2.Agarwal , Textbook of Logistics and Supply Chain Management, Laxmi Publications 1st Edition, 2023

WEB LINKS

- https://static.pib.gov.in/WriteReadData/specificdocs/documents/2023/apr/doc2023428189201. pdf
- https://dpiit.gov.in/sites/default/files/eBook_LogisticPolicy_v3_19September2022_1.pdf
- https://www.dgshipping.gov.in/Content/PageUrl.aspx?page_name=ShipManualChap22

COURSE OUTCOMES

CO1	List the key objectives PM GATI SHAKTI National Master Plan	**K1**
CO2	Summarize the concepts and implementation of SMART Cities.	**K2**
CO3	Build Knowledge of the Regional Connectivity Scheme (RCS) - UDAN	**K3**
CO4	Analyze Economic Corridor Development process and its role in economic growth.	**K4**
CO5	Explain and adapt Pradhan Mantri Kisan Sampada Yojna and its significance	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5	**1**	**3**	**2**		**2**	**3**	**2**	**3**	**3**	**2**	**1**

24EMBS…	GREEN LOGISTICS	3	0	0	3

COURSE OBJECTIVES

- To understand green logistics concepts, analyze trends, and regulatory frameworks.
- To Integrate sustainability into supply chain strategies, apply assessment tools.
- To Assess transportation's environmental impact, optimize routes for sustainability.
- To Identify and adhere to environmental regulations, develop risk mitigation strategies.
- To Develop risk assessment and mitigation strategies for environmental compliance

UNIT I	INTRODUCTION TO GREEN LOGISTICS	9 hours

Overview of logistics and its environmental impact-Definition and importance of green Logistics-Evolution and trends in green logistics practices-Regulatory frameworks and internationalagreements related to environmental-sustainability in logistics and Case studies illustrating successful implementation of green logistics initiatives.

UNIT II	SUSTAINABLE SUPPLY CHAIN MANAGEMENT	9 hours

Understanding the concept of sustainable supply chains-Integration of sustainability principles into supply chain management-green procurement and supplier management strategies-Life cycle assessment and carbon footprint analysis in supply chains-Tools and frameworks for assessing and improving supply chain sustainability performance.

UNIT III	GREEN TRANSPORTATION AND DISTRIBUTION	9 hours

Sustainable transportation modes: road, rail, air, sea, and multimodal options - Energy- efficient and low-emission transportation technologies- Route optimization and vehicle routing algorithms for minimizing environmental impact-green warehousing and distribution center practices-Reverse logistics and closed-loop supply chain strategies for waste reduction and resource recovery.

UNIT IV	ENVIRONMENTAL REGULATIONS AND COMPLIANCE	9 hours

Overview of environmental regulations affecting logistics operations-Compliance requirements foremissions, waste management, and hazardous materials handling -Environmental risk assessment and mitigation strategies in logistics operations -Corporate social responsibility (CSR) and reporting
frameworks related to environmental performance-Auditing and certification processes for verifying environmental compliance in logistics.

UNIT V	GREEN LOGISTICS IMPLEMENTATION AND PERFORMANCE MEASUREMENT	9 hours

Strategies for implementing green logistics initiatives within organizations-Change management and stakeholder engagement for fostering a culture of sustainability- Key performance indicators (KPIs) for measuring environmental and operational performance in logistics-Continuous improvement methodologies-Lean and 6 Sigma Application-Case study.

TOTAL : -- 45 hours

TEXT BOOKS

1.. David B. Grant, Alexander Trautrims, and Chee Yew Wong, Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management, Publication: Kogan Page-: 2nd Edition, 2021.

2. Alan McKinnon, MichaelBrowne, Maja Piecyk, and Anthony , Green Logistics: Improving the Environmental Sustainability of Logistics, Whiteing-Publication: Kogan Page, 4th Edition, 2015.

REFERENCE BOOKS

1. Alan, McKinnon, Michael Browne, Anthony Whiteing, and Maja Piecyk Handbook of Green Logistics: Sustainable Supply Chain Management in the Automotive Industry, Springer,2015.

2. Hsiao-Fan Wang and C.P. Huang, Green Supply Chain Management: Product Life Cycle Approach, McGraw-Hill Education, 1st Edition,2011.

WEBLINKS

1. https://www.greenbiz.com/
2. https://www.carbontrust.com/en-as

COURSE OUTCOMES

CO1	Define the green logistics concepts, explain trends and regulatory frameworks.	**K1**
CO2	Indicate sustainability into supply chain strategies applying assessment tools.	**K2**
CO3	Identify transportation's environmental impact optimizing routes for sustainability.	**K3**
CO4	Analyse to comply with environmental regulations to mitigate risk.	**K4**
CO5	Conclude and develop risk assessment and mitigation strategies for environmental compliance	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24EMBS..	MATERIALS AND STORE MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To understand and apply materials management techniques to optimize inventory strategies.
- To classify inventories, apply costing methods, and improve efficiency through optimization techniques.
- To design warehouse layouts, monitor performance using KPIs, and ensure safety measures.
- To apply material handling principles, select appropriate technology, and optimize transportation for cost reduction.

UNIT I	INTRODUCTION TO MATERIALS MANAGEMENT	9 hours

Definition and scope of materials management -Importance of effective materials management in supply chain operations -Functions and objectives of materials management-Material planning and control techniques-Inventory management principles and strategies.

UNIT II	INVENTORY MANAGEMENT	9 hours

Types and classification of inventories-Inventory costing methods: FIFO, LIFO, weighted average- Economic order quantity (EOQ) and reorder point (ROP) analysis-Inventory optimization techniques-Inventory control systems: ABC analysis, just-in-time (JIT) inventory, vendor-managed inventory (VMI).

UNIT III	WAREHOUSE MANAGEMENT	9 hours

Warehouse design and layout principles-Storage systems and equipment-Warehouseoperations: receiving, put-away, picking, packing, and shipping-Warehouse performance metrics and key performance indicators (KPIs)-Warehouse safety and security measures

UNIT IV	MATERIAL HANDLING AND TRANSPORTATION	9 hours

Principles of material handling-Material handling equipment and technology- Transportation modes and selection criteria-Route optimization and load planning-Freightmanagement and cost reduction strategies.

UNIT V	STORE MANAGEMENT AND CONTROL	9 hours

Store layout and organization-Storekeeping procedures and documentation-Stock control methods: perpetual inventory system, physical inventory counts-Store security and loss preventionmeasures-Emerging trends and technologies in store management.

TOTAL : 45 hours

TEXTBOOKS

1. J.R. Tony Arnold, Stephen N. Chapman, and Lloyd M. Clive, Introduction to Materials Management, Pearson Education, 8th Edition, 2019.
2. Gwynne Richards, Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse, KoganPage, 2nd Edition ,2014.

REFERENCE BOOKS

1. Adam E.Brouillard , Inventory Management: Principles, Concepts and Techniques, CRC Press,2nd Edition, 2019.
2. Steven M. Bragg, Material Handling and Distribution: Warehouse Management, Accounting Tools, 2nd Edition ,2020.

WEB LINKS

- https://www.mhi.org
- https://www.apics.org/

COURSE OUTCOMES

CO1	Select critical materials management techniques to enhance inventory efficiency.	**K1**
CO2	Illustrate various inventory control techniques to establish rational inventory policies.	**K2**
CO3	Show the warehouse layouts for both performance and safety measures	**K3**
CO4	Analyze principles of material handling with suitable technology.	**K4**
CO5	Design store layouts and inventory techniques and support with technology tools	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24EMBS..	ADVANCED AI FOR SUPPLY CHAINS AND LOGISTICS	3	0	0	3

COURSE OBJECTIVES

- To understand the significance of Artificial Intelligence (AI) in Supply Chain Management (SCM) and its impact on industry evolution.
- To explore AI-driven last-mile delivery optimization techniques for efficient deliveryroute planning.
- To analyze AI algorithms for network optimization, including supplier selection and distribution network design.

UNIT I	OVERVIEW OF ARTIFICIAL INTELLIGENCE IN SCM	9 hours

Introduction to Artificial Intelligence (AI) in Supply Chain Management (SCM): Overview, significance, and emerging trends-Evolution of AI in SCM – Adoption Challenges - AI Techniques for SCM: Machine Learning, Deep learning, NLP and LLM-AI Applicationsin SCM: Demand forecasting, inventory optimization, route optimization-Challenges and Opportunities: Implementation challenges, ROI assessment, and future prospects of AI in SCM -AI and Gen AI- Applications in Manufacturing and Process Industries.

UNIT II	AI FOR TRANSPORTATION AND LOGISTICS	9 hours

AI-driven Route Optimization: Dynamic routing, load balancing, and delivery scheduling- Predictive Maintenance: AI-based systems for predicting equipment failures and optimizing maintenance schedules-Last-Mile Delivery Optimization: AI algorithms for optimizing last- mile delivery routes and schedules-Freight Management: AI-powered freight matching, load optimization, and carrier selection.

UNIT III	AI FOR INVENTORY FORECASTING AND PLANNING	9 hours

Demand Forecasting with AI: Time series analysis, predictive modeling, and demand sensing techniques-Inventory Optimization: AI-driven approaches for safety stock calculation,reorder point optimization, and SKU classification -Stockout Prediction and Prevention: AI Applications in Vendor Managed Inventory (VMI): AI-enabled VMI systems for automatic replenishment and inventory management-Case Studies.

UNIT IV	AI APPLICATIONS IN WAREHOUSE MANAGEMENT	9 hours

AI driven stock optimization in warehouses-Warehouse Layout Optimization: AI techniques for space utilization, picking efficiency, and layout design-Automated Material Handling: Robotics, drones, and autonomous vehicles for warehouse operations-AI-enabled Quality Control: Computer vision, sensors, and IoT for warehouse product identification, inspection and quality assurance.

UNIT V	AI-DRIVEN SUPPLY CHAIN ANALYTICS	9 hours

Supply Chain Visibility: AI-Powered solutions for real-time monitoring and visibility across the supply chain. Predictive Analytics: AI models for predicting supply chain disruptions, demand fluctuations, and supplier risks-Network Optimization: AI algorithms foroptimizing supply chain networks, including supplier selection and distribution network design-Supply Chain Risk Management: AI-driven risk assessment, mitigation strategies, and contingency planning.
TOTAL : 45 hours

TEXT BOOKS

1. Turan Paksoy, Cigdem Gonul , Sadia Samar Ali , Logistics 4.0: Digital Transformation of SCM: Kochan ,Sadia Samar Ali: CRC Press,Taylor Francis group, 2021.
2. António Carrizo Moreira, Luís Miguel, D. F. Ferreira, Ricardo A. Zimmermann - Innovations and Supply Chain Management- Springer, 2019.

REFERENCE BOOKS

1. Kumaresan Perumal, Chiranji Lal Chowdhary, Logan Chella - Innovative Supply Chain Management via Digitalization and Artificial Intelligence, Springer, 2022.
2. Prakash Kumar Udupi , Vishal Dattana, Jitendra Pandey , AI in Supply Chain and Logistics: Revolutionize Your Supply Chain and Logistics withAI: Amazon Digital Services- 979-8867345778, 2023.

COURSE OUTCOMES

CO1	State the challenges in implementing of AI in SCM.	**K1**
CO2	Indicate and apply AI-based freight management solutions including load optimization	**K2**
CO3	Modify old case studies with AI applications in inventory forecasting for industries for innovative solutions	**K3**
CO4	Analyze AI-driven inventory management techniques for demand forecasting.	**K4**
CO5	Justify and build AI-powered solutions for supply chain visibility, facilitating real-time monitoring	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3	-	1	-	2	2	1		1	1	2	-
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	-	1	3	-	1	2	3	2	2	3	-

24EMBS..	AR / VR IN LOGISTICS	3	0	0	3

COURSE OBJECTIVES

- To comprehend applications of augmented reality (AR) and virtual reality (VR) technologies in logistics.
- To develop skills in utilizing AR/VR technologies to optimize warehouse layout and process excellence.
- To acquire competencies in deploying AR/VR solutions for delivery accuracy and customer satisfaction.
- To learn to leverage AR/VR tools to design supply chain networks and conduct simulation-based decision-making.
- To gain insights into emerging AR/VR technologies and regulatory considerations.

UNIT I	AUGMENTED REALITY (AR) AND VIRTUAL REALITY (VR) IN LOGISTICS	9 hours

Overview of AR and VR technologies and their applications in logistics-Benefits and challengesof implementing AR/VR in supply chain operations-Case studies illustrating successful AR/VR integration in logistics processes-Future trends and opportunities for AR/VR in the logistics industry.

UNIT II	AR/VR APPLICATIONS IN WAREHOUSE MANAGEMENT	9 hours

Use cases of AR/VR in warehouse layout design and optimization-AR-guided picking and packing processes for increased efficiency and accuracy-VR-based training simulations for warehouse staff on equipment operation and safety procedures-Integration of AR/VR with warehouse management systems (WMS) for real-time data visualization.

UNIT III	AR/VR IN TRANSPORTATION AND LAST-MILE DELIVERY	9 hours

Enhancing driver training and route planning with AR/VR technologies-AR-based navigation systems for drivers to improve delivery accuracy and efficiency-VR simulations for testing and optimizing last-mile delivery strategies-Impact of AR/VR on customer experience and delivery service quality.

UNIT IV	AR/VR FOR SUPPLY CHAIN VISUALIZATION AND OPTIMIZATION	9 hours

Visualizing supply chain networks and flows using AR/VR models-Simulation-based scenario planning and decision-making in supply chain management-AR/VR tools for predictive analytics and demand forecasting-Optimizing inventory management and order fulfillment processes with AR/VR insights.

UNIT V	FUTURE TRENDS AND CHALLENGES OF AR/VR IN LOGISTICS	9 hours

Emerging AR/VR technologies and their potential impact on logistics-Regulatory and ethical considerations of AR/VR adoption in logistics operations-Challenges and limitations of AR/VR implementation in the logistics industry-Strategies for successful AR/VR integration and adoption in logistics businesses.

TOTAL HOURS: 45

TEXTBOOKS

1. Dieter Schmalstieg and Tobias HollererPublication: Addison- Augmented Reality: Principles and Practice ,Wesley Professional-Edition, 1st Edition,2016.
2. William R. Sherman and Alan B. Craig, Virtual Reality: Concepts and Technologies - CRC Press, 2nd Edition,2018.

REFERENCE BOOKS

1. Jan Holmström and Marc Winterfeldt- Augmented Reality in Logistics: A Handbook - Publisher: Springer-Edition: 1st Edition , 2019.
2. Bruno Arnaldi, PascalGuitton, and Guillaume Moreau Virtual Reality and Augmented Reality: Myths and Realities ,Wiley-ISTE,1st Edition ,2016.

WEB LINKS

- https://logisticsviewpoints.com/tag/ar-vr/)
- https://www.supplychaindive.com/topic/virtual-reality

COURSE OUTCOME

CO1	Relate and explain AR/VR applications in logistics.	**K1**
CO2	Outline skills for AR/VR integration in warehouse management.	**K2**
CO3	Demonstrate competencies in deploying AR/VR for enhanced delivery.	**K3**
CO4	Examine AR/VR applications for supply chain visualization and simulation.	**K4**
CO5	Judge and develop suitable insights into emerging AR/VR trends and regulations.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2	-	-	-	-	-	-	1
CO2	2	-	-	3	1	-	-	-	-	-	2
CO3	-	1	-	2	2	1	-	1	1	2	-
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	-	1	3	-	1	2	3	2	2	3	-

24EMBS	CASE STUDIES OF SUCCESSFUL STARTUPS/UNICORNS IN LOGISTICS	3	0	0	3

COURSE OBJECTIVES

- To analyze common hurdles faced by startups in logistics.
- To explore the transformative impact of technology on last-mile delivery services.
- To gain insights into the latest innovations in warehouse automation and robotics.

UNIT I	CASE STUDIES OF SUCCESSFUL STARTUPS IN LOGISTICS	9 hours

Overview of Entrepreneurship in Logistics: Understanding the entrepreneurial landscape and challenges in the logistics industry-Key Challenges for Logistics Startups: Identifying common hurdles faced by startups in logistics, including funding, competition, regulation, and scalability.

Flexport - Disrupting Freight Forwarding, Convoy - Transforming Trucking with Technology, Ship Bob Revolutionizing E- commerce Fulfillment, Shippo - Simplifying Shipping for SMBs, Load smart - Innovating Digital Freight Booking..

UNIT II	CASE STUDIES IN LAST-MILE DELIVERY	9 hours

Door Dash - Revolutionizing Food Delivery, Instacart - Transforming Grocery Delivery Services, Postmates - Innovating Local Logistics Solutions, Gojek - Providing Multi-Service Delivery Platform, Deliv - Reinventing Same-Day Delivery Services.

UNIT III	CASE STUDIES IN SUPPLY CHAIN OPTIMIZATION	9 hours

Flexport - Disrupting Freight Forwarding with Technology, Convoy - Digitizing Trucking Operations, ShipBob - Streamlining E-commerce Fulfillment, Slync.io - Leveraging AI for Supply Chain Visibility, Cargomatic - Innovating Freight Matching Solutions.

UNIT IV	CASE STUDIES IN LOGISTICS TECHNOLOGY PLATFORMS	9 hours

Uber Freight - Disrupting Freight Brokerage with Digital Platforms, Shippo - Simplifying Shipping for E-commerce Businesses, Project44 - Enhancing Supply Chain Visibility with Advanced APIs, Haven - Digitizing Ocean Freight Procurement, Load smart - Innovating Digital Freight Booking and Management Solutions.

UNIT V	EMERGING WAREHOUSE AUTOMATION TECHNOLOGIES	9 hours

Investigating the role of startups in driving innovation in warehouse automation and robotics. Fetch Robotics - Implementing Autonomous Mobile Robots, 6 River Systems - Redefining Warehouse Fulfillment, Locus Robotics - Optimizing Order Fulfillment Processes, Geek+ - Deploying AI-driven Solutions for Warehouses, Magazino - Introducing Intelligent Piece-Picking Robots.

TOTAL: 45 hours

TEXT BOOKS

1. Vasant Desai, Fundamentals of Entrepreneurship and Small Business Management, Himalaya Publishing House,1st Edition, 2023.
2. Alexander Newman, Andrea North-Samardzic, Madhura Bedarkar, Yogesh Brahmankar - Entrepreneurship in India, Taylors and Francis group 1st Edition,2021.

REFERENCE BOOKS

1. Poornima M Charantimath, Entrepreneurship Development and Small Business Enterprises, Pearson Education, 3rd Edition, 2018.
2. Shishir Gupta, The Essentials: A Step by Step Guide for Entrepreneurs Kindle Edition Startup Lanes.com, 1st Edition, 2017.
3. P. Narayana Reddy, Entrepreneurship – Text and Cases, Cengage Learning India, Ist Edition, 2010.
4. Thomas Grebel, Entrepreneurship: A New Perspective, 1st Edition, Kindle Routledge; 2015.

WEB LINKS

- https://onlinecourses.nptel.ac.in/noc23_mg63/previewOnline
- https://onlinecourses.nptel.ac.in/noc21_mg63/preview

COURSE OUTCOMES

CO1	Identify sources of opportunities and development of the skills so as to analyze these opportunities for entrepreneurship.	**K3**
CO2	Describe the concept and overview of entrepreneurship with a view to enhance entrepreneurial skills.	**K2**
CO3	Explore new vistas of entrepreneurship in 21st century environment to generate innovative business ideas.	**K4**
CO4	Assess how entrepreneurship can help shape one's career	**K5**
CO5	Identify and evaluate different theories of entrepreneurship and the characteristics of Indian entrepreneurs.	**K3**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	3	2	-	1	-	-	-	-	1	3	-
CO2	3	1	3	1	-	-	-	-	-	-	1
CO3	2	1	-	-	3	-	-	-	-	-	-
CO4	2	-	2	-	3	-	-	-	1	-	3
CO5	3	-	3	3	2	-	-	-	-	2	-

24EMBS …	**BLOCKCHAIN AND SMART CONTRACTS**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To gain foundational knowledge of blockchain technology and its core principles.
- To understand the concept and applications of smart contracts in supply chain management.
- To learn blockchain transparency and traceability ensuring ethical sourcing andproduct integrity.
- To explore the applications of blockchain in revolutionizing supplychain finance.
- To evaluate future trends and potential disruptions of blockchain technology.

UNIT I	**INTRODUCTION TO BLOCKCHAIN TECHNOLOGY**	**9 hours**

Overview of blockchain technology-Basic principles of blockchain: decentralization- immutability, and transparency-Types of blockchain: public, private, and consortium- Applications of blockchain in logistics and supply chain management-Case studies.

UNIT II	**SMART CONTRACTS FUNDAMENTALS**	**9 hours**

Introduction to smart contracts-Smart contract languages: Solidity, Ethereum, and others-Use cases of smart contracts in supply chain management-Benefits and challenges of smart contracts-Hands-on exercises in creating and deploying smart contracts.

UNIT III	**BLOCKCHAIN FOR SUPPLY CHAIN TRANSPARENCY AND TRACEABILITY**	**9 hours**

Leveraging blockchain for supply chain transparency-Improving traceability using blockchain technology-Blockchain-based track-and-trace systems-Ensuring product authenticity and preventing counterfeiting-Regulatory considerations and privacy implications.

UNIT IV	**BLOCKCHAIN IN SUPPLY CHAIN FINANCE**	**9 hours**

Introduction to blockchain-enabled supply chain finance-Smart contracts for automating trade finance processes-Benefits of blockchain in supply chain finance-Challenges and adoption barriers- Case studies of successful blockchain implementations in trade finance.

UNIT V	**FUTURE TRENDS AND CHALLENGES OF BLOCKCHAIN**	**9 hours**

Integration of blockchain with other emerging technologies-Scalability and interoperability challenges-Future trends and potential disruptions-Regulatory considerations and legal implications - Industry perspectives and expert insights.

TOTAL: 45 hours

TEXTBOOKS

1.Daniel Drescher - Blockchain Basics: A Non-Technical Introduction in 25 Steps -: Publication: Apress, 1st Edition, 2017

2.Imran Bashir - Mastering Blockchain: Unlocking the Power of Cryptocurrencies, Smart Contracts, and Decentralized Applications, Packt Publishing, 2nd Edition, 2018

REFERENCE BOOKS

1. Don Tapscott and Alex Tapscott Blockchain Revolution: How the Technology Behind Bitcoin and Other Cryptocurrencies is Changing the World - Publisher:Portfolio; Edition: Updated Edition, 2018

2. Blockchain Applications: A Hands-On Approach- Arshdeep Bahga and Vijay Madisetti (Publisher: VPT; Edition: 1st Edition, 2018)

WEB LINKS

- https://www.blockchain-council.org.
- https://www.hyperledger.org

COURSE OUTCOME

CO1	Identify foundational concepts of blockchain technology and its core principles.	**K2**
CO2	Outline the applications of smart contracts in supply chain management.	**K2**
CO3	Compute blockchain transparency and traceability	**K3**
CO4	Analyze blockchain applications in revolutionizing supply chain finance.	**K4**
CO5	Prepare and adapt the trends and potential applications of blockchain technology.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**--**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	**-**	**1**	**-**	**2**	**2**	**1**	**-**	**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5	**1**	**3**	**2**	**-**	**2**	**3**	**2**	**3**	**3**	**2**	**1**

24EMBS …	**APPLIED GIS AND SPATIAL DATA ANALYTICS**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To grasp the foundational concepts and practical applications of Geographic Information Systems (GIS),Including GIS map basics, data models, and spatial analysis techniques.
- To demonstrate proficiency in utilizing GIS for data visualization, analysis, and design, enhancing spatial understanding and decision-making capabilities.

UNIT I	**GEOGRAPHIC INFORMATION SYSTEM**	**9 hours**

Geographic information systems (GIS) - Definition – Brief History – GIS as growth industry – Sample Application areas of GIS – Digital Geographic data – Developing Spatial Awareness – Spatial measurement levels – Spatial location and reference – spatial patterns – Geographic data collection – Population and sampling schemes.

UNIT II	**GIS MAP BASICS AND STRUCTURE**	**9 hours**

Nature of Maps – A paradigm shift in cartography – Map scale – Map Characteristics – Map projections – Grid systems of mapping – map symbolism – Map abstraction and cartographic databases – Basic computer file's structure – Database management structures – Hierarchal data structures – Network Systems – Relational Database Management Systems.

UNIT III	**GIS DATA MODELS**	**9 hours**

Graphic Representation of Entities and Attributes – Raster Models – Raster surface models – compact storing of raster data – Vector Models – Object orient data models – systems models – Input storage andEditing – Primary Data – Secondary data – metadata and metadata standards – GIS Database storage – Error deducting and editing - Application of GIS on Supply Chain Management.

UNIT IV	**SPATIAL ANALYSIS**	**9 hours**

Model flow charting – GIS data query – locating and identifying spatial objects – defining spatial characteristics –Working and higher-level objects – Measurement – Classification – Statistical surfaces –Interpolation – Terrian analysis – Spatial arrangement – Map overlay – Cartographic modelling – AI Driven Geo-Spatial Solutions.

UNIT V	**GIS OUTPUT AND DESIGN**	**9 hours**

Cartographic and Visualization – Cartographic output – non-cartographic output – GIS design – Application design – Analytical model design – Components and Procedures - Selecting the Software - Database design - Scientific Models and GIS - Institutional/System Design – GIS Information Products – System Implementation - Internal Players and External Players

TOTAL: 45 hours

TEXT BOOKS

1. Micheal M Demers , John Wileyand Sons, Fundamentals of Geographic information system, John Wiley & Sons Inc, 4th Edition, 2008.
2. John Stillwell and Graham Clarke, Applied GIS & Spatial Analysis, John Wiley and Sons,1st Edition, 2003.

REFERENCE BOOKS

1. Paul Bolstad ,GIS Fundamentals – A first text on Geographic information system, XanEdu Publishing Inc, 6th Edition, 2019.

2. Roger S. Bivand , Applied Spatial Analysis with R, Springer Publication, 2nd Edition, 2013.

COURSE OUTCOMES

CO1	Relate comprehensive understanding of Geographic Information Systems (GIS).	**K1**
CO2	Explain the basics and structure of GIS maps, focusing on key functionalities	**K2**
CO3	Apply knowledge of GIS data models and their applications	**K3**
CO4	Develop skills in spatial analysis for data interpretation and decision-making	**K4**
CO5	Conclude GIS output and design principles to effectively visualize spatial information	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PS03**
CO1	**2**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO3	**-**	**1**	**-**	**2**	**2**	**1**	**-**	**1**	**1**	**2**	**-**
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5	**1**	**3**	**2**	**-**	**2**	**3**	**2**	**3**	**3**	**2**	**1**

24EMBS..	FREIGHT TRANSPORT MANAGEMENT AND MMT	3	0	0	3

COURSE OBJECTIVES

- To understand major aspects of Freight Transports and managerial aspects needed for management.
- To discuss multimodal transportation applicable in sea/air/rail/road/pipeline modes

UNIT I	INTRODUCTION TO FREIGHT TRANSPORT MANAGEMENT	9 hours

Significances of surface transport – last mile connectivity – road networks and types of Road network – commercial aspects of surface transport – utility of cargo trucks with respect to Weight and Volume – various terms of carriage - Cargo Truck – classifications – capacity of vehicle various cargo vehicles – supply and demand for trucks – factors affecting truck freight.

UNIT II	FLEET OPERATIONS	9 hours

Fleet operations – vehicle tracking devises and methods of tracking– loading – unloading – route planning – documents necessary for transportation- Goods Consignment Note – tax invoice – delivery challans – Waybill requirements - 3PL and outsourcing of logistics services – Land Freight, Sea Freight, Air Freight & Pipeline Freight.

UNIT III	MULTIMODAL TRANSPORTATION	9 hours

Various modes of transport – Limitations of Uni mode - Advantages of Multimodal Transportation – intermodal – compatibility for carriage - Managing Commercial risks in surfacetransport – aspect of insurance – type of insurance – claims because of insurance - Nature of Hazardous Cargo – Dangerous goods – Classification – Packing – Labelling – Handling – Special requirements.

UNIT IV	MULTIMODAL TRADE ROUTES	9 hours

Multimodal transportation - Introduction, growth, and components, Physical multi modal operations - Interrelationship of transport mode, Specialized container equipment's – FCL, LCL and Customs facilitation. Multimodal trade routes – factors affecting Mode and Route choices, Multimodal transport operators - Types of Vessel Operators –Other provisions through Transport services.

UNIT V	MULTIMODAL CONTRACT	9 hours

International contract of sale-Bill of Lading-Clauses- -Identity of Carrier-Liability andInsurance-Paperless Trading, Indian Multimodal Act- 1993, Conventions related Multi modal transport-Cargoliability conventions, Conventions relating Dangerous Goods- Statutory Regulations and Restrictions-National and International restrictions on the movement of goods.

TOTAL : - 45 hours

TEXT BOOKS

1. Jason Monios, Rikard Bergovist , Intermodal Freight Transport & Logistics,Taylors and Francis group ,1st Edition,2017.

2. Tolga Bektas - Freight Transport and Distribution Concepts and Optimisation Models - Taylors and Francis group,CRC Press Publication- 1st Edition,2017.

REFERENCE BOOKS

1. Alan E Branch - Global Supply Chain Management and International Logistics - Taylors and Francis group, CRC Press Publication, 1st Edition,2009.

2. David A Glass , Freight Forwarding & Multimodal Contracts, Taylors and Francis group ,CRC Press Publication 2nd Edition, 2012.

COURSE OUTCOMES

CO1	Describe the various freight transport movements for global connectivity.	**K2**
CO2	Explain about capacity of cargo vehicles with respect to transportation.	**K2**
CO3	Compute and utilize various modes of international multimodal transportation.	**K3**
CO4	Analyze about various multimodal and intermodal transportation.	**K4**
CO5	Evaluate the various contracts in multimodal transportation.	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	_	_	3	1	_	_			_	2
CO2	2	_	_	3	1	_	_			_	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24EMBS…	WAREHOUSING FACILITIES AND AUTOMATION MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To gain knowledge on warehousing facilities, process, operations, and automation management.
- To improve supply chain efficiency and competitiveness through effective warehousing practices

UNIT I	INTRODUCTION	9 hours

Introduction to warehouse - Types of warehouse operation - Why do we hold stock - Warehouse location– Number of warehouses - Supply chain trends affecting warehouses - The growth of e-fulfilment and itseffect on the warehouse - Specialized warehousing – Layout and Design - Fluid Flow Model for Efficient Warehousing - Geometry of Slotting - Design of Fast Pick Area - Units of Handling - Dedicatedvs Shared Warehouses - Warehouse Quing System.

UNIT II	WAREHOUSE OPERATIONS PROCESS AND MHE	9 hours

Warehouse Operations – receiving and put-away – pick preparations - Warehouse pick area layout –cross docking – picking strategies and equipment - Material Handling equipment's - Storage equipment's – order picking methods - Order Packing – Order Shipping - Warehousing Efficiency Methods and Bench Markings.

UNIT III	WAREHOUSE INVENTORY PROCESS	9 hours

Warehouse Process – Replenishment - Value-adding services - Stock management – Indirectactivities - Stock or inventory counting - Cycle counting or perpetual inventory counts - Returns processing Security - Dispatch - Role of the driver - Order Fulfilment – Inventory Control - Unitizing and Shipping Packing and Packaging.

UNIT IV	WAREHOUSING FACILITIES AND BEST DISTRIBUTION PRACTICES	9 hours

Warehouse Facilities - Warehouse Management System – The WMS Process - Why does a company need a WMS - Warehouse Layout – Racking and Shelving - Milk-run Delivery Concepts - Storage options – High Bay warehouses - Specialized equipment – Resourcing a warehouse – Various Warehouse Cost.

UNIT V	WAREHOUSE AUTOMATION	9 hours

Warehouse Automation – Automated storage and retrieval systems (AS/RS) – Analytical Model for AS/RS – Simulation Model for AS /RS - Barcodes – Radio Frequency Identification (RFID) – Automated Guided Vehicles (AGV) – Robotics for Picking and Packing – AI & ML in warehouse - Automated Sorting Systems – Voice and Vision Technologies – Conveyor Systems – Automated pallet scanning.

TOTAL : -- 45 hours

TEXTBOOKS

1.Gwynne Richards - Warehouse management - The Definitive Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse, Kogan Page Limited CILT UK Publication,4th Edition,2021.

2. Riccardo Manzini - Warehouse in the Global Supply Chain Advanced Models, Tools and Applications for Storage Systems , Springer, 1st Edition, 2012.

REFERENCE BOOKS

1. Alan Rushton, Phil croucher, Peter Baker, The Handbook of Logistics and Distribution Management, Kogan Page Publisher, 5th Edition, 2014.

2.David E Mulcahy, Joachim Sydow , A Supply Chain Logistics Program for Warehouse Management, Auerbach Publications; 1st Edition, 2008.

COURSE OUTCOMES

CO1	Define the roles of warehousing in supply chain.	**K1**
CO2	Demonstrate innovative warehouse design strategies optimizing material space utilizations.	**K2**
CO3	Apply integrated automation technologies to enhance warehouse efficiency.	**K3**
CO4	Dissect inventory management techniques-systems to minimize costs	**K4**
CO5	Appraise and design workable strategies for warehouse management systems (WMS)	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	2	-	-	3	1	-	-	-	-	-	1
CO2	2	-	-	2		-	-	-	-	-	2
CO3		1	-	2	2	1	-	1	1	2	-
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	-	1	3	-	1	2	3	2	2	3	-

24EMBS	NATIONAL LOGISTICS INFRA-STRUCTURE TRENDS AND GLOBAL SCENARIO	3	0	0	3

COURSE OBJECTIVES

- To assess the components of national logistics infrastructure and their roles.
- To describe various transportation modes and their infrastructure requirements.
- To explore trends in technology adoption, such as big data analytics and AI, in logistics.

UNIT I	NATIONAL LOGISTICS INFRASTRUCTURE: AN OVERVIEW	9 hours

Overview of Logistics Infrastructure: Definition, Importance, and Role in Economic Development-Components of National Logistics Infrastructure: Transportation, Warehousing, Distribution Centers, and Information Systems-Historical Evolution of Logistics Infrastructure Development in Various Countries-Impact of Logistics Infrastructure on Trade Facilitation and Supply Chain Efficiency-Challenges and Opportunities in Developing National Logistics Infrastructure- Indian Logistics Infrastructure Development: Recent Policies and Initiatives- National Logistics Policy 2021: Key Objectives and Implications for Infrastructure Development- Gati shakti Master Plan-Indian Inland Waterways current scenario and future – Routes and Waterway Lines- National Logistics corridors and (National Logistics Parks) NLPs.

UNIT II	NATIONAL TRANSPORTATION AND LOGISTICS INFRASTRUCTURE TRENDS	9 hours

Overview of Transportation Modes: Road, Rail, Air, and Sea-Infrastructure Development in Road Transportation: Highways, Expressways, and Bridges-Modernization of Rail Transportation Infrastructure: High-Speed Rail, Freight Corridors, and Intermodal Terminals-Airport Infrastructure Expansion: Runways, Terminals, and Cargo Handling Facilities-Port Infrastructure Development: Deepening Channels, Container Terminals, and Intermodal Connectivity.

UNIT III	WAREHOUSING AND DISTRIBUTION INFRASTRUCTURE	9 hours

Role of Warehousing in Logistics: Storage, Consolidation, and Distribution-Trends in Warehouse Designand Automation: Automated Storage and Retrieval Systems (AS/RS), Robotics, and IoT-Multi-modal Distribution Centers: Integration of Rail, Road, and Sea Transport-Cold Chain Infrastructure Development: Temperature-Controlled Warehouses and Refrigerated Transportation-Technology Integration in DistributionInfrastructure: Warehouse Management Systems (WMS) and Real-time Tracking Solutions.

UNIT IV	INFORMATION SYSTEMS AND TECHNOLOGY IN LOGISTICS INFRASTRUCTURE	9 hours

Introduction to Logistics Information Systems: Enterprise Resource Planning (ERP) and Supply Chain Management (SCM)-Trends in Technology Adoption: Big Data Analytics, Artificial Intelligence (AI), and Internet of Things (IoT) in Logistics-Digital Platforms for Freight Matching and Load Optimization-Cloud Computing and Blockchain Technology for Supply Chain Visibility and Transparency-Cybersecurity Considerations in Logistics Information Systems.

UNIT V	GLOBAL LOGISTICS INFRASTRUCTURE COMPARISONS	9 hours

Comparative Analysis of Logistics Infrastructure in Different Countries: USA, China, Germany, and Singapore-Best Practices from Global Logistics Leaders-Future Trends in Logistics InfrastructureDevelopment: Green Logistics, Smart Cities, and Sustainable Transportation-Strategies for Enhancing National Logistics Infrastructure-Competitiveness in the Global Market- Case Studies of Successful Logistics

Infrastructure Projects and Initiatives.
TOTAL: 45 hours

TEXT BOOKS

1. Mariyan Jameela, Understanding the National Logistics Policy: Implications for Businesses and Industries, Ware IQ, 2024
2. Martin Christopher , Logistics and Supply Chain Management, Pearson Education,4th Edition, 2011.

REFERENCE BOOKS:

1. Alan E Branch - Global Supply Chain Management and International Logistics - Taylors and Francis group , CRC Press Publication, 1st Edition, 2009.
2. John J. Coyle, Robert A. Novack,Brian J. Gibson, Transportation- Global Supply Chain Perspectives, Cengage Learning ,1st Edition, 2011

COURSE OUTCOMES

CO1	List and explain the key objectives of National Logistics Policy 2021.	**K1**
CO2	Infer airport infrastructure expansion initiatives (impacts) on air transportation.	**K2**
CO3	Identify development of cold chain infrastructure for temperature-sensitive goods.	**K3**
CO4	Compose the importance of information systems in logistics, including ERP and SCM.	**K4**
CO5	Examine and develop best practices from global logistics leaders for infrastructure development.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

ELECTIVE COURSE

SUPPLY CHAIN MANAGEMENT

24EMBS …	SCM TECH-TRENDS AND DIGITAL SUPPLY CHAINS FOR INDUSTRIES	3	0	0	3

COURSE OBJECTIVE

- To familiarize students with range of technology led systems and process solutions in the Supply Chain and Logistics with primary focus on Process Automation, Analytics, Data science Tools, Artificial intelligence, Robotic Process Control and Block Chain Applications to be taught from a conceptual point of view.
- To introduce concepts of data management, data mining and analytics and apply in supply chain Decisions.

UNIT I	EVOLUTION OF TECHNOLOGIES IN SCM	9 hours

Industry 1.0 2.0. 3.0 and Supply Chain 4.0- Automation Concepts for Process Applications - Role of Technologies in Supply Chain Systems -Technological Building blocks In SCM- IoT Building blocks and Applications in Industries – Digital Twin and Metaverse Concepts for Industry Usages.

UNIT II	ANALYTICS IN SUPPLY CHAIN SYSTEMS	9 hours

Introduction to analytics- Data analytics - Process cycle- Sources of data- Data Structuring - Data visualization Applications in SCM

UNIT III	DATA SCIENCE IN SUPPLY CHAIN SYSTEMS	9 hours

Introduction to Data Science - Demystifying Data Science, AI, ML, DL- Data Science process cycle- Data extraction- Data Science Tools in ML & DL

UNIT IV	ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN SYSTEMS	9 hours

Introduction to Artificial Intelligence - Decoding the Artificial Intelligence - Stages of Artificial intelligence - Artificial intelligence Framework (DL)- Fundamentals of NLP, Image Recognition & expert systems - Smart AI Applications in L SCM – Robotic Process control

UNIT V	BLOCK-CHAIN IN SUPPLY CHAIN SYSTEMS	9 hours

Introduction and concept to Blockchain - Eco systems of Blockchain structure - Types of Blockchains - Blockchain mining - Blockchain Security and privacy - Blockchain in Logistics and Supply Chain-Industry Applications and future Trends- Smart contract Management

TOTAL: 45 hours

TEXTBOOKS

1. Bart L. MacCarthy, Dmitry Ivanov, The Digital Supply Chain, Imprint: Elsevier Paperback ISBN: 9780323916141 , eBook ISBN: 9780323916158, 1st Edition, 2022.
2. Anthony M. Pagano, Matthew Liotine, Technology in Supply Chain Management and Logistics, Elsevier, 2019.
3. Sheth Vijay , Industrial Engineering Methods And Practices, Penram International Publishing Pvt Ltd,1st Edition,2005.

REFERENCE BOOKS

1. M.P. Groover, Automation, Production Systems and Computer Integrated Manufacturing,Pearson Education.5th Edition, 2009.

2. .Prof. Martin Christopher, Logistics & Supply Chain Management, FT Publishing International , 5th Edition,2016.

3. S Sadagopan, Management Information System , Prentice Hall India Learning Private Limited;, 2nd Edition,2014.

WEBLINKS

- https://www.coursera.org/articles/digital-supply-chain
- https://tradeshift.com/solutions/digital-supply-chain-management/
- https://www.oracle.com/in/scm/ai-supply-chain/

COURSE OUTCOMES

CO1	Define the Importance of Technology Evolution in Supply Chain Management	**K1**
CO2	Explain need and relevance of Analytics in Contemporary business management	**K2**
CO3	Identify role of Data Science prior to applying Digital-Tech in Supply Chains	**K3**
CO4	Analyse the role of Artificial Intelligence in Contemporary Supply Chains	**K4**
CO5	Explain applications of Block Chain Technology in Logistics and SCM	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3	**-**	**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5	**1**	**3**	**2**		**2**	**3**	**2**	**3**	**3**	**2**	**1**

24EMBS..	INNOVATION IN WASTE MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To gain knowledge in the key areas of exploring innovations in waste management from abusiness perspective and strategic decision-making to achieve sustainable waste.

UNIT I	INTRODUCTION	9 hours

Introduction to waste management - Various types of waste and their contaminant – IndustrialWaste Management – Tannery – Distilleries – Pulp and Paper – Textile Industry – Food and Beverages – Organic pollutants – Inorganic pollutants – Various treatment technologies - Waste toWealth.

UNIT II	RECYCLING ASPECTS	9 hours

Recycling of solid waste – Introduction - Recycling Terminology - Recycling Progress and Statistics – Recovery and Markets for Components of the Waste Stream - Market Issues - Purity of Materials – Paper – Glass – Aluminum – Ferrous Metals – Plastics – Yard Waste – Food Waste – Tires and Timbers - Goals for the nation**.**

UNIT III	ZERO WASTE CONCEPT	9 hours

Towards Zero Waste - Zero Waste Concept - The Circular Economy Model of the PET Industry - Sustainable Business Model - The Circularity of the PSBM - Inclusive Collection - Collection Processes – Recycling Processes - Customers (Market) - Innovation and Continuous Improvement - The Circular Economy Framework. Case Study - Pet Star PET Bottle-to-Bottle Recycling.

UNIT IV	WASTE MANAGEMENT PRACTICES	9 hours

Waste Management Practices - Brief History of Waste Management - Categories of Wastes - Industrial Waste - Electronics Waste - Construction and Demolition Debris - Radioactive Waste - Mining Waste - Agricultural Waste - Solid Waste Management - Regulatory Development**.**

UNIT V	CIRCULAR ECONOMY	9 hours

Future of circular economy and zero waste - Country-Specific Challenges and Opportunities – Stakeholders - Stakeholder Promoter: Public Sector - Stakeholder Promoter: Private Sector - Stakeholder Promoter: Civil Society - Overview and Suggestions for Future Research - ZLD Conceptin Industries" – Renewable Energy Sources and Methods for Green Supply Chains - Surplus through Sustainability and Circular Economy.

TOTAL : -- 45 hours

TEXT BOOKS

1. Syed . E. Hasan, Introduction to Waste Management, Wiley Publication, 1st Edition, 2022.

2. María- Laura,Franco, García, Towards Zero Waste - Circular Economy Boost, Waste to Resources, Springer International Publishing AG, 1st Edition, 2019.

3. Ram Naresh Bhargava, Pankaj Chowdary, Emerging and Eco-friendly Approaches for Waste Management, Springer Verlag, 1st Edition, 2019.

REFERENCE BOOKS

1. John Pichel , Waste Management Practices, CRC Press Publication, 2nd Edition, 2014.
2. Ankur Rajpal, Moharana Choudhury, Srijan Goswami, Arghya Chakravorty, Vimala Raghavan, Waste Management and Treatment Advances and Innovations, Taylor & Francis Group, 1st Edition, 2023.
3. Dr Sachin Mishra, From Trash to Treasure : Innovations in Global Waste Management , Notion Press, Paperback , 2023.

WEBLINKS

- https://igps.net/waste-management-in-the-supply-chain/
- https://www.achilles.com/industry-insights/importance-minimising-waste-supply-chain/

COURSE OUTCOMES

CO1	Select emerging technologies and trends for effective waste management	**K1**
CO2	Identify opportunities associated with innovative waste management practices	**K2**
CO3	Practice policy frameworks and regulations influencing waste management	**K3**
CO4	Categorize the impact on cost reduction, resource recovery and community Engagement	**K4**
CO5	Choose and adapt strategic skills to implement innovative waste management solutions	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS...	DIGITAL INNOVATION AND TECHNOLOGY IN SCM	3	0	0	3

COURSE OBJECTIVES

- To explore the historical evolution of digital technologies in SCM
- To examine the applications of digital twins and simulation-based optimization in manufacturing operations.
- To assess advanced strategies for data governance and compliance in complex supply chain networks.

UNIT I	INTRODUCTION TO DIGITAL INNOVATION IN SCM	9 hours

Overview of Digital Transformation in Supply Chain Management: Definition and significance of digital innovation in SCM-Historical context and evolution of digital technologies in SCM-Key Digital Technologies- Blockchain, AI, IoT, big data analytics, and cloud computing-Understanding concept of digital twins, Robotics and automation systems -Assessing organizational readiness for digital transformation – Bridging the gap between 3.0 and 4.0.

UNIT II	DIGITAL SOURCING AND PROCUREMENT	9 hours

Digital Procurement Processes-eProcurement systems and platforms-Supplier relationship management in the digital era-Blockchain in Supply Chain Procurement-Applications of blockchainin supplier verification, contract management, and payment processing-AI and Predictive Analytics in Sourcing-Leveraging AI and predictive analytics for demand forecasting and supplier selection- Dynamic pricing and negotiation strategies enabled by AI.

UNIT III	DIGITAL MANUFACTURING, PROCESS AND OPERATIONS	9 hours

Introduction to smart factories and cyber-physical systems-IoT-enabled production monitoring and optimization-digital twins and their applications in manufacturing-Simulation-based optimization production processes-RPA for process automation and efficiency improvement- Applications of Additive Manufacturing – Reverse Engineering – Digital Twins – AR-VR.

UNIT IV	DIGITAL LOGISTICS AND TRANSPORTATION	9 hours

IoT and Real-Time Tracking: IoT applications in asset tracking, fleet management and supply chain visibility-Real-time monitoring of shipments and transportation routes-Optimization algorithms for route planning, load consolidation, and delivery scheduling-Dynamic routing and last-mile delivery solutions-dronesand autonomous vehicles for delivery and inventory management-Digital Tech Tools-Barcode- RFID-Cloud Computing – GPRS.

UNIT V	ADVANCED DATA SECURITY AND CYBER SECURITY IN SCM	9 hours

Advanced Data Governance and Compliance in SCM: Advanced strategies for data governance in complex supply chain networks-Cross-border data transfer regulations and international compliance standards-Emerging trends in data privacy regulation and their impact on SCM- Threat Intelligence andCyber Risk Assessment- Incident Response and Cyber Crisis Management- Cybersecurity Auditing andContinuous Monitoring.

TOTAL: 45 hours

TEXT BOOKS

1. Turan Paksoy, Cigdem Gonul Kochan,Sadia Samar Ali, Logistics 4.0: Digital Transformation of SCM, CRC Press,1st Edition, 2021.
2. Innovations and Supply Chain Management: António Carrizo Moreira, Luís Miguel D. F. Ferreira, Ricardo A. Zimmermann: Springer

REFERENCE BOOKS

1. António Carrizo Moreira,, Luís Miguel D. F. Ferreira, Ricardo A, Zimmermann: Innovations and Supply Chain Management, Springer, 1st Edition,2019
2. John Wang, Innovations in Supply Chain Management for Information Systems: Novel Approaches, Business Science Reference,2009.

WEBLINKS

https://www.linkedin.com/pulse/top-10-supply-chain-innovations-maaz-khan-/
https://taulia.com/resources/blog/a-guide-to-digital-supply-chain-management/

COURSE OUTCOMES

CO1	Outline organizational readiness for bridging gaps for SC digital transformations.	**K2**
CO2	Relate role of AI - predictive analytics in sourcing, demand forecasting and pricing	**K1**
CO3	Illustrate RPA tools for process automation and efficiency in SC manufacturing	**K3**
CO4	Devise part in applying emerging technologies such as Drones and AGVs for Intra-Logistics	**K4**
CO5	Compare and adapt emerging trends and applications in SC data privacy regulation	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**2**		**-**	**-**	**-**	**-**	**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**	**-**	**-**	**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	**-**

24EMBS…	LEAN SIX SIGMA IN LOGISTICS AND SUPPLY CHAIN	3	0	0	3

COURSE OBJECTIVES

- To understand the evolution and principles of Lean Manufacturing
- To analyze material and information flow within supply chain networks using (VSM).
- To integrate Lean principles with Six Sigma methodologies to drive continuous improvement and efficiency in Logistics supply chain management.

UNIT I	LEAN MANUFACTURING: PRINCIPLES AND TOOLS	9 hours

Evolution of Just-In-Time and Lean Manufacturing – Principle – Seven wastes – Just-In-Time (JIT) – One-Piece or Continuous Flow – Kanban or Pull System – Basic tools for Six Sigma: 5S, Poke Yoke. Kaizen: An overview.

UNIT II	TECHNIQUE: VALUE STREAM MAPPING IN LOGISTICS AND SUPPLY CHAIN	9 hours

Value Stream Mapping (VSM) – Analysis of Material and Information Flow in Supply Chain Networks– Understanding VSM Symbols and Notations in Supply Chain Mapping– Identification of Product or Product Family – Current-State Mapping – Future-State Mapping by key questions – Plan and Implementation.

UNIT III	SIX SIGMA	9 hours

Evolution – TQM vs. Six Sigma – What is Six Sigma – Defects Per Million Opportunities (DPMO) in Supply Chain Processes – Process Sigma Level and its Implications for Supply Chain Quality – Critical to Quality (CTQ) – Six Sigma methodologies Such as DMAIC, DMADV – Roles of Six Sigma Belts in Supply Chain Improvement Projects.

UNIT IV	DMAIC AND DMADV: AN OVERVIEW	9 hours

SIPOC Diagram – Voice of the Customer (VoC) – CTQ Tree – Project Charter – Seven Quality tools – Seven Management Tools – Measurement System Analysis (MSA) for Supply Chain Performance Evaluation – Failure Mode and Effects Analysis (FMEA) – Process Capability Analysis – Application of Statistical Tools in Supply Chain Decision Making– Design of Experiments (DoE).

UNIT V	LEAN SIX SIGMA	9 hours

The Synergy of Six Sigma and Lean – Lean Six Sigma – Principle – Lean tools in DMAIC and DMADV- Implementation of Lean Six Sigma.

TOTAL: 45 hours

TEXT BOOKS

1. Michael L. George, John Maxey , David T. Rowlands, Mark Price, Lean Six Sigma Pocket Tool Book Paperback, McGraw Hill Education, 1st Edition, 2004.

2. Thomas Pyzdek, Paul A. Keller, The Six Sigma Handbook, McGraw Hill, 5th Edition, 2021.

REFERENCE BOOKS

1. John Morgan , Martin Brenig-Jones ,Lean Six Sigma for Dummies, Wiley (Publication, 3rd Edition, Paperback – 2021.
2. Craig Joseph Setter. Six SIGMA: A Complete Step-By-Step Guide: A Complete Training &

Reference Guide for White Belts, Yellow Belts, Green Belts, and Black Belts Paperback, 2018.

WEBLINKS

- https://www.msajce-edu.in/academics/ece/LectureNote/OMF751-LN.pdf
- https://sixsigmastudyguide.com/six-sigma-study-guides/

COURSE OUTCOMES

CO1	Demonstrate the benefits of implementing a Kanban System in manufacturing.	**K2**
CO2	Defend VSM process to map and visualize current and future processes.	**K2**
CO3	Discover DMAIC and DMADV methodologies for appropriate SC issues	**K3**
CO4	Outline the Design of Experiments (DoE) to optimize supply chain processes.	**K4**
CO5	Evaluate and predict apt opportunities for implementing Lean tools within the DMAIC framework.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-	-	-	-	1
CO2	2	-	-	2		-	-		-	-	1
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS ..	ADVANCED SUPPLY CHAIN STRATEGIES AND OPERATIONS	3	0	0	3

COURSE OBJECTIVES

- To develop skills in synthesizing supply chain networks, while assessing design principles.
- To master demand forecasting techniques, apply collaborative planning, evaluating forecasting impact on supply chain performance.
- To apply inventory management techniques to analyze inventory's impact on supply chain efficiency for optimization.
- To develop strategies for supplier selection to gain insights for collaboration.
- To implement sustainable practices and develop strategies for growth.

UNIT I	SUPPLY CHAIN NETWORK DESIGN AND OPTIMIZATION	9 hours

Introduction to supply chain network design-Factors influencing network design decisions-Methods for modeling and optimizing supply chain networks-Case studies and future trends in supply chain network optimization.

UNIT II	DEMAND FORECASTING AND PLANNING	9 hours

Advanced demand forecasting techniques: time series analysis, causal methods, and machine learning-Collaborative planning, forecasting, and replenishment (CPFR)-Demand-driven supply chain management strategies-Case studies and challenges and best practices in demand planning

UNIT III	INVENTORY OPTIMIZATION STRATEGIES	9 hours

Inventory management techniques: ABC analysis, EOQ, safety stock, and inventory turnover. Multi-echelon inventory optimization-Inventory visibility and control in omni-channel retailing Just-in-Time (JIT) and lean inventory management principles-Implementing advanced inventory optimization software solutions.

UNIT IV	SUPPLIER RELATIONSHIP MANAGEMENT (SRM) AND COLLABORATION	9 hours

Strategic supplier selection and segmentation-Supplier performance measurement and improvement strategies-Collaborative supplier partnerships and joint value creation-Supplier risk management and mitigation techniques-Case studies on successful supplier relationship management initiatives.

UNIT V	SUSTAINABLE SUPPLY CHAIN STRATEGIES	9 hours

Sustainable sourcing and procurement practices-Environmental sustainability in logistics and transportation-Circular economy principles and supply chain sustainability-Social responsibility and ethical considerations in supply chain management-Certification programs and standards for sustainable supply chain management.

TOTAL : -- 45 hours

TEXTBOOKS

1. Sunil Chopra and Peter Meindl, Supply Chain Management: Strategy, Planning, and Operation, Pearson Education, 7th Edition, 2020
2. David Simchi-Levi, Philip Kaminsky Edith Simchi-Levi, Designing and Managing the Supply Chain: Concepts, Strategies, and Case Studies, McGraw-Hill Education, 4th Edition, 2014.

REFERENCE BOOKS

1. Yossi Sheffi, The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage, MIT Pressm,1st Edition, 2005.
2. F. Robert Jacobs andRichard B. Chase, Operations and Supply Chain Management: The Core, McGraw-Hill Education,5th Edition, 2018.

WEBLINKS

- https://logistics.gov.in/media/3whb3pbh/2015-book-supplychainmanagementandadvanc.pdf
- https://www.netsuite.com/portal/resource/articles/erp/supplier-relationship-management-srm.shtml

COURSE OUTCOMES

CO1	Arrange expertise in synthesizing supply chain networks assessing design principles.	**K1**
CO2	Identify inclusive demand forecasting techniques for collaborative planning process.	**K2**
CO3	Compare inventory management techniques to analyze advance inventory optimization	**K4**
CO4	Examine supplier selection strategies to gain collaboration insights.	**K4**
CO5	Choose and develop sustainable practices and growth strategies for implementation.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO4		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS…	SUPPLY CHAIN NETWORK DESIGN	3	0	0	3

COURSE OBJECTIVES

- To understand the principles and practices of supply chain network design.
- To explore various modeling techniques and tools used in supply chain network design.
- To analyze strategic decisions involved in supply chain network design, such as facility location and distribution network configuration.

UNIT I	INTRODUCTION	9 hours

Introduction to Supply Chain Network Design- Importance and Benefits of Supply Chain Network Design- Key Concepts and Terminologies- Evolution of Supply Chain Network Design Approaches- Challenges and Trends in Supply Chain Network Design.

UNIT II	SUPPLY CHAIN MODELING AND ANALYSIS	9 hours

Mathematical Modeling Techniques for Supply Chain Network Design-Data Collection and Analysis Methods for Supply Chain Modeling-Optimization Algorithms and Heuristics in Supply Chain Design- Sensitivity Analysis and Scenario Planning in Supply Chain Modeling-Performance Metrics for Evaluating Supply Chain Network Designs.

UNIT III	TACTICAL PLANNING AND IMPLEMENTATION	9 hours

Capacity Planning and Resource Allocation in Network Design-Demand Forecasting and Demand-Supply Matching Strategies-Technology Integration and Automation in Network Design-Risk Management and Contingency Planning in Network Implementation-Change Management and Organizational Adoption of New Network Designs.

UNIT IV	STRATEGIC DECISIONS IN SUPPLY CHAIN NETWORK DESIGN	9 hours

Facility Location Selection and Analysis-Distribution Network Configuration and Optimization-Inventory Placement and Allocation Strategies-Supplier and Customer Relationship Management in Network Design- Sustainable Practices and Ethical Considerations in Network Design.

UNIT V	GLOBALIZATION AND SUPPLY CHAIN NETWORK DESIGN	9 hours

Global Supply Chain Trends and Impacts on Network Design - Cross-Border Trade and International Logistics Considerations in Network Design-Supplier and Partner Selection Strategies for Global Network Optimization- Regulatory Compliance and Trade Regulations in Global Supply Chain Network Design- Cultural and Socio-Economic Factors in Global Network Design Decision-Making.

TOTAL : -- 45 hours

TEXT BOOKS

1. Michael Watson, Sara Lewis, Peter Cacioppi, and Jay Jayaraman, Supply Chain Network Design, Ft Pr, 1st Edition, 2012.

2. Shoshanah Cohen, Joseph Roussel, Strategic Supply Chain Management: The Five Core Disciplines for Top Performance, McGraw Hill Education; 2nd Edition,2013.

REFERENCE BOOKS

1. Sunil Chopra and Peter Meindl, Supply Chain Management: Strategy, Planning, and Operation, Pearson Education, 7th Edition,2020.
2. Janat Shah, Supply Chain Management: Text and Cases, Pearson Education India, 2nd Edition,2016.

WEBLINKS

- https://mbacrystalball.com/blog/operations-management/logistics-scm/
- https://rightinformation.com/blog/essential-supply-chain-management-automation-tools/
- https://carto.com/blog/what-is-supply-chain-network-design-how-does-it-work

COURSE OUTCOMES

CO1	List the fundamental principles and terminologies of supply chain network design.	**K1**
CO2	Explain mathematical modeling techniques used in supply chain network design.	**K2**
CO3	Apply demand forecasting and matching techniques in supply chain planning.	**K3**
CO4	Analyze strategic decisions like facility location and network configuration.	**K4**
CO5	Assess and adapt regulatory compliance in global supply chain design.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS…	**SUPPLY CHAIN CONTRACTS**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To identify risks in supply chain contracts and implement mitigation strategies.
- To understand contract lifecycle management, including monitoring, compliance, and renewal.
- To explore international contracting and cross-border legal frameworks.

UNIT I	**SUPPLY CHAIN CONTRACTS – AN OVERVIEW AND TYPES**	**9 hours**

Overview of Supply Chain Contracts-Importance and Role of Contracts in Supply Chain Management- Types of Supply Chain Contracts: Purchase Agreements, Price Agreement Contracts - Service Level Agreements-FEED Contracts – EPCs – Minor Contracts - Emerging Issues in Supply Chain Contract Management

UNIT II	**CONTRACT NEGOTIATION AND FORMATION**	**9 hours**

Preparing for Contract Negotiations: Setting Objectives and Identifying Key Terms-Negotiation Strategies and Tactics in Supply Chain Contracts-Contract Formation: Drafting, Reviewing, and Finalizing Contracts- Negotiating Service Level Agreements (SLAs) and Performance Metrics-Best Practices in Contract Negotiation and Formation.

UNIT III	**CONTRACT LAWS - CONTRACT MANAGEMENT-CONTRACT ADMINISTRATION**	**9 hours**

Contract Terms and Conditions – Contract Regulatory Compliance – LD Clause - Contract Laws – Contract Lifecycle Management: Monitoring, Compliance, and Renewal-Contract Administration: Documenting Changes and Resolving Disputes-Performance Measurement and Evaluation in Supply Chain Contracts-Supplier Relationship Management (SRM) and Collaboration in Contract Management-Technology Solutions for Contract Management and Administration.

UNIT IV	**RISK MANAGEMENT IN SUPPLY CHAIN CONTRACTS**	**9 hours**

Identifying and Assessing Risks in Supply Chain Contracts-Risk Mitigation Strategies: Contractual Provisions and Contingency Planning-Legal and Regulatory Risks in Contract Management-Managing Disruptions and Force Majeure Events in Supply Chain Contracts-Insurance and Indemnification in Supply Chain Contracting.

UNIT V	**INTERNATIONAL CONTRACTING AND CROSS-BORDER LEGAL FRAMEWORKS**	**9 hours**

Intellectual Property Rights and Confidentiality in Supply Chain Contracts-International Contracts and Cross-Border Legal Considerations-Sustainability and Ethical Considerations in Supply Chain Contracting-Outsourcing and Third-Party Contracts: Managing Risks and Relationships-Future Trends and Innovations in Supply Chain Contract Management

TOTAL : -- 45 hours

TEXT BOOKS

1. Marcel Sieke,, Supply Chain Contract Management , Springer Publication, 1ST Edition, 2019, eBook ISBN978-3-658-24382-1
2. Marcel Sieke ,Supply Chain Contract Management: A Performance Analysis of Efficient Supply Chain Contracts, Springer Gabler; 1st Edition, 2019

REFERENCE BOOKS

1. Msme Robert C Mastice , Esq X Paul Humbert, Contract and Risk Management for Supply Chain Management Professionals,1st Edition, 2014.
2. Hartmut Stadtler , Christoph Kilger , Herbert Meyr, Supply Chain Management and Advanced Planning, 5th Edition, 2015.

WEBLINKS

- https://www.docuvantage.com/blog/contract-management/the-role-of-contract-management-in-supply-chain-management.
- https://www.procurementjourney.scot/route-2/contract-and-supplier-management

COURSE OUTCOMES

CO1	Explain the overview of supply chain contracts and types.	**K2**
CO2	Defend negotiation strategies and tactics employed in supply chain contracts.	**K2**
CO3	Discuss about Contract Laws and Management Methods	**K3**
CO4	Examine risk management in supply chain contracts	**K4**
CO5	Explain and discuss on IPR and Cross -Border legal frameworks	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	2	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS ..	CASE STUDIES -PM GATI SHAKTI NMP	3	0	0	3

COURSE OBJECTIVES

- To gain comprehensive insight into PM Gati Shakti, encompassing its introduction, pillars, various projects, government initiatives, and key government ministries.
- To understand the significance and interrelation of these aspects in driving efficient infrastructure development and fostering holistic growth in India.

UNIT I	INTRODUCTION	9 hours

Introduction – Indian Infrastructure Industry – Key Trends – Vision of PM Gati Shakthi - Expansion of Railways – Telecom Infrastructure – Need for PM Gati Shakthi Program – 7 Engines of PM Gati Shakthi - Interconnected Infrastructure Networks - Digital Technology Integration - Empowering Local Communities – Monitoring and Evaluation Mechanism.

Case Study
1: Textile Industry & Market Growth in India Case Study
2 - Automobile Industry in India

UNIT II	PILLARS OF PM GATI SHAKTHI	9 hours

Six Pillars of PM Gati Shakthi: Comprehensiveness – Prioritization – Optimization – Synchronization – analytical – Dynamic, National Master Plan: Multi-sectoral Collaboration - Accelerating Project Implementation - Focus on Sustainable Development - Global Connectivity and Trade Facilitation – 1530 Layers – 43 Ministries – 36 States / UT's.

Case Study 1: Indian Pharmaceutical Industry
Case Study 2: E-commerce Industry in India

UNIT III	VARIOUS PROJECTS	9 hours

Bunkering Terminal - Facility for Liquified Natural Gas (LNG) Handling - Barging of Containers Between Jawaharlal Nehru Port Trust (JNPT) and Mumbai - Coastal Facilities - Expanding POL Capacity – Making Railway - Connectivity Better - International Cruise Terminal - Mumbai Port Waterfront at Prince & Victoria Dock Wall - Ro-Pax Terminal - Ropeway Between Sewri and Elephanta Island.

Case Study 1: Defense Manufacturing Industry in India
Case Study 2: Retail Industry in India

UNIT IV	GOVERNMENT INTIATIVES	9 hours

Bharat Mala – Sabarimala - Inland Waterways – UDAN – National Highways Projects – Unified Logistics Interface Portal – Open-source mobility source – Integration of postal and railway – One station One Product – Vande Bharat Trains – Multimodal Connectivity– National Ropeway Development Plan – Capacity building for Infrastructure projects.

Case Study: Agriculture in India: Information About Indian Agriculture
Case Study: Manufacturing Sector in India

UNIT V	KEY GOVERNMENT MINISTRIES	9 hours
Ministry of Civil Aviation - Ministry of Port, Shipping and Waterways - Ministry of Road & Highways – Ministry of Indian Railways – Ministry of Commerce and Industry – Ministry of food processing industries – Ministry of micro small and medium enterprises – Ministry for Heavy Industry, Ministry of Power & Ministry for Agriculture. Case Study 1: FMCG Industry in India **Case Study 2:** Engineering Industry in India		
TOTAL: 45 hours		

TEXT BOOKS

1. Supply Chain Management in Agriculture, National Institute Of Agricultural Extension Management (Reading Material) .
2. Sunil Chopra , Dharam Vir Kalra , Gourav Dwivedi Supply Chain Management: Strategy, Planning, and Operation, 7th Revised Edition, Pearson Education, 2024
3. Case studies of BAKRAW, Omnichannel Strategy at Tanishq, Retail Location Selection at Lenskart, Forecasting at Relaxo Footwears Limited etc, 7th Edition, 2024.
4. R.P. Mohanty S.G Deshmukh, Indian Case Studies Supply Chain Management, Wiley Publication, 2005

REFERENCE JOURNALS

1. PM Gati Shakti – Department For Promotion of Industry and Internal Trade India Brand Equity Foundation – Ministry of Commerce and Industry.
2. https://www.coursesidekick.com/management/1416873
3. https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1988824#:~:text=PM%20Gati%20Shakti%20National%20Master%20Plan%20provides%20a%20comprehensive%20database, Central%20Government%20and%20States%2FUTs.

WEBLINKS

- https://www.ibef.org/research/case-study/gati-shakti-programme
- http://worldtradescanner.com/Use%20Cases.pdf
- https://www.india.gov.in/spotlight/pm-gati-shakti-national-master-plan-multi-modal-connectivity

COURSE OUTCOMES

CO1	Explain what PM Gati Shakti is about, its main pillars & projects	**K2**
CO2	Relate how PM Gati Shakti works to build better infrastructure faster	**K1**
CO3	Illustrate the different PM Gati Shakti projects and thereby enhancing country GDP	**K3**
CO4	Analyze how PM Gati Shakti fits with other government plans for a better India	**K4**
CO5	Conclude how key ministries are working together to make PM Gati Shakti successful	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	**-**	**-**	**3**	**1-**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3		**1**		**2**	**2**	**1-**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	**-**

24EMBS….	DATA SCIENCE AND MACHINE LEARNING FOR SUPPLY CHAIN MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To familiarize students with Data Analytics and applications for supply chain data driven decisions alongside Machine learning fundamentals and framework to apply them for industry complex problems for adaptive solutions.

UNIT I	INTRODUCTION TO DATA ANALYTICS	9 hours

Introduction to Analytics: Descriptive-Predictive-Prescriptive-Data analytics Process cycle - Sources Data – Data Structuring - Data visualization Applications in Supply Chain management

UNIT II	DATA SCIENCE IN SUPPLY CHAIN SYSTEM	9 hours

Introduction to Data Science - Demystifying Data Science, Artificial Intelligence, Machine Learning and Deep Learning - Data Science process cycle - Data extraction Data Science Tools in Machine Learning and Deep Learning.

UNIT III	DATA VISUALIZATION EXCEL TOOLS AND QUANTITATIVE ANALYSIS FOR SCM	9 hours

Introduction to sourcing data – Presenting data graphically - MS Excel overview - V Lookup, H lookup and data cleaning - Logical functions and pivot tables - Advanced formulae in MS Excel – Linear Programming —Transportation problems – Assignment problems – Queuing model.

UNIT IV	INTRODUCTION TO MACHINE LEARNING AND DEEP LEARING	9 hours

Simple introduction to Machine learning - Framework of Deep Learning – Neural networks and Artificial neural networks – Types of Neural networks - Basics of Model learning – Image analysis with CNN (Convolutional Neural Networks) – Recurrent Neural Networks for NLP – The transformer network for NLP – Introduction to reinforcement learning.

UNIT V	DATA DRIVEN DECISION ANALYSIS FOR INDUSTRIES	9 hours

Random variables and probability functions - Normal distribution -Sampling -Hypothesis testing - Correlation - Regression: linear and multiple – Simulation - Inventory control decisions – EOQ and ABC Analysis.

TOTAL : -- 45 hours

TEXT BOOKS

1. E. Alpaydin Ethem, Introduction to Machine Learning, Prentice Hall of India,3rd Edition,2015
2. . S Sadagopan, Management Information System, Prentice Hall India Learning, 2nd Edition,2014.

REFERENCE BOOKS

1.Wayne L. Winston, Microsoft Excel, Data Analysis and Business Modelling, Microsoft Press, PHI Learning ,1st Edition, 2017.
2. Peter W.Robertson, Supply Chain Analytics(using data to optimize supply chain process) , Routledge Learning, 1st Edition, 2021.

WEBLINKS

- Developing spreadsheet-based decision support systems, Hanna, Ahuja, and Winston, 2004-
- https://www.researchgate.net/publication/233389697_Developing_Spreadsheet-Based_Decision_Support_Systems.
- https://www.geeksforgeeks.org/machine-learning-and-data-science/

COURSE OUTCOMES

CO1	Explain interpretation of Data and Analytics	**K2**
CO2	Relate various applications of data science for successful implementation	**K1**
CO3	Experiment with data modelling, presentation and visualization tools	**K4**
CO4	Design fundamentals of Machine Learning and Deep learning	**K4**
CO5	Assess and adapt data driven decisions in QTs.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	2	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO3	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS	OVERVIEW OF BLOCKCHAIN APPLICATIONS IN LOGISTICS AND SUPPLY CHAIN INDUSTRIES	3	0	0	3

COURSE OBJECTIVE

- To identify the key components and characteristics of Blockchain Technology
- To assess the impact of Blockchain on Supply Chain Management.
- To understand governance models for Blockchain Networks.

UNIT I	INTRODUCTION TO BLOCKCHAIN TECHNOLOGY	9 hours

Overview of Blockchain Technology-Fundamentals of Distributed Ledger Technology (DLT)- Characteristics and Components of Blockchain-Types of Blockchain Networks: Public, Private, and Consortium- Blockchain Consensus Mechanisms: Proof of Work, Proof of Stake, and Practical Byzantine Fault Tolerance (PBFT).

UNIT II	BLOCKCHAIN APPLICATIONS IN SUPPLY CHAIN MANAGEMENT	9 hours

Mathematical Modeling Techniques for Supply Chain Network Design-Data Collection and Analysis Methods for Supply Chain Modeling-Optimization Algorithms and Heuristics in Supply Chain Design- Sensitivity Analysis and Scenario Planning in Supply Chain Modeling-Performance Metrics for Evaluating Supply Chain Networks.

UNIT III	BLOCKCHAIN APPLICATIONS IN LOGISTICS	9 hours

Enhancing Supply Chain Logistics with Blockchain Technology-Blockchain Applications in Transportation Management and Last-Mile Delivery-Optimizing Warehouse Operations through Blockchain Based Solutions- Real-time Tracking and Visibility in Logistics using Blockchain-Improving Supply Chain Resilience and Risk Management in Logistics with Blockchain.

UNIT IV	BLOCK CHAIN APPLICATION IN OTHER INDUSTRIES AND IMPLIMENTATION CHALLENGES	9 hours

Block chain applications for financial services (BFSI) - Block chain and food Industry- Blockchain in Oil & Gas – Block Chain for automobiles. Scalability and Performance Issues in Blockchain Networks-Data Privacy and Security Concerns in Blockchain Adoption-Regulatory Compliance and Legal Implications of Blockchain Technology-Interoperability and Integration Challenges with Existing Systems-Cost-Benefit Analysis and Return on Investment (ROI) for Blockchain Implementation.

UNIT V	BLOCKCHAIN GOVERNANCE AND REGULATION	9 hours

Understanding Governance Models for Blockchain Networks-Regulatory Landscape for Blockchain Technology in Supply Chain-Compliance Requirements and Legal Considerations in Blockchain Implementation-Establishing Industry Standards and Best Practices for Blockchain Governance- Addressing Ethical and Societal-Implications of Blockchain Adoption in Supply Chain.

TOTAL : -- 45 hours

TEXT BOOKS

1. Trevor Clohessy, Blockchain in Supply Chain Digital Transformation, Routleadge Taylor & Francis, CRC Press,1st Edition, 2023.
2. Muhammad Shujaat Mubarik,Muhammad Shahbaz, Blockchain Driven Supply Chain Management, Springer; 2023rd Edition, 2023.

REFERENCE BOOK

1. Matthew A. Waller, Remko van Hoek, Marat Davletshin, Brian Fugate, Integrating Blockchain into Supply Chain Management, Kogan Page Publishers,1st Edition, 2019.

2. K Mathiyazhagan, Atour Taghipour, Vernika Agarwal, Blockchain Technology in Supply Chain Management for Society 5.0, 1st Edition, 2023.

COURSE OUTCOMES

CO1	Relate different types of Blockchain networks including Public, Private, and Consortium.	**K1**
CO2	Explain optimization algorithms and heuristics in Supply Chain Design	**K2**
CO3	Predict and apply methods to improve Supply Chain Resilience in Logistics with Blockchain technology tools	**K3**
CO4	Survey data privacy and security concerns in Blockchain Adoption.	**K4**
CO5	Evaluate and discuss ethical and societal implications of Blockchain Adoption in Supply Chain.	**K 6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	1	2	2	3	

24EMBS..	RETAIL AND E-COMMERCE SUPPLY CHAIN MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

1. To understand about the retail management and its types of retail and e- retail concepts of retail management
2. To study about the e – commerce retail fulfilment and its operating models.

UNIT I	INTRODUCTION TO RETAIL SCM	9 hours

The Retail Supply Chain – Customer Segments – Success in a retail business - Value Chain Management – Merchandise types - Replenishment & Budgeting – Types of Retail Supply Chain Business – Financial statement and analysis – Comparative Advantage – Corporate Social responsibility & sustainability – Collaborations with partners – Demand Driven supply chain – Tools and Techniques.

UNIT II	RETAIL SUPPLY CHAIN ENVIRONMENT	9 hours

Drivers of Retail Supply Chain Change – paths to the customer – Supply Chain Risk – Retail supply chain metrics – Service metrics – operating metrics – financial metrics – Meeting the needs of decision makers – proactive decision making – Application for Information Technology – Operating Improvements – Management Improvements - Product Tracking – Barcodes – Radio Frequency identification – Tracking in transit.

UNIT III	RETAIL SUPPLY CHAIN STRATEGY	9 hours

Product Types – Value to the customer – Product lifecycle – Innovative and functional products – Customer values and product types - Business inside the Business – Omnichannel retailing – Market Segments – Activity Systems and Processes – Retail SCM Skills - Retail Supply Chain Performance – Continuous Improvement Cycles.

UNIT IV	E-COMMERCE RETAIL FULFILLMENT	9 hours

Ecommerce retail sector - Inventory led and marketplace ecommerce models - Minimum storage. Requirements for an inventory led ecommerce - world class ecommerce retail fulfillment facility – Differences between conventional warehouse and ecommerce fulfillment center - Layout of ecommerce fulfillment center - Sorting techniques and technology - Labelling and packaging technology.

UNIT V	E-COMMERCE OPERATING MODELS	9 hours

Understanding customer expectations - B2B and B2C customer expectations - Key success factors for Ecommerce fulfilment operations - Fulfilment business processes and digitization - Process innovations – Order processing - Order visibility, Order delivery, Payment collection & Returns processing - Emerging technologies - Drones for delivery & Customer pickup mode.

TOTAL : -- 45 hours

TEXTBOOKS

1. James B Ayers and Mary Ann , Retail Supply Chain Management , CRC Press Publication,2nd Edition, 2017.

2. Deborah L. Bayles,E-commerce Logistics and Fulfilment: Delivering the Goods, Prentice Hall,1st Edition, 2000.

REFERENCE BOOKS

1. John Fernie & Leigh Sparks, Logistics and Retail Management, CILT UK, 4th Edition,2014.
2. Janice Reynolds, Logistics and Fulfillment for e-business: A Practical Guide to Mastering Back Office Functions for OnlineCommerce, CRC Press,1st Edition,2017.

WEBLINKS

- **https://webcreatify.com/blog/?E-Retailing-and-Supply-Chain-Management&id=95**
- **https://brochureslearnbay.s3.ap-south-1.amazonaws.com/domain/Retail%2C+Ecommerce+and+Supply+chain+Domain.pdf**

COURSE OUTCOMES

CO1	List the unique challenges and complex dynamics of retail supply chains	**K1**
CO2	Build strategies for managing inventory, collaborating with vendors	**K2**
CO3	Summarize process improvement methods for efficient retail supply chains	**K3**
CO4	Examine the order processing to ensure fast and reliable delivery in retail	**K4**
CO5	Perceive and construct different e-commerce business models and assess their Strengths	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	_	_	2		_	_			_	1
CO2	2	_	_	3	1	_	_			_	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5	1	3	2		2	3	2	3	3	2	1

24EMBS..	SCM FOR E-COMMERCE MANAGEMENT	3	0	0	3

Course Objectives

- To understand the e-commerce functions, drivers, and benefits in the digital world
- To analyze the e-commerce applications, business models, future, and regulations in supply chain.

UNIT I	OVERVIEW OF E-COMMERCE	9 hours

Electronic Commerce – Definition & Concepts – Electronic markets and networks – Framework of E-commerce – Classification of EC by nature of transactions – Drivers and Benefits of e-commerce – Social Computing and commerce – Digital and social world -Economy – Enterprise – society - Electronic commerce business models – Types – Classification – Limitation, Impacts and Future of e-commerce .

UNIT II	E - COMMERCE APPLICATIONS	9 hours

Retailing in e-commerce product and services – distribution channels - E-tailing business models – Drop Shipping – Online Billing and Billing paying – on demand delivery of products – Online purchasing - decision aids – New Face of retail competition – Retailers vs E-tailers –Convergence and Omnichannel.

UNIT III	BUSINESS TO BUSINESS E-COMMERCE	9 hours

Business to Business concepts and process – B2B marketing and sell side marketplaces – e-procurement and buyside marketplaces – E-tendering – e-procurement methods – B2B Exchanges – B2B in web 2.0 and social networking – Smart e-commerce – social commerce – e-commerce support services.

UNIT IV	SUPPLY CHAIN E-COMMERCE	9 hours

Order Fulfillment – Make to Order (MTO) – Assemble to Order (ATO) – Warehousing – Robots – Warehouse management system (WMS) – Delivery to customers – Robots to Drones – Speeding up Deliveries – Same to Day to Few Hours – RFID in e-commerce – Handling Returns (Reverse Logistics) –Innovative e-fulfillment strategies .

UNIT V	FUTURE & REGULATIONS FOR SCM E-COMMERCE	9 hours

Key factors for the future e-commerce – New Trends shaping e-commerce – Future of B2B & B2C – Marketplace to marketspace – M-commerce – Social commerce – Future technological trends – future consumer behavior – Intellectual property law – Privacy in e-commerce – ecommerce legal issues – Fake content of the web – Public policy, taxation, and political environment – Social issues and Green e-commerce .

TOTAL : -- 45 hours

TEXT BOOKS

1. Efraim Turban , Electronic Commerce – A managerial and social networks perspective, Springer ,9th Edition, 2018.
2. Gary P Schneider, Electronic commerce, Course Technology Publication, 9th Edition,2010.

REFERENCE BOOKS

1. Jack W Plunkett , E-commerce and internet Business Almanac, Plunkett Research,2024.
2. Dave Chaffey, Digital Business and E-commerce Management, Pearson Publication,7th Edition, 2019.

WEBLINKS

1. **https://uk.indeed.com/career-advice/career-development/what-is-ecommerce-management.**
2. **https://www.brightpearl.com/ecommerce-order-management**

COURSE OUTCOMES

CO1	Define E-commerce system to represent major business revenue models, drivers, and benefits.	**K1**
CO2	Demonstrate major applications in E-commerce operations.	**K2**
CO3	Develop online business-to-business activities in E-commerce.	**K3**
CO4	Interface supply chain strategies for E-commerce business management.	**K4**
CO5	Explain and adapt ethical, legal, social environmental E-commerce operatives	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	1
CO2	2	-	-	2		-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS..	**SUPPLY CHAIN SUSTAINABILITY**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To provide students with an understanding of the sustainability opportunities and challenges facing supply chains today as modern-day supply chains seldom be concerned only with creating shareholder value; their performance is also measured in terms of social, environmental and economic impact.
- To further emphasis the importance of circular supplychains for ENCON and explain how digitalization complements sustainable practices.

UNIT I	**INTRODUCTION TO SUSTAINABILITY CONCEPTS AND FRAMEWORKS**	**9 hours**

Definitions of sustainability, environmental responsibility - Global Warming - Carbon Footprints - Triple Bottom Line - Social sustainability - Government Regulations - Circular Economy.

UNIT II	**OVERVIEW OF GREEN SUPPLY CHAINS AND ESG PRACTICES**	**9 hours**

Introduction – Traditional Supply Chain and Green Supply Chain – Environmental Concern and Supply Chain – Closed-loop Supply Chain – Corporate Environmental Management – Green Supply Chain (GSCM): Definition, Basic Concepts – GSCM Practices – Sustainability and Surplus in SupplyChains. Metrics and Scope Measurements – ESG Principles, Scope, and Practices.

UNIT III	**ECO-DESIGN**	**9 hours**

Design for the Environment (DFE) or Eco-Design – Eco-Design and Supplier Relationships – Definitions of Eco-Design – Tools of Product Eco-Design – Involving suppliers in product eco-design: Drivers, Challenges and Successful factors

UNIT IV	**GREEN PURCHASING**	**9 hours**

Green Procurement and Purchasing – Definitions of green purchasing – Drivers of green purchasing. – Green purchasing strategies – Green purchasing performance measurement –Green Supplier Development and Collaboration.

UNIT V	**GREEN MANUFACTURING – DIGITAL APPLICATIONS**	**9 hours**

Green Manufacturing or Production: Evolution, Definitions – 4Re's: recycling, remanufacturing, reuse and reduction – Closed-loop Manufacturing – ISO 14000 systems – Life Cycle Analysis (LCA) – Lean Manufacturing for Green Manufacturing or Production – Sustainability through digital applications in Manufacturing industries and Logistics Industries and Services – Industry Case Analysis for digital applications for Green and Circular Supply Chains.

TOTAL : -- 45 hours

TEXTBOOKS

1.Joseph Sarkis, Yijie Dou, Green Supply Chain Management: A Concise Introduction, Routledge

Publication, 1st Edition, 2018.

2. Charisios Achillas, Dionysis D, Dimitrios Bochtis,, Dimitris Folin's. Green Supply Chain Management, Routledge, 1st Edition, 2019.

3. David B. Grant, Chee Yew Wong, Alexander Trautrims , Sustainable Logistics and Supply Chain Management - Principles and Practices for Sustainable Operations andManagement, Kogan Page; 2nd Edition, 2017.

REFERENCE BOOKS

1. Hsiao-Fan Wang, Surendra M. Gupta, Green Supply Chain Management: Product Life Cycle Approach, McGraw Hill Publishing, 1st Edition, 2011.
2. Yaduvanshi, N.R., Myana, R. and Krishnamurthy, S., Circular economy for sustainable development inIndia. Indian Journal of Science and Technology, 9(46), pp.1-9,2016.
3. Stuart Enment, Vivek Sood, Green Supply Chains : An Action Manifesto, Wiley Publicaations,1st Edition, 2010

WEBLINKS

https://www.gep.com/knowledge-bank/glossary/what-is-supply-chain-management
https://www.softeq.com/blog/green-supply-chain-management-use-cases-and-benefits

COURSE OUTCOMES

CO1	List Supply Chain Sustainable Practices	**K 1**
CO2	Demonstrate Green and Sustainability Practices in all Supply Chains functions	**K2**
CO3	Develop Eco-design practices for Green Supply Chains	**K3**
CO4	Examine benefits of Green Procurement Practices	**K4**
CO5	Assess and construct efficient manufacturing process to achieve Sustainability Metrics	**K5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO 1	**PO2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	2	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS..	**SUPPLY CHAIN MODELLING -ANALYTICS-SUPPLY CHAIN INTERFACE**	**3**	**0**	**0**	**3**

Course Objectives

- To explain concepts of quantitative techniques with analytics and industrial case analysis.
- To describe conceptual skills in solving practical industrial challenges for effective objectives.
- To compare optimal decisions evolved out of various industrial supply chain functions for optimal solutions.

UNIT I	**SUPPLY CHAIN DECISION PHASE - BPR–SUPPLY CHAIN PERFORMANCE VALUE CHAIN**	**9 hours**

Supply Chain Framework Design: Structure Analysis Phases and Strategic, Tactical and Operational SCM Decisions. Business Process Re-engineering: Concurrence Engineering in Supply Chain-Cycle views- Supply Chain Agility- Efficiency Vs Responsive Frontier Supply Chains- Process Plant Capacity Utilization-Rationalization of EOQ Concepts- Organizational Synergy.

UNIT II	**SUPPLY CHAIN MODELLING IN LAYOUT DESIGN, CAPACITY PLANNING, MANUFACTURING AND SUSTAINABILITY DECISIONS**	**9 hours**

Break Even Analysis – Make or Buy Decisions - Models for Sourcing Alternatives – Capacity Utilization -Alternatives-Assembly Line Balancing Model-Productivity through Sustainability and Energy Conservation Vs Investment Decisions- Modelling using Value Analysis Techniques

UNIT III	**SUPPLY CHAIN ANALYTICS AND SCM INTERFACES**	**9 hours**

Supply Chain Analytics: An Overview – Descriptive -Predictive - Predictive- Cognitive Methods and their Applications- OR Techniques for Analytics - Introduction to simulation – Type: Discrete and Continuous simulation – Simulation models – Steps in Simulation study – Simulation for Analytics – Experimental Designs (Taguchi, RSD, Mixture Design)

UNIT IV	**MODELLING IN RESOURCE ALLOCATION DISTRIBUTION NETWORK**	**9 hours**

Demand and Source Allocation – Formulation of Objective Functions- Optimization Techniques (Maximizing Profits and Minimizing Costs) with Linear Programming Models- Mathematical Formulations for Solutions-Optimal Transportation Allocation on Cost Analysis – Transportation and Route allocation Problems.

UNIT V	**MODELLING IN PROCUREMENT- INVENTORY DECISIONS**	**9 hours**

EOQ Conceptualization Models by weakening Assumption Impacts- Inventory Tools with ABC-VED-FSN Analysis Allocation- Models of Inventory with Trade-off between Costs-Quantity Discounts- Real World Lead Time Analysis in Capital and Consumable Procurements

– International Procurement Problems (Freight Vs Sourcing Decisions) – Digital Procurement Process – Reverse and Forward Auction Procurement Model.
TOTAL : -- 45 hours

TEXTBOOKS

1.Dmitry Ivanov, Introduction to Supply Chain Analytics: With Examples in Any Logic and any Logistix Software, Springer International Publishing AG; 1st Edition. 2024

2. Kurt Y.L in , Supply Chain Analytics: Concepts, Techniques and Applications Paperback, Palgrave Macmillan,2022.

REFERENCE BOOKS

1. Francisco Campuzano , Josefa Mula , Supply Chain Simulation: A System Dynamics Approach for Improving Performance 2011th Edition, Kindle Edition.

2. Jeremy Shapiro, Modeling the Supply Chain, Misc. Supplies , Brooks/Cole; International,2nd Edition, 2008.

WEBLINKS

https://www.ibm.com/topics/supply-chain-analytics
https://www.qlik.com/us/data-analytics/supply-chain-analytics

COURSE OUTCOMES

CO1	Define Supply Chain Frameworks in Performance Value Chain	**K1**
CO2	Illustrate Supply Chain Modelling techniques in Manufacturing-Sustainability Areas	**K2**
CO3	Develop Supply Chain Analytics Methods to manage Supply Chain Challenges	**K3**
CO4	Examine Operations Research Techniques for Supply Chain interfaces	**K4**
CO5	Evaluate and originate SC Inventory-Procurement trade off decisions through Analytics Methods	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS..	DATA AND INFORMATION SYSTEMS IN LOGISTICS AND SUPPLY CHAINS	3	0	0	3

Course Objective

- To focus and familiarize students on fundamental data visualization; given the rapid development in data Analytics and Information System Applications, special emphasisshall be made to introduce concepts in managing and analyzing data structure and information systems in Supply Chains.

UNIT I	INTRODUCTION TO DATA VISUALIZATION	9 hours

Introduction to Sourcing Data - Scales of Measurement - Presenting Data graphically – Data driven decision analysis: Random variables and probability functions- Normal distribution – Sampling – Hypothesis testing – Correlation and Regression

UNIT II	INFORMATION SYSTEMS OVERVIEW	9 hours

Meaning and role of information systems in organization - Types of information systems - IT Systems application in business organization - IT Security Policy and its relevance to Logisticsand Supply Chain Organizations - Communication Networks and Application in Supply Chain - Stakeholders in Information Systems.

UNIT III	SCM FUNCTIONAL SYSTEMS	9 hours

Discussion on popular Enterprise Application Packages applicable in SCM Logistics, Inventory, MIS, Manufacturing, Sourcing and E-Auctions Modules - Introduction to advancedapplications in Logistics: Telematics, AIDC -Geo fencing and GRRS systems applications.

UNIT IV	DATA MANAGEMENT	9 hours

Overview of Data Base Management Systems-Data Warehousing Concepts - Applications of Data Ware housing in SupplyChain Management - Creating data for Analytics using Excel Applications - Data Analytics and Application in Business decisions

UNIT V	PLANNING FOR INFORMATION SYSTEM IN FACILITIES MANAGEMENT	9 hours

Benefits of Enterprise Information Systems - Information Integration and Application in Supply Chains- Resource Requirements for IT systems Integration - System Development, Deployment and Management

TOTAL : -- 45 hours

TEXT BOOK

1 . S. Sadagopan, Management Information System, Prentice Hall India Learning 2nd Edition, 2014,

2. Wayne.L.Winston, Microsoft Excel 2016, Data Analysis and Business Modelling, Microsoft Press , PHI Learning Pvt.Ltd, 2017

REFERENCE BOOKS

1. Kenneth C. Laudon, Jane P. Laudon , Management Information Systems, Pearson Education, 12th Edition, 2012.
2. Gopi Subramanian, R Data Analysis Projects, Packt Publishing, 1st Edition, 2017.

WEBLINKS

https://egyankosh.ac.in/bitstream/123456789/72290/1/Unit-9.pdf

https://qodenext.com/blog/benefits-of-logistics-information-system/

COURSE OUTCOMES

CO1	Outline and relate data and information systems	**K2**
CO2	Identify the needs and relevance of Information Systems in Business	**K2**
CO3	Develop various Functional Systems for SCM applications	**K3**
CO4	Examine applications of Data Management Analytics in Supply Chain	**K4**
CO5	Prioritize Information Systems for Supply Chain Facilities Management	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	_	_	3	1	_	_			_	2
CO2	2	_	_	3	1	_	_			_	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS..	**SUPPLY CHAIN CONTRACT MANAGEMENT AND LEGAL PERSPECTIVES**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To understand supply chain contracts and their legal frameworks.
- To develop negotiation strategies and techniques for effective contract negotiation.
- To identify and assess risks associated with supply chain contracts to further mitigate the risk.
- To define key performance indicators (KPIs) for evaluating and monitoring contract performance.
- To explore digitalization and technology-driven innovations in contract management with environmental factors.

UNIT I	**INTRODUCTION TO SUPPLY CHAIN CONTRACTS**	**9 hours**

Definition and scope of supply chain contracts-Types of supply chain contracts: purchase agreements, service contracts, distribution agreements, etc.-Legal framework for supply chain contracts-Key elements of a contract - Negotiation strategies and techniques for supply chain contracts-Contract drafting best practices: clarity, specificity, and enforceability-Terms and conditions commonly included in supply chain contracts.

UNIT II	**INTELLECTUAL PROPERTY RIGHTS (IPR) IN SUPPLY CHAIN CONTRACTS**	**9 hours**

IPR overview and Importance-Types of IPR - Considerations and Procedure for filing IPR- Indian and global IPR Bodies and Acts-Intellectual Property Rights (IPR) considerations in contract negotiation and drafting-Practical exercises and role-plays to develop negotiation and drafting skills.

UNIT III	**RISK MANAGEMENT AND COMPLIANCE IN SUPPLY CHAIN CONTRACTS**	**9 hours**

Identification and assessment of risks in supply chain contracts-Risk mitigation strategies: insurance, indemnification, limitation of liability clauses-Compliance requirements in supply chain contracts: regulatory, environmental, and ethical considerations-Impact of globalization and international trade agreements on supply chain contract compliance-Case studies on supply chain contract disputes and resolutions.

UNIT IV	**PERFORMANCE MEASUREMENT AND DISPUTE RESOLUTION**	**9 hours**

Key performance indicators (KPIs) for evaluating contract performance-Monitoring and enforcement mechanisms in supply chain contracts-Dispute resolution methods: negotiation, mediation,arbitration, and litigation-Contract termination and remedies for breach of contract-best practices formaintaining supplier relationships and resolving conflicts amicably.

UNIT V	MERGING TRENDS AND FUTURE DIRECTIONS IN SUPPLY CHAIN CONTRACTS	9 hours
Digitalization and technology-driven innovations in contract management-Sustainability considerations in supply chain contracts: environmental, social, and governance (ESG) factors-Impact of geopolitical events and regulatory changes on supply chain contract management-Future trends in supply chain contracting: blockchain, artificial intelligence, and predictive analytics-Guest lectures and industry panel discussions on current issues and emerging trends.		
TOTAL : -- 45 hours		

TEXTBOOKS

1 Robert J. Trent ,Supply Chain Contracting and Negotiation: A Practical Guide to Best Practices, CRC Press-Edition: 1st Edition,2017

2. Kogan Page , Contract Management in Purchasing and Supply, Kogan Page,6th Edition,2018

REFERENCE BOOKS

1.Pamela Tepper , The Law of Contracts and the Uniform Commercial Code, Cengage Learning-Edition: 3rd Edition (2019).

2. Frederick M. Abbott and Thomas Cottier, Intellectual Property Rights in the Global Economy, Oxford University Pres. 3rd Edition (2016).

WEB LINKS:

1. https://iccwbo.org/dispute-resolution-services/
2. https://www.wipo.int

COURSE OUTCOMES

CO1	Define the basics of supply chain contract	**K1**
CO2	Explain the negotiation strategies and drafting practices for effective contracts.	**K2**
CO3	Identify areas to mitigate risks associated with supply chain contracts.	**K3**
CO4	Analyze KPIs monitoring mechanisms for contract performances.	**K4**
CO5	Justify and adapt technology innovations and sustainability in supply chain contracts.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO 2	PO 3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS..	**ROBOTIC PROCESS AUTOMATION IN LOGISTICS AND SUPPLY CHAIN MANAGEMENT**	**3**	**0**	**0**	**3**

COURSE OBJECTIVES

- To understand the fundamental concepts, components, and architecture of RPA technology.
- To evaluate the key features and functionality of RPA tools for logistics and supply chain applications.
- To optimize warehouse layout and space utilization through RPA-driven solutions.

UNIT I	**INTRODUCTION TO ROBOTIC PROCESS AUTOMATION (RPA)**	**9 hours**

Overview of Robotic Process Automation (RPA) in Logistics and Supply Chain Management-Fundamentals of RPA: Concepts, Components, and Architecture-Applications of RPA in Logistics and Supply Chain: Warehouse Automation, Order Processing, and Inventory Management-Advantages and Challenges of Implementing RPA in Logistics and Supply Chain Operations-Case Studies and Success Stories of RPA Implementation in the Logistics Industry

UNIT II	**RPA TOOLS AND TECHNOLOGIES**	**9 hours**

Introduction to RPA Tools and Platforms: UiPath, Automation Anywhere, Blue Prism-Key Features and Functionality of RPA Tools for Logistics and Supply Chain Applications-Developing RPA Bots: Designing, Building, and Deploying Automated Processes-Integrating RPA with Existing IT Systems: ERP, WMS, TMS, and CRM-Best Practices for RPA Implementation and Maintenance in Logistics and Supply Chain Management.

UNIT III	**ROBOTICS APPLICATIONS IN MANUFACTURING-WAREHOUSING-HEALTH CARE INDUSTRIES**	**9 hours**

Applications of RPA in Manufacturing-Production Line Automation-Quality Control and Inspection-Inventory Management and Material Handling-Predictive Maintenance-Automating Order Fulfillment Processes: Pick-Pack-Ship Automation with RPA-Inventory Management and Stock Replenishment using RPA-RPA Applications in Goods Receipt and Put away Processes-Optimizing Warehouse Layout and Space Utilization with RPA-Real-time Reporting and Analytics with RPA in Warehouse Operations-Applications of RPA in Healthcare: Streamlining Administrative Processes (Billing, Claims Processing)-Improving Patient Care (Appointment Scheduling, Patient Data Management).

UNIT IV	**RPA IN TRANSPORTATION AND DISTRIBUTION**	**9 hours**

Streamlining Transportation Planning and Routing using RPA-Automating Freight Booking and Carrier Selection Processes with RPA-RPA Applications in Track and Trace: Real-time Shipment Visibility-Dynamic Pricing and Rate Management using RPA in Logistics-Enhancing Last-Mile Delivery Efficiency with RPA Technologies.

UNIT V	**RPA GOVERNANCE AND FUTURE TRENDS**	**9 hours**

Establishing RPA Governance Frameworks and Controls in Logistics and Supply Chain Management-Regulatory Compliance and Data Security Considerations for RPA Implementation-Ethical and Social Implications of RPA Adoption in Logistics-Emerging Trends and Innovations in RPA for Logistics and Supply Chain-Future Outlook: Predictions and Opportunities for RPA in the Logistics Industry.
TOTAL : -- 45 hours

TEXT BOOKS

1. Carl Keyness,Robotics in Manufacturing: Optimizing Production Processes with Automation, Paper back, 979-8868989421, 2023.
2. Tom Taulli , The Robotic Process Automation Handbook, Apress, 2020.
3. Michael Johnson, Automating the Supply Chain: Robotic Process Automation for Logistics Professionals,

REFERENCE BOOKS

- James Manyika,A Future That Works: Automation, Employment, And Productivity, McKinsey Company, 2017.
- Violetta Giada Cannas,Maria Pia Ciano,Mattia Saltalamacchia & Raffaele Secchi, Artificial intelligence in supply chain and operations management: a multiple case study research, 2023.

WEBLINKS

- https://www2.deloitte.com/us/en/pages/manufacturing/articles/autonomous-robots-supply-chain-innovation.html.
- https://www.honeywell.com/us/en/news/2022/04/how-robots-are-upgrading-the-supply-chain-industry

COURSE OUTCOMES

CO1:	Relate the practical implications of RPA implementation in the logistics industry.	**K1**
CO2:	Explain various RPA tools-platforms UiPath, Automation Anywhere and Blue Prism.	**K2**
CO3:	Identify the role of RPA in manufacturing, warehousing, and healthcare industries.	**K3**
CO4:	Analyze facility location selection and distribution network configuration using RPA.	**K4**
CO5:	Evaluate the ethical and social implications of RPA and adapt in LSCM operations.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO 2	PO 3	PO4	PO5	PO6	P07	PO8	PSO1	PSO2	PSO3
CO1	2	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**1**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**2**
CO3		**1**		**2**	**2**	**1**		**1**	**1**	**2**	
CO4	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**2**	**2**	**1**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

ELECTIVE COURSE

ENTREPRENEURSHIP

24EMBS--	TECHNOLOGY APPRECIATION AND INTELLECTUAL PROPERTY RIGHTS	3	0	0	3

COURSE OBJECTIVES

- To understand the technology absorption, incremental innovation, research
- To development, techno Innovation and technology fusion that dominate the contemporary world industry and gain an insight into the various forms and models of technology development.
- To understand Intellectual Property Rights, Patents, GATT, Copyright, Trademarks and Geographical Indications.

UNIT I	TECHNOLOGY AND INNOVATION	9 hours

Definition of technology and its evolution - Technology as a driving force-Axes and Atlas of Technology – Strategic Management of Technology – Productivity and Incremental Innovation– Technology absorption – Technology forecasting – Technological competitive advantage - Technological advancements and their impact on society.

UNIT II	EVALUATION OF TECHNOLOGY IDEA GENERATION	9 hours

Evaluation of Technological Investments- Fundamental venture types–the idea generation process–the opportunity register nontraditional idea sources – countdown to launch product planning and development–the idea development process - New R and D– Product Development Cycle – Management of Technological Innovation – Core Competencies in Technology – Structural Imperatives of Technology Management – Technology process mapping.

UNIT III	INTRODUCTION TO INTELLECTUAL PROPERTY	9 hours

Introduction - Importance of IPR in fostering innovation and economic growth - Invention and Creativity - An Overview of Intellectual Property (IP) - Importance - Protection of IPR - Basic types of property. Forms of Industrial Properties: Patents, Industrial Designs, Plant Varieties, copyrights, Trademarks, Geographical Indications - Ownership and liability issues –choice of legal structure–equity and equity types– raising capital equity distribution in the start–up venture.

UNIT IV	COPYRIGHTS, TRADEMARKS, OTHER INTELLECTUAL PROPERTY RIGHTS	9 hours

Copyrights and related rights - Trade Marks and rights arising from Trademark registration – Definitions - Industrial Designs and Integrated circuits - Protection of Geographical Indications at national and international levels, Plant Varieties - Application Procedures, Trade Secret.

UNIT V	LEGAL ASPECTS OF INTELLECTUAL PROPERTY RIGHTS	9 hours

Infringement of Patents and Remedies-Modification of granted patents, Case Studies on – Patents - Copyright and related rights - Trade Marks - Industrial design and Integrated circuits -Geographic indications - Protection against unfair competition. Enforcement of Intellectual Property Rights

TOTAL: -- 45 hours

TEXT BOOKS

i. Kurt M. Saunders, Intellectual Property Law: Legal Aspects of Innovation and Competition, West Academic Publishing, Illustrated Edition, 2016

ii. Stephen M. McJohn , Intellectual Property (Examples & Explanations Series), Aspen Publishing; 7th Edition,2021.

3. John Palfrey and Daniel L.Levy, Intellectual Property Strategy, MIT Press, 2011.

EFERENCE BOOKS

1. Donald S. Chisum , Tyler T. Ochoa , Shubha Ghosh , Mary LaFrance, Understanding Intellectual Property Law, LexisNexis,2nd Edition, 2011.
2. Thomas Duening, Robert Hisrich, Michael Lechter, Technology Entrepreneurship– Taking Innovation to the Marketplace, Academic Press, UK, 2014.

3. Gerald B. Halt, Jr., John C. Donch, Jr., Amber R. Stiles, RobertFesnak, Intellectual Property and Financing Strategies for Technology Startups, Springer International Publishing AG, 1st Edition, 2018.

WEB LINKS

1. https://www.coursera.org/learn/introduction-intellectual-property/lecture/q7KSP/introduction-to- intellectual property
2. https://www.oecd.org/sti/inno/1822541.pdf
3. https://www.wipo.int/edocs/mdocs/tk/en/wipo_iptk_ge_14/wipo_ iptk_ge_14_wipo_presen tation_1. pdf

COURSE OUTCOMES

CO1	Understand the issues in defining 'technology', 'innovation' and 'innovation management'	**K2**
CO2	Memorize various types of innovation, innovators and innovation settings	**K1**
CO3	Discover ,assess and explain the key current issues in understanding the innovation as a field ofstudy.	**K3**
CO4	Design about IPR, International Protection of IPR, Filing of Patents Trademark Registration.	**K4**
CO5	Evaluate ethical and legal considerations surrounding technology and intellectual property.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO 2**	**PO 3**	**PO4**	**PO5**	**PO6**	**P07**	**PO8**	**PSO1**	**PSO2**	**PSO 3**
CO1	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO2	**2**	**-**	**-**	**2**		**-**	**-**			**-**	**1**
CO3		**1**		**2**	**2**	**1**		**1**	**1**		
CO4	**2**	**-**	**-**	**3**	**1**	**-**	**-**			**-**	**2**
CO5		**1**	**3**	**-**	**1**	**2**	**3**	**2**	**2**	**3**	

24EMBS--	INNOVATION TECHNOLOGY MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To identify the conscious choices of technical models of analysis and other theoretical tools designed for the challenges faced in companies' markets face.
- To enable the students to understand the upgraded technologies related to business.
- To provide students with the knowledge, skills, and perspectives necessary to understand and effectively manage innovation in technology-driven environments.

UNIT I	INTRODUCTION TO TECHNOLOGY MANAGEMENT	9 hours

Concept and Meaning of Technology and Technology Management- Technology; Technology management, Evolution and Growth of Technology, Role and Significance of Technology Management, Impact of Technology on Society and Business- Technology and competition; Key issues in managing technological innovation, Forms of Technology- Process technology; Product technology.

UNIT II	INNOVATION BASED TECHNOLOGIES AND KNOWLEDGE MANAGEMENT	9 hours

Knowledge Based Technology and Techniques - Knowledge based technology process; Tools and techniques, Role of Artificial Intelligence Techniques, Knowledge Management Techniques for Technology Management - Rogers' diffusion of innovations theory - Innovation ecosystems - Role of government policies and regulations - Incubators, accelerators, and innovation hubs - Resilience and adaptability in innovation management.

UNIT III	TECHNOLOGY GENERATION AND DEVELOPMENT	9 hours

Technology Generation- Process; , Technology Development, Importance of Technology Generation and Development, Need for Technology Strategy, Importance of Research and Development (R&D)- R&D project management methodologies - Intellectual property management - Collaboration and partnerships in R&D; Production costs and R&D; Translation of R & D efforts to technology.

UNIT IV	TECHNOLOGY STRATEGY AND COMPETITIVENESS	9 hours

Technology Strategy-Technology strategy and management; Elements of an accessible technology strategy, Innovation Management, Competitive Advantage- Components of competitive advantage; Creating competitive advantage using value chain, Technology Management Evaluation or Assessment - Future Trends in Innovation Technology Management - Implications of AI and automation on innovation management - Ethical and societal considerations in future innovation

UNIT V	SOCIAL ISSUES IN TECHNOLOGY MANAGEMENT	9 hours

Social Issues, Technological Change and Industrial Relations- Implementation of rationalization and automation in India; Impact of technological change, Technology Assessment and Environmental Impact Analysis- Environmental impact analysis process- Guidelines on the scope of EIA; Issues in preparation of EIA report; Elements of the environmental problem.

TOTAL: 45 hours

TEXT BOOKS

1. Eric Ries, The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses, Currency Publication, Illustrated Edition, 2021.
2. sSANJIVA SHANKAR, Technology and Innovation Management, PHI Learning, 2nd Edition,2011.
3. Hochschule, Technology and Innovation Management, Harz University of Applied Sciences, 1st Edition,2021.

REFERENCE BOOKS

1. Ramesh Behl, Technology in Management, Mc Graw Hill, Third Edition, 2020
2. U. Ravi Kiran, Technology and Management , Laxmi Publications, 2nd Edition, 2012
3. Joe Tidd , John R. Bessant, Managing innovation, Wiley: Chichester, United Kingdom. ISBN: 978-1-118-36063,5th Edition, 2015.

WEB LINKS

http://soskin.info/userfiles/file/2015/1- 2_1_2015/Obradovic_Ebersold_Obradovic.pdf
https://courses.lumenlearning.com/wm-introductiontobusiness/chapter/ethical-and-social-issues/
https://link.springer.com/chapter/10.1057/9780230582361_4

COURSE OUTCOMES

CO1	Explain various types of innovation (e.g., incremental, disruptive) and their implications for technology-driven industries.	**K2**
CO2	Outline strategies for managing resistance to change during technology adoption.	**K2**
CO3	Sketch and implement innovation strategies in organizations, corporate foresight andtechnology for evaluating and selecting R&D proposals.	**K3**
CO4	Construct the effective management of technological innovation requires the integration of people, processes and technology	**K4**
CO5	Evaluate the impact of incubators, accelerators, and innovation hubs on fostering innovation.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1		
CO4	2	-	-	3	1	-	-			-	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS--	INDIAN MODELS IN ENTREPRENEURSHIP	3	0	0	3

COURSE OBJECTIVES

- To enable the students to learn various aspects of innovation and methods of fostering innovation.
- To understand the concept and theories of entrepreneurship.
- To recognize the qualities of entrepreneurs that contributed to their success.
- To generate several ideas for potential businesses based on important trends and each student's interests.

UNIT I	ENTREPRENEURSHIP ESSENTIALS	9 hours

Concepts and Overview of Entrepreneurship - Evolution and Growth of Entrepreneurship in India - Role of Entrepreneurship in Economic Development - Role of Entrepreneur in Indian economy and developing economies with reference to Self-Employment Development - Entrepreneurial Culture - The Indian innovations and opportunities - Growth and promotion of Entrepreneurship in India - Institutional arrangements

UNIT II	DEVELOPMENT OF ENTREPRENEURIAL SKILLS	9 hours

Entrepreneurship and Indian Social System - Entrepreneurial Characteristics - Entrepreneurial Motivation and Need for Achievement - Entrepreneurs Skills and Competencies - Entrepreneurial Personality - Characteristics of Successful, Entrepreneur – Knowledge and Skills of Entrepreneur- Entrepreneurship – The Indian Scenario - Case Study of Successful Entrepreneurs in India.

UNIT III	SUSTAINABILITY INNOVATION AND ENTREPRENEURSHIP	9 hours

Strategy for Commercializing Innovation - Innovation Process - Risks and barriers for introducing products and services - Selecting a Strategy, setting up the Investment and establishing organization - Evaluating the Costs and impact of the Project- Sustainability Innovation and Entrepreneurship, Types of Sustainable Entrepreneurship, Conditions for Sustainability Innovation, strategic involvement in sustainable development. Sustainability Innovation and Entrepreneurship, Innovation Sustainable Conditions, Innovation: Context and Pattern, SME'S strategic involvement in sustainable development.

UNIT IV	ENTREPRENEURSHIP DEVELOPMENT AND GOVERNMENT	9 Hours

Role of Central Government and State Government in promoting Entrepreneurship - Introductionto various incentives, subsidies and grants - Export Oriented Units - Fiscal and Tax concessions available. Role of following agencies in the Entrepreneurship Development - District Industries Centers (DIC), Small Industries Service Institute (SISI), Entrepreneurship Development Institute of India (EDII), National Institute of Entrepreneurship & Small Business Development (NIESBUD), National Entrepreneurship Development Board (NEDB).

UNIT V	INNOVATION ENTREPRENEURSHIP AND BUSINESS MODELS	9 hours

Introduction to Innovation - Creativity, Invention and innovation - Types of Innovation – Relevance of Technology for Innovation - Attributes and Characteristics of a successful Entrepreneur - Exploration of business models for material efficiency services- Business Models and value proposition, Business Model Failure: Reasons and Remedies, Incubators : Business Vs

Technology, Managing Investor for Innovation , Future markets and Innovation needs for India.
TOTAL: 45 hours

TEXT BOOKS

iii. Vasant Desai, A. G. Parasher, and D. M. Pestonjee , Indian Models of Entrepreneurship: Opportunities and Challenges, Himalaya PublishingHouse, 2023.

iv. Donald F. Kuratko, Entrepreneurship: Theory, Process, Practice with MindTap, Cengage Learning, 11th Edition, 2022.

REFERENCE BOOKS

1. Shishir Gupta , The Essentials: A Step by Step Guide for Entrepreneurs, Kindle Edition StartupLanes.com; 1 Edition, 2017
2. P. Narayana Reddy, Entrepreneurship – Text and Cases, Cengage Learning, 1st Edition, 2010.
3. Poornima M Charantimath, Entrepreneurship Development and Small Business Enterprises, Pearson Education; 2nd Edition, 2014.
4. Thomas Grebel, Entrepreneurship: A New Perspective, Routledge; 1st Edition,2015.

WEB LINKS

- https://www.krmangalam.edu.in/10-effective-ways-to-develop-your-entrepreneurship-skills/
- https://www.griet.ac.in/cls/Entrepreneurship%20Skills.pdf
- https://aicontentfy.com/en/blog/evolution-of-entrepreneurship-look-into-its-rich-history

COURSE OUTCOMES

CO1	Identify sources of opportunities and development of the skills so as to analyze these opportunities for entrepreneurship.	**K2**
CO2	Describe the concept and overview of entrepreneurship with a view to enhance entrepreneurial skills.	**K2**
CO3	Examine new vistas of entrepreneurship in 21st century environment to generate innovative business ideas.	**K4**
CO4	Formulate how entrepreneurship can help shape one's career	**K4**
CO5	Summarize evaluate different theories of entrepreneurship and the characteristics of Indian entrepreneurs.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-	-	-	-	2
CO2	2	-	-	3	1	-	-	-	-	-	2

CO3	2	-	-	3	1	-	-	-	-	-	2
CO4	2	-	-	3	1	-	-	-	-	-	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS--	ENTREPRENEURIAL MARKETING	3	0	0	3

COURSE OBJECTIVES

- To provide students with a thorough understanding of the fundamental concepts and principles of marketing within an entrepreneurial context.
- To illustrate the unique challenges and opportunities faced by entrepreneurial ventures in the marketing landscape.
- To understand the importance of branding and positioning in establishing a new business in the market.
- To explore the use of social media, SEO, content marketing, and analytics in driving business growth.
- To explore creative ways to maximize marketing impact with minimal expenditure.

UNIT I	INTRODUCTION TO ENTREPRENEURIAL MARKETING	9 hours

Overview of entrepreneurial marketing - Characteristics of entrepreneurial ventures - Significance of Entrepreneurial Marketing - Importance of marketing in startups - Entrepreneurship ecosystem and trends - Market analysis for startups - Identifying target markets and customer segments.

UNIT II	BUILDING THE ENTREPRENEURIAL BRAND	9 hours

Branding strategies for startups - Positioning and differentiation - Creating a compelling value proposition - The importance of customer segmentation - Understanding customer value - Targeting using effectuation - Developing a positioning statement - Validation: initial customer feedback and - iteration - Using technology push or market pull.

UNIT III	MARKETING STRATEGIES	9 hours

Marketing strategies for Entrepreneurs- Relationship Marketing- one to one Marketing –Viral Marketing – Digital Marketing - Introduction to growth hacking - Search Engine Optimization (SEO) - Social media marketing for startups - Customer acquisition strategies - Customer relationship management (CRM) - Customer lifetime value (CLV)

UNIT IV	MARKETING METRICS AND ANALYTICS	9 hours

Marketing and sales plan - Marketing analytics tools and techniques - Iterative marketing and A/B testing - Key performance indicators (KPIs) - Content of the plan - Marketing instruments - Product: designing a product application and product line – Modern approaches of product design.

UNIT V	PRODUCT DEVELOPMENT AND INNOVATION	9 hours

Product-market fit - Lean startup methodology - Minimum Viable Product (MVP) development - Funding and Pitching - Marketing in fundraising efforts - Crafting a compelling pitch deck - Investor relations and communication.
TOTAL: 45 hours

TEXT BOOKS

1. Zubin Sethna, Rosalind Jones, and Paul Harrigan, Entrepreneurial Marketing: Global Perspectives, SAGE Publications, 2nd Edition, 2020.
2. Frederick G. Crane, Marketing for Entrepreneurs: Concepts and Applications for New Ventures, , SAGE Publications, 3rd Edition, 2021.
3. David Meerman Scott, The New Rules of Marketing and PR :How to Use News Releases, Blogs, Podcasting, Viral Marketing and Online Media to Reach Buyers Directly,, Wiley Publication, 8th Edition, 2020

REFERENCE BOOKS

v. Eric Ries, The Lean Startup, Crown Publication, Unabridged, Edition,2016.
2. Nir Eyal ,Hooked: How to Build Habit-Forming Products, Portfolio Penguin, Penguin Group (USA) , 2014

WEB LINKS

1. https://www.coursera.org/learn/marketing-digitalOnline
2. https://hbr.org/topics/marketing
3. https://www.socialmediaexaminer.com/
4. https://blog.hubspot.com/marketing/author/neil-patel

COURSE OUTCOMES

CO1	Express a comprehensive understanding of entrepreneurial marketing principles and how they differ from traditional marketing.	**K2**
CO2	Practice and implement strategic marketing plans tailored to the unique needs of entrepreneurial ventures.	**K3**
CO3	Examine and manage a strong brand identity and effectively position products or services in the market.	**K4**
CO4	Design digital marketing tools and techniques, including social media, SEO, and analytics, to enhance marketing efforts and drive business growth	**K4**
CO5	Measure critical thinking and problem-solving skills in addressing marketing challenges faced by entrepreneurial ventures.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	3	1	-	-			-	2
CO2		1		2	2	1		1	1	2	
CO3	2	2	1	1	3	2	1	2	2	1	2
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

ELECTIVE COURSE

GENERAL MANAGEMENT

24EMBS--	STRATEGIC MANAGEMENT OF SERVICES	3	0	0	3

COURSE OBJECTIVES

- Understand the unique characteristics of service industries and their implications forstrategic management.
- Analyze the competitive landscape of service markets and identify key success factor
- Develop critical thinking and decision-making skills necessary for effective strategicmanagement in service contexts.

UNIT I	INTRODUCTION	9 hours

Overview of service industries -Characteristics of services - Challenges and opportunities in service management -Generic competitive strategies - Differentiation, Cost leadership,Focus - Blue Ocean Strategy for service industries- Service innovation and new service development.

UNIT II	STRATEGIC PLANNING AND IMPLEMENTATION	9 hours

Strategic planning process for service organizations - Strategy implementation and organizational structure - Strategic leadership in service contexts - Service quality dimensions and measurement - Service recovery and customer retention strategies - Customer experience management in services.

UNIT III	STRATEGIC ANALYSIS FOR SERVICE ORGANIZATIONS	9 hours

External environment analysis - PESTEL - Industry analysis - Internal analysis - Resource-based view - Value chain analysis -SWOT analysis for service organizations - Strategic Groups and Competitive Positioning - Dynamic Capabilities and Innovation in service sector - Digital transformation in service industry.

UNIT IV	SERVICE OPERATIONS MANAGEMENT	9 hours

Service process design and improvement - Capacity management in services - Managing service supply chains -Digital Technologies Reshaping Service Operations: Overview of digital technologies and their applications in service operations - Managing multi-channel service delivery - Agile methodologies applied to service operations for rapid adaptation to changing customer needs and market conditions.

UNIT V	GLOBAL STRATEGY IN SERVICES	9 hours
Internationalization strategies for service firm - Cultural considerations in global service management - Managing global service networks - Case Studies		
TOTAL : -- 45 hours		

TEXT BOOKS

1. Gregory G. Dess, Alan B. Eisner, Strategic Management: Text & Cases,Mc Graw Hill, 9th Edition, 2021.

2. JochenWirtz, Christopher Lovelock, Heikki J. Koskela , Strategic Management of Services: Concepts, Cases and Readings, Pearson Education, 2021

3. Valarie A. Zeithaml, Mary Jo Bitner, Dwayne D. Gremler , Services Marketing: People, Technology, Strategy, McGraw-Hill Education, 8th Edition,2020.

REFERENCE BOOKS

1. Michael A. Hitt, R. Duane Ireland, Robert E. Hoskisson,Strategic Management: Concepts and Cases ,Cengage Learning,14th Edition. 2024.

2. James A. Fitzsimmons, Mona J. Fitzsimmons, Sanjeev Bordoloi, Service Management: Operations, Strategy, Information Technology, McGraw- Hill Education 9th Edition.2021.

WEBLINKS

- www.investopedia.com/terms/s/strategy.asp
- www.mckinsey.com/business-functions/strategy-and-corporate-finance
- https://www.strategicmanagementinsight.com/

COURSE OUTCOMES

CO1	Explain and compare various perspectives of strategic management services	**K 2**
CO2	Understand the strategies for customer management services	**K 2**
CO3	Analyze the concepts of internal, external and digital transformations	**K 4**
CO4	Test the different methodologies of strategic management services.	**K 4**
CO5	Explain international strategies in service management	**K 6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	2	2	1	1	3	2	1	2	2	1	2
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

24EMBS--	DESIGN THINKING	3	0	0	3

COURSE OBJECTIVES

- To describe the concepts of Design Thinking , its stages and framework.To discuss the purpose of design thinking & its importance
- To examine and analyze the Phases of Design Thinking
- To enable adoption of Design thinking in organizations

UNIT I	INTRODUCTION TO DESIGN THINKING	9 hours

Understanding the basic concepts of Design Thinking - Theory and Practice in design thinking- Tools for design thinking -Stages of Design Thinking – Factors affecting and influencing design thinking- types of design-product design-system design-service design – design framework – principles of design thinking

UNIT II	PURPOSES OF DESIGN THINKING	9 hours

Inspiration (Problem Framing) – Ideation (Problem Solving) – Immersion (Solution Testing) – Purposes of Design Thinking – Reframe opportunity- Rediscover your user deep needs – Refresh Solutions and Innovative Ideas – Reaffirm user needs – Review Activities and Strategies

UNIT III	PHASES OF DESIGN THINKING – I , II & III	9 hours

Phase I – EXPLORE – STEP Analysis – Strategic Priorities – Activity System – Stakeholder Mapping – Opportunity Framing - Phase II – EMPATHISE – Observations – Need finding – User Personas – Phase III – EXPERIMENT – Ideation – Prototyping.

UNIT IV	PHASES OF DESIGN THINKING – IV & V	9 hours

Phase IV – ENGAGE – Story Boarding – Co- Creation – Phase V – EVOLVE – Concept Synthesis Strategic Requirements – Evolved Activity Systems – Quick wins

UNIT V	ADOPTION OF DESIGN THINKING	9 hours

A Design Journey-Designers and the Design Thinking “Fad”-Four Case Studies in Design Thinking-Why Organizations Implement Design Thinking-The Three Tensions of Design Thinking in Organizations- Tension of Inclusion – Tension of Disruption -Tension of Perspective

TOTAL: - 45 Hours

TEXT BOOKS

1. Sharon Boller, Laura Fletcher, Design Thinking for Training and Development - Creating Learning Journeys That Get Results, Association for Talent Development, 1st Edition, 2020.
2. Isabell Osann, Lena Mayer, Inga Wiele, The Design Thinking Quick Start Guide: A 6-Step Process for Generating and Implementing Creative Solutions, Wiley Pblication,1st Edition, 2020.

REFERENCE BOOKS

1. Lee Chang Hwa, Jason Leow, Jun Lau & Angelo Ho, Design Thinking – The Guide Book , Royal Civil Service Commission, Singapore , 1st Edition, 2017.
2. David Dunne, Design Thinking at work, How Innovative Organizations are embracing Design, University of Toronto Press,1st Edition, 2018.

WEB LINKS

1. https://www.ideou.com/pages/design-thinking?srsltid=AfmBOorcp_hYidtCifWMPCMKFNEd4mEONEtb5r-3n3UFL3CVDOdXj7FZ
2. https://www.interaction-design.org/literature/article/5-stages-in-the-design-thinking-process
3. https://www.interaction-design.org/literature/article/design-thinking-get-a-quick-overview-of-the-history?srsltid=AfmBOoqIlaW33R2ODDOa6m3obtBV9H-MYdke1J4751aShnh9payICcaR.
4. https://www.rcsc.gov.bt/wp-content/uploads/2017/07/dt-guide-book-master-copy.pdf

COURSE OUTCOMES

CO1	Outline the tools and frame work of Design Thinking	**K1**
CO2	Describe the purposes of Design Thinking	**K2**
CO3	Interpret he Explore, Empathise &Experiment Phases of Design Thinking	**K3**
CO4	Examine the Engage & Explore Phases of Design Thinking	**K5**
CO5	Value a Design Thinking Culture in organisations	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	1	
CO4	1	3	2		2	3	2	3	3	3	1
CO5		1	3	-	1	2	3	2	2	2	

24EMBS--	INDIAN KNOWLEDGE SYSTEM	3	0	0	3

COURSE OBJECTIVES

1. To Explain the historicity of Indian Knowledge System
2. To familiarize the foundational concepts, texts, and practices of Indian knowledge systems,
3. To examine historical development, cultural significance, and contemporary relevance.

UNIT I	INTRODUCTION TO INDIAN KNOWLEDGE SYSTEM	9 hours

An overview of Indian Knowledge System (IKS): Importance of Ancient Knowledge - Definition of IKS - Classification framework of IKS - Unique aspects of IKS. The vedic corpus:Vedas and Vedangas - Distinctive features of vedic life.

UNIT II	INDIAN PHILOSOPHICAL SYSTEM	9 hours

Different schools of philosophy. Wisdom through the ages: Puranas – Ithihasas - Niti shastras - Subhasitas. Linguistics: Components of a language - Paṇini's work on Sanskrit grammar - Phonetics in Sanskrit and the role of Sanskrit in natural language processing. The knowledge triangle: Prameya, Pramaṇa, Saṃsaya - Framework for establishing valid knowledge - Potential fallacies in the reasoning process.

UNIT III	SALIENT FEATURES OF INDIAN NUMERICAL SYSTEM	9 hours

Salient features of the Indian numeral system - Importance of decimal representation - The discovery of zero and its importance - Unique approaches to represent numbers. Unique aspects of Indian mathematics - Great mathematicians and their significant contributions in the area of arithmetic, algebra, geometry, trigonometry, combinatorial problems in Chandaḥ-sastra of Pingala, binary mathematics and Magic squares in India. Highlights of Indian Astronomy:

UNIT IV	ASTRONOMY, INDIAN SCIENCE AND TECHNOLOGY	9 hours

Historical development of astronomy in India - The Celestial Coordinate System - Astronomical terminologies - Equinotical points, precession of eqinoxes, movable and fixed zodiac - Elements of the Indian Calendar - Panchanga - Indian science and technology heritage - Metals and metalworking - Mining and ore extraction

UNIT V	PHYSICAL STRUCTURES AND ETHICS IN INDIA	9 hours

Irrigation and water management - Dyes and painting technology - Surgical Techniques - Shipbuilding - Sixty-four art forms (64 Kalas) - Status of indigenous science and technology. Governance and ethics in Indian Tradition - Case Studies

TOTAL: -- 45 hours

TEXT BOOKS

1. Dr.ShaikhTaufiq Khalil, Indian Knowledge System: Arthashastra By Kautilya : "Exploring Ancient Indian Wisdom: Unveiling Arthashastra by Kautilya, Notion Press, 2023.

2. B. Mahadevan, Vinayak Rajat Bhat, Nagendra Pavana R.N., Indian Knowledge System, Notion Press, 2023

3. Dr.Alka Agarwal , 'Indian Knowledge System : Know your own country' Redshine Publication in the year (2024)

REFERENCE BOOKS

1. Dr.Buddhadev Chandra, Dr.Sourav Ghosh, Indian Knowledge System and its Applications, Global netin (2024)
2. Balkrishna Rai, Sunita Joshi Kathuria, Saroj Sharma, Scientific Basis Of Indian Knowledge System , Shipra Publications , 1st Edition, 2023.

WEBLINKS

1. www.iksindia.org
2. www.education.gov.in
3. www.mmc.ugc.in
4. www.mygov.in

COURSE OUTCOMES

CO1	Understand the foundational concepts and key texts of Indian knowledge systems.	**K 2**
CO2	Indicate the Indian Philosophical System	**K 2**
CO3	Analyse the historical development and contributions of Indian mathematics	**K 4**
CO4	Assemble the interdisciplinary connections between astronomy, Indian Science and Technology	**K 4**
CO5	Develop the framework of Indian thoughts in the ethical system.	**K 5**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOME

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	2	2	1	1	3	2	1	2	1	1	2

CO4	2	2	1	1	3	2	1	2	1	1	2
CO5	1	3	2		2	3	2	3	2	2	1

24EMBS--	UNDERSTANDING SELF: INDIAN PERSPECTIVE	3	0	0	3

COURSE OBJECTIVES

- Reflect on their personal identity, values, and beliefs to gain a deeper understanding of them.
- Analyze their personality traits and characteristics using psychological frameworks.
- Identify and manage their emotions and motivations effectively.
- Explore their strengths, weaknesses, and areas for personal growth.
- Apply self-awareness techniques to enhance decision-making, goal-setting, and interpersonal relationships.

UNIT I	INTRODUCTION	9 hours

Definition of personal identity, Factors influencing personal identity (e.g., culture, upbringing, experiences), Self-reflection exercises on identity, values, and beliefs, Role of self-awareness in personal development, Personality–Definition and Determinants, Personality Traits, Personality Attributes, Importance and factors influencing perception, perception and making judgement about others.

UNIT II	INDIVIDUAL BEHAVIOR	9 hours

Managing Emotions and Motivations, Importance of emotional intelligence (EQ) in self- awareness Recognizing and regulating emotions, Understanding intrinsic and extrinsic motivations Goal-setting strategies based on personal motivations Reflection on individual personality traits and characteristics, Learning and its application, Learning Theories, Motivation– Importance–Types-Contemporary theories in motivation.

UNIT III	ATTITUDE AND VALUES	9 hours

Attitude-Characteristics–Components–Formation–changingAttitudes-Values-Power–Politics
Ethics of power and politics-Conflict-Negotiation-situational factors favouring negotiation-Negotiation and conflict resolution.

UNIT IV	UNDERSTANDING SELF	9 hours

Misbehavior –Types–Emotions– Emotional Labour – Emotional Intelligence –Theories-SelfEsteem Self-Knowledge Identifying personal strengths and weaknesses, SWOT analysis(Strengths, Weaknesses, Opportunities, Threats), Strategies for leveraging strengths and overcoming weaknesses, Growth mindset vs. fixed mindset.

UNIT V	APPLYING SELF-AWARENESS IN DAILY LIFE	9 hours
Integrating self-awareness into decision-making processes, cultivating mindfulness and self-compassion Enhancing interpersonal relationships through self-awareness, creating a personal development plan Stress–The stress experience–Work stress model–Stressors–Sources of stressors-Ways to overcome stress –Stress management–Individual strategies – Stress and performance.		
TOTAL: - 45 hours		

TEXT BOOKS

1. Stephen P. Robbins, Timothy A. Judge, and Neharika Vohra, Organizational Behavior, Pearson Education, 19th Edition,2023.

2. Jason A. Colquitt, Jeffery A. LePine, and Michael J. Wesson, Organizational Behavior: Improving Performance and Commitment in the Workplace, McGraw-Hill Education, 8th Edition,2023.

REFERENCE BOOKS

1. Mary Uhl-Bien, Ronald F. Piccolo, and John R. Schermerhorn Jr.,Organizational Behavior, Wiley, 14th Edition,2023.

2. Ricky W. Griffin and Gregory Moorhead, Organizational Behavior: Managing People and Organizations, Cengage Learning, 13th Edition, 2023.

WEBLINKS

1. https://us.sagepub.com/en-us/nam/principles-and-practices-of-management-and-organizational-behaviour/book251882#:~:text=Principles%20and%20Practices%20 of%20Management%2 0and%20 Organizational%20Behaviour %20provides%20a,performance%20in%20the%20gl obal%20era.

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

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

COURSE OUTCOMES

CO1	Explain the evolution of Management thought and interpret the OB Model	**K 2**
CO2	Identify the functions of Management	**K 2**
CO3	Illustrate the foundations of organizational behaviour	**K 3**
CO4	Examine the motivation and group behaviour of the employees in the organisations	**K 4**
CO5	Predict the process of communication, classify leadership styles and analyse organizational change	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4		1		2	2	1		1	1	2	
CO5		1	3	-	1	2	3	2	2	3	

ELECTIVE COURSE - OPERATIONS MANAGEMENT

24EMBS--	QUALITY TOOLKIT FOR MANAGERS	3	0	0	3

COURSE OBJECTIVES

- To examine the Quality concept, principles, and its various tools.
- To understand the statistical process control for the implementation of quality management

UNIT I	INTRODUCTION	9 hours

Evolution of Quality Management-Concepts of Product and Service Quality-Dimensions of Quality-Quality Philosophies-Deming's, Jurans, Crosby-Quality Cost-Quality Leadership.

UNIT II	STATISTICAL PROCESS CONTROL	9 hours

Introduction – Pareto Analysis – 7QC Tools-Cause and Effect Diagram – Checklist or Check sheet – Process Flow Chart – Histogram – Scatter Diagram – Chance and Assignable Causes – Control Charts for Variables – Process Capability Analysis such as Cp and Cpk– Control Charts for Attributes.

UNIT III	MANAGEMENT TOOLS	9 hours

Introduction – Affinity Diagram [KJ method] – Interrelationship Diagram – Tree Diagram Prioritization Matrix – Matrix Diagram – Process Decision Program Chart – Activity Network Diagram-SERVQUAL Model with Application.

UNIT IV	TOOLS AND TECHNIQUES	9 hours

Plan-Do-Check-Act (PDCA) Cycle – Quality Circles – Benchmarking – Quality Function Deployment (QFD) – Failure Mode and Effect Analysis (FMEA) – Robust Design and Taguchi Method.

UNIT V	SIX SIGMA	9 hours

Evolution – TQM vs. Six Sigma – What is Six Sigma – Six Sigma methodologies Such as DMAIC, DFSS – Six Sigma Belts.

TOTAL: 45 hours

TEXT BOOKS

1. Gurucharan Raghunathan, Lokesh Kannaiyan, Product Management Simplified, Nation Press, 3rd Edition, 2021.

2. Suganthi, L. and Samuel, A., Total Quality Management, Prentice Hall (India) Pvt. Ltd.,PHI Learning Pvt.Ltd, ISBN : 8120326555, 9788120326552 , 1st Edition, 2004.

REFERENCE BOOKS

1. Gabriel Steinhardt, The Product Managers Toolkit, Springer, 2nd Edition 2017
2. David Connaughton, Every Managers Lean/Six Sigma Quick Reference and Toolkit For Optimum

Performance, Createspace Independent Pub , 2014.

WEBLINKS

1. https://www.scribd.com/document/383519351/Total-Quality-Management-By-Dr-V-Jayakumar-Dr-R-Raju-pdf
2. http://rmkec.ac.in/tmp/mech/Contents/totalqualitymanagement.pdf

COURSE OUTCOMES

CO1	Identify the steps involved in implementing of quality management.	**K1**
CO2	Explain the implementation of SPC tools.	**K2**
CO3	Demonstrate the various management tools used in operation management	**K3**
CO4	Apply knowledge on the various techniques of quality management.	**K3**
CO5	Explain the implementation of SPC tools using Six Sigma methodologies.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4		1		2	2	1		1	1	2	
CO5		1	3	-	1	2	3	2	2	3	

24EMBS--	OPERATIONS STRATEGY	3	0	0	3

COURSE OBJECTIVES

- To Provide Foundation Knowledge about Operations Strategy and Approaches.
- To describe the various Performance Objectives for implementation of operations strategy

UNIT I	INTRODUCTION	9 hours

Introduction – Strategy: Definition, Levels – Operations and Strategy – Operations Management Vs. Operations Strategy – Four perspectives on Operations Strategy – Decision areas: Structural and Infrastructural – The Process of Operations Strategy-Operations for Strategic Advantage.

UNIT II	PERFORMANCE OBJECTIVES	9 hours

Introduction – Quality: Hard, Soft – Speed: Time – Dependability: Time – Flexibility: Type – Internal and external benefits – The Operations Strategy Matrix – Performance Objectives and Competitive Factors – Product/Service Life Cycle on Performance Objectives-Managing Risk in Operations.

UNIT III	NEW APPROACHES	9 hours

Total Quality Management (TQM): Fit into Operations Strategy – Lean Manufacturing: Fit into Operations Strategy – Business Process Reengineering (BPR): Fit into Operations Strategy – Six Sigma: Fit into Operations Strategy-Betting on the Unknown: Newsvendor Model

UNIT IV	DECISION AREAS – I	9 hours

Capacity Strategy: Levels of capacity decision, Factors influencing the overall level of capacity, Location of capacity – Purchasing and Supply Strategy: Supply Networks, Do (Make) or Buy? The vertical integration decision-Newsvendor Applications: Managing Biases in Operational Decisions.

UNIT V	DECISION AREAS – II	9 hours

Process Technology Strategy: Classification, Three dimensions of process technology – Improvement Strategy: Breakthrough Improvement and Continuous Improvement, The Importance–Performance Matrix-More of Less or Less of More: Make to Stock v. Make to Order Strategies.

TOTAL: 45 hours

TEXT BOOKS

1. Nigel Slack, Michael Lewis, Mohita Gangwar Sharma - Operations Strategy, Pearson Education, 5th Edition, (2018).
2. Chandrasekaran N. , Chandiran P, Operation Strategy, Cengage . 1st Edition, 2020.

REFERENCE BOOKS

1. David Walters. Operations Strategy, Palgrave Macmillan Publisher, 1st Edition, 2015
2. JA Van Mieghem and Gad Allon. Operations Strategy: Practicesand Principles, Dynamic Ideas LLC, 2nd Edition, 2015.

WEBLINKS

1. https://ocw.mit.edu/courses/sloan-school-of-management/15-769-operations-strategy-fall- 2010/lecture-notes/
2. https://www.vssut.ac.in/lecture_notes/lecture1429900757.pdf

COURSE OUTCOMES

CO1	Understand the process of operations strategy	**K2**
CO2	Explain the fundamental concepts of Performance Objectives.	**K2**
CO3	Appraise how the lean manufacturing fit into Operations Strategy	**K4**
CO4	Predict the decision areas of Purchasing and Supply Strategy.	**K3**
CO5	Evaluate the decision areas of Improvement Strategy	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	3	1	-	-			-	2
CO2	2	-	-	3	1	-	-			-	2
CO3	2	2	1	1	3	2	1	2	2	1	2
CO4		1		2	2	1		1	1	2	
CO5		1	3	-	1	2	3	2	2	2	

24EMBS--	MANAGEMENT OF MANUFACTURING SYSTEMS	3	0	0	3

COURSE OBJECTIVES

- To explain for satisfaction of the customer who wants. Every commercial organization is to focus on making profit.
- To explain the world class manufacturing strategy within these enterprises because they make their products themselves.

UNIT I	INTRODUCTION	9 hours

Management of Manufacturing Systems: An Overview – Manufacturing Systems: Type – Challenges – Evolution of Manufacturing Systems – Importance of manufacturing for technological and Socioeconomic developments– Nine laws in Manufacturing – Various Methodologies.

UNIT II	CELLULAR MANUFACTURING SYSTEMS	9 hours

Principle – Group Technology (GT) – Cellular Manufacturing Systems – Layout – Cell Design: formation, operator allocation, sequencing and scheduling – Part Classification and Coding – Production flow analysis.

UNIT III	JUST-IN-TIME	9 hours

Evolution of Just-In-Time – Principle – Seven wastes – Just-In-Time (JIT) – Kanban or Pull, System – CONWIP – Tools and Techniques- Role of basic elements in JIT and Critical Success factors.

UNIT IV	SYNCHRONOUS MANUFACTURING	9 hours

Synchronous Manufacturing or Theory of Constraints – Principle – Definition of Goal by Goldratt – Role of a constraint – Types of resources: bottlenecks and capacity constrained resource – Drum Buffer Rope System.

UNIT V	ADVANCED	9 hours

Concept of Flexible Manufacturing System (MS) – Flexibility – Types: Single machine cell, Flexible manufacturing cell, Flexible manufacturing system – Components – Loading, Multiple batches and change over times- Applications – Benefits -Implementation issues.

TOTAL: 45 hours

TEXT BOOKS

vi. Rui Yang Maiying Zhong, Machine Learning-Based FaultDiagnosis for Industrial Engineering Systems, CRC Press, Illustration Edition, 2022.

2. Kaushik Kumar, Divya Zindani, J.Paulo Davim Digital Manufacturing and Assembly Systems in Industry 4.0 CRC Press, 1st Edition,2021.

3. Richard J. Schonberger, World Class Manufacturing, Free Press Publication, 1st Edition, 2008.

REFERENCE BOOKS

1. Richard J. Schonberger, World Class Manufacturing: The NextDecade: Building Power, Strength, and Value, Free Press Publication, 1st Edition,2013.
2. R.P.Mohanty & S.G.Deshmukh, Advanced Operations Management, Excel Books, 1st Edition, 2013.

WEB LINKS

1. https://theintactone.com/2019/12/10/kmbom05-management-of-manufacturing-system/
2. https://www.vssut.ac.in/lecture_notes/lecture1429900757.pdf
3. https://backup.pondiuni.edu.in/storage/dde/dde_ug_pg_books/BBA%20III%20%20BBA%203004%20Production%20and%20Materials%20Management.pdf

COURSE OUTCOMES

CO1	Describe the types of Manufacturing style.	**K2**
CO2	Explain manufacturing processes to identify bottlenecks, inefficiencies, and opportunities for improvement using techniques.	**K2**
CO3	Examine the knowledge about the principle and wastages of JIT.	**K4**
CO4	Analyze the role of manufacturing systems within the broader supply chain context.	**K4**
CO5	Justify emerging technologies and automation solutions in manufacturing to improve productivity, flexibility, and competitiveness.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	1	1	-	-			-	2
CO2	2	-	-	1	1	-	-			-	2
CO3	2	2	1	3	3	2	1	2	2	1	2
CO4	2	2	1	3	3	2	1	2	2	1	2
CO5		1	3	1	1	2	3	2	2	3	

24EMBS--	SOURCING MANAGEMENT	3	0	0	3

COURSE OBJECTIVES

- To explain the strategic role of sourcing management in creating and enhancing a firm's competitive advantages.
- To understand the sourcing activities, supplier management.
- To learn about the global sourcing management.
- To learn about the latest trends in sourcing.

UNIT I	INTRODUCTION	9 hours

Sourcing – Sourcing management: Concept, Functions, Application – Supplier Evaluation and Selection (Concepts): Supplier Rating – Rating criteria – Factors

UNIT II	GLOBAL SOURCING	9 hours

Introduction to Global Sourcing – Trends in Global Sourcing – Global Sourcing – Supply Chain Localization and Reshoring- Negotiation – Performance Measurement and Evaluation (Concepts and Metalcraft Case)

UNIT III	SUPPLY CHAIN	9 hours

Supply Chain: The Role of Sourcing Outsource: Single, Dual & Multiple sourcing arrangements. Tendering – Open, Restricted and Negotiated approaches – Components – Key Process- Physical SCM vs Financial SCM, Effectiveness of financial SCM, Financial SCM-Importance, Objectives, Benefits (wrt consumers and companies) — Third-party logistics (3PL): Service.

UNIT IV	ANALYTICAL TOOLS	9 hours

Analytical Tools in Sourcing (Total Cost of Ownership (Wire Harness case), Pricing Analyses (Plastic Shield case)) – Analytical Tools in Sourcing (Foreign Exchange Currency Management, Learning Curve, Quantity Discount Models) – Integrative Pacific Systems Case (Supplier Scorecard, Sourcing Risk, Supplier Financial Analysis)

UNIT V	RISKS & TRENDS	9 hours

Sourcing Risk Management (Concepts) – Electronic Sourcing - Agile Sourcing – Single-Sourcing Dependency - Sustainability and Sourcing (Green Sourcing; Walmart-China Case)

TOTAL: -- 45 hours

TEXT BOOKS

1. Justin Ashlock, Sourcing and Procurement with SAP S/4HANA, Rheinwerk Publishing, 3rd Edition, 2024

2. Selvan Athishtaraj.V, Basic of Strategic Sourcing, Notion Press,1st Edition, 2020.

REFERENCE BOOKS

1. Linda Cohen & Allie Young , Multi-Sourcing Moving Beyond Outsourcing to Achieve Growth and Agility , Harvad Business Review, Gartner Inc.,Illustrated Edition, 2005.
2. Olivier Bruel, Strategic Sourcing Management: Structural and Operational Decision-making Kogan Page; 1st Edition, 2016

WEB LINKS

1. https://theintactone.com/2019/12/10/kmbom04-sourcing-management/
2. https://www.msuniv.ac.in/Download/Pdf/2e361eb8504c4b4
3. https://examupdates.in/materials-management-notes/

COURSE OUTCOMES

CO1	State the selection of supplier.	**K1**
CO2	Explain the Global Sourcing.	**K2**
CO3	Indicate the Sourcing in Supply Chain. to set priorities within the complex supply chain management topic and to disclose the problems contained therein	**K3**
CO4	Outline the knowledge about the Analytical Tools in Sourcing.	**K4**
CO5	Describe the new trends in the sourcing and sustainability	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	--	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

SEMESTER IV

24CMBS41	UNIVERSAL HUMAN VALUES	4	0	0	4

COURSE OBJECTIVES

- To help the students appreciate the essential complementarily between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirationsof all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutuallyenriching interaction with Nature.

UNIT I	INTRODUCTION TO VALUE EDUCATION	12hours

Right Understanding; Relationship and Physical Facility; Understanding Value Education; Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity -the Basic Human Aspiration-Current Scenario and Method to Fulfill the Basic Human Aspirations.

UNIT II	HARMONY IN THE HUMAN BEING	12hours

Understanding Human being as the Co-existence of the Self and the Body, distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health.

UNIT III	HARMONY IN THE FAMILY AND SOCIETY	12hours

Harmony in the Family – the Basic Unit of Human Interaction; 'Trust' – the Foundational Value in Relationship; 'Respect' – as the Right Evaluation: Other Feelings, Justice in Human-

to-Human Relationship; Understanding Harmony in the Society; Vision for the Universal Human Order.		
UNIT IV	**HARMONY IN NATURE & EXISTENCE**	**12 hours**
Understanding Harmony in the Nature; Inter-connectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature. Realizing Existence as Co-existence at All Levels. The Holistic Perception of Harmony in Existence. Exploring Co-existence in Existence.		
UNIT V	**IMPLICATIONS OF THE HOLISTIC UNDERSTANDING – A LOOK AT PROFESSIONAL ETHICS**	**12hours**
Definitiveness of (Ethical) Human Conduct; A Basis for Humanistic Education, Humanistic Constitution and Universal Human Order; Competence in Professional Ethics; Holistic Technologies, Production Systems and Management Models; Strategies for Transition towards Value-based Life and Profession.		
TOTAL : -- 60 hours		

TEXT BOOKS

vii. Dr. Kuldeep S. Sharma, Dr. Sarveen Kaur Sachdeva, Universal Human Values,Books Clinic Publishing,1st Edition, 2023.

viii. Dr. Saroj Kumar, Prof. Sheenu Nayyer, Universal Human Values and Professional Ethics, Thakur Publication,1st Edition 2020.

REFERENCE BOOKS

1. Dr. Sujatha, Universal Human Values I, Laxmi Book Publication,1ST Edition, 2024
2. R R Gaur, R Asthana,G P Bagaria Teachers, A Foundation Course in Human Values and Professional Ethics, 2nd Edition, Excel Books, 2019
3. A.N. Tripathi, Human Values, New Age Intl. Publishers, 3rd Edition,2004.

Web Links:

1. https://notionpress.com/read/universal-human-values

2. https://lecturenotes.in/notes/27764-note-for-human-values-and-professional-ethics-2-hvpe-2- by-indrajeet-verma

COURSE OUTCOMES

CO1	Recall holistic vision of life - themselves and their surroundings.	**K1**
CO2	Identify competence and capabilities for maintaining Health and Hygiene	**K2**
CO3	Interpret various problems in life, family,Society and in handling problems with Sustainable Solutions	**K3**
CO4	Inspect the values to their own self in different day-to-day settings in real life and in handling problems with sustainable solutions.	**K4**
CO5	Justify the value of appreciation and aspiration for excellence and gratitude for all.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			-	2
CO3		1		2	2	1		1	1	2	
CO4	2	2	1	1	3	2	1	2	2	1	2
CO5		1	3	-	1	2	3	2	2	3	

24RMBS41	**PROJECT**	**0**	**0**	**20**	**10**

COURSE OBJECTIVES

- The Aim of the final year project is to developstudent's knowledge for solving societal problem.
- It enables students to develop problem solving,analysis, synthesis and evaluation skills.

COURSE OUTCOMES

CO1	Recall and develop deep understanding of the interaction about the research methods	**K1**
CO2	Recognize and solve problems on an executive level and demonstrating critical.	**K2**
CO3	Sketch the general (core) management skills in the chosen area of specialization.	**K3**
CO4	Design strategies to solve business problems and pursue opportunities	**K5**
CO5	Interpret a variety of ways to engage in experiential learning.	**K6**

MAPPING OF COURSE OUTCOMES TO PROGRAM OUTCOMES

	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PSO1**	**PSO2**	**PSO3**
CO1	2	-	-	2		-	-			-	1
CO2	2	-	-	3	1	-	-			--	2
CO3		1		2	2	1		1	1	2	
CO4	1	3	2		2	3	2	3	3	2	1
CO5		1	3	-	1	2	3	2	2	3	