Nutan Maharashtra Vidya Prasarak Mandal's (NMVPM's)

NUTAN MAHARASHTRA INSTITUTE OF ENGINEERING AND TECHNOLOGY (NMIET)

An

Autonomous Institute

Affiliated to Savitribai Phule Pune University

Governing

Post Graduation (MBA) Program

Master of Business Administration

Operation and Supply Chain Management

(With effect from Academic Year 2025 – 27)

Nutan Maharashtra Vidya Prasarak Mandal's (NMVPM's)

NUTAN MAHARASHTRA INSTITUTE OF ENGINEERING AND TECHNOLOGY (NMIET)

An Autonomous Institute from 2025-26

Under Administrative Support - Pimpri Chinchwad Education Trust (PCET)

ESTD - 1998

Course Approval Summary – Board of Studies (MBA)

Sl. No.	Approved By	Signature and Stamp / Authority
1	Chairman, Board of Studies, MBA	HEAD OF THE DEPARTMENT Master Of Business Administration Nutan Maharashtra Inst Of Engg & Tech Talegaon Dabhade, Pune - 410 507
2	Secretary, Academic Council, NMIET, Pune	
3	Chairman, Academic Council, NMIET, Pune	Director Nutan Maharashtra Institute of Engineering & Technology Talegaon Dabhade - 410507

CURRICULUM FRAMEWORK

List of Abbreviations

Sr. No.	Abbreviation	Type of Course
1.	GC	Generic Core
2.	GC	Generic Core with Non-Credit
3.	SC	Specialization Core
4.	SE	Specialization Elective
5.	OJT	On the Job Training
6.	RP	Research Project

Course Wise Credit Distribution

Sr.No	Abbreviation	Type of Course	No. of Courses		Total Course	Credits	
			III Sem	IV Sem		Credit Points	% of Credits
1	**GC**	**Generic Core**	**1**	**2**	**3**	**8**	**15%**
i	**GC**	**Generic Core with Non-Credit**	**1**	**-**	**1**	**0**	**0%**
2	**SC**	**Specialization Core**	**1**	**1**	**2**	**6**	**12%**
i.	**SC OJT**	**On Job Training**	**1**	**-**	**1**	**8**	**15%**
ii.	**SC RP**	**Research Project**	**-**	**1**	**1**	**6**	**12%**
3	**SE**	**Specialization Elective**	**4**	**4**	**8**	**24**	**46%**
Total			**8**	**8**	**16**	**52**	**100%**

ASSESSMENT PARAMETERS

Continuous Assessment (CA) Parameters					
Parameter	**Attendance & Overall Conduct**	**Assignment**	**Group Presentation**	**Case Study Presentation**	**Field Project**
Marks (25)	**5**	**5**	**5**	**5**	**5**

Summative Assessment (SA) Parameters					
Course Credits	**Formative Assessment (FA)**		**Summative Assessment (SA) / Practical**	**Oral / Viva Voce**	**Total Marks**
	Unit Test (UT)	**Continuous Assessment (CA)**			
3 Credit Course	25 Marks	25 Marks	50 Marks	--	**100 Marks**
2 Credit Course	10 Marks	10 Marks	30 Marks	--	**50 Marks**
6 Credit Course	--	100 Marks	--	50 Marks	**150 marks**
OJT Credit (8 Credit)	--	100 Marks	--	100 Marks	**200 Marks**
Audit Course (0 Credit)	--	--	--	--	**Pass/ Not Pass**

CURRICULUM STRUCTURE

Second Year MBA-SEM-III- (Operation & Supply Chain Management)

Type	Sem Code	Course Code	Course	Credits	Examination Schemes				Teaching Scheme [L, T, P]				Marks
					Theory								
					FA (50)		SA (50)		TOTAL				TOTAL
					UT (25)	CA (25)	TH	PR	L	T	P	TOT	
Mandatory	GC – 14	MB25GC-301	Strategic Management	3	25	25	50	-	2	1	1	4	100
Mandatory	GC – 15	MB25GC-302	Cyber Security	**Audit Course (0 Credit)**									AC/NC
Mandatory	SC – 01	MB25SCOP-303	Supply Chain Management	3	25	25	50	-	2	1	1	4	100
	CORE TOTAL		**3**	**6**	**50**	**50**	**100**	**0**	**4**	**2**	**2**	**8**	**200**
Mandatory	OJT (SC)	MB25OJTOP-304	On the Job Training	8	0	100	0	100	0	2	14	16	200
	SIP TOTAL		**1**	**8**	**0**	**100**	**0**	**100**	**0**	**2**	**14**	**16**	**200**
Semester III Specialization Electives - Any 4 Courses to be Opted from the respective elective list													
Elective	SE 01	MB25SEOP-305	Planning & Control of Operation	3	25	25	50	-	2	1	1	4	100
Elective	SE 02	MB25SEOP-306	Productivity Management	3	25	25	50	-	2	1	1	4	100
Elective	SE 03	MB25SEOP-307	Theory of Constraints	3	25	25	50	-	2	1	1	4	100
Elective	SE 04	MB25SEOP-308	Manufacturing Resource Planning	3	25	25	50	-	2	1	1	4	100
Elective	SE 05	MB25SEOP-309	Quality Management Standards	3	25	25	50	-	2	1	1	4	100
Elective	SE 06	MB25SEOP-310	Strategic Supply Chain Management	3	25	25	50	-	2	1	1	4	100
GENERIC ELECTIVE TOTAL			**4**	**12**	**100**	**100**	**200**		**8**	**4**	**4**	**16**	**400**
SEMESTER TOTAL			**8**	**26**	**150**	**250**	**400**		**12**	**8**	**20**	**40**	**800**

L-Lecture, T-Tutorial, P-Practical, UT-Unit Test, FA-Formative Assessment, SA-Summative Assessment,*Exit Policy: Available as a separate document

CURRICULUM STRUCTURE

Second Year MBA-SEM-IV-(Operation & Supply Chain Management)

Type	Sem Code	Course Code	Course	Credits	Examination Schemes				Teaching Scheme [L, T, P]				Marks
					Theory								
					FA (50)		SA (50)		TOTAL				
					UT (25)	CA (25)	TH	PR	L	T	P	TOT	TOTAL
Mandatory	GC – 16	MB25GC-401	Entrepreneurship, Innovation and Design Thinking	3	25	25	50	-	2	1	1	4	100
Mandatory	GC –17	MB25GC-402	Project Management	2	10	10	30	-	1	1	1	3	50
Mandatory	SC – 02	MB25SCOP - 403	Innovation & Entrepreneurship Lab	3	25	25	50	-	2	1	1	4	100
	CORE TOTAL		**3**	**8**	**60**	**60**	**130**	**0**	**5**	**3**	**3**	**11**	**250**
Mandatory	RP	MB25RPOP -404	Research Project	6	0	100	0	50	0	2	10	12	150
	RESEARCH PROJECT TOTAL		**1**	**6**	**0**	**100**	**0**	**50**	**0**	**2**	**10**	**12**	**150**
Semester III Specialization Electives - Any 4 Courses to be Opted from the respective elective list													
Elective	SE 07	MB25SEOP -405	Manufacturing System Analysis & Management	3	25	25	50	-	2	1	1	4	100
Elective	SE 08	MB25SEOP -406	Operation Strategy	3	25	25	50	-	2	1	1	4	100
Elective	SE 09	MB25SEOP -407	Industry 5.0	3	25	25	50	-	2	1	1	4	100
Elective	SE 10	MB25SEOP -408	World Class Manufacturing	3	25	25	50	-	2	1	1	4	100
Elective	SE 11	MB25SEOP -409	Six Sigma for Operation Management	3	25	25	50	-	2	1	1	4	100
Elective	SE 12	MB25SEOP -410	Supply Chain Strategy	3	25	25	50	-	2	1	1	4	100
GENERIC ELECTIVE TOTAL			**4**	**12**	**100**	**100**	**200**		**13**	**4**	**4**	**16**	**400**
SEMESTER TOTAL			**8**	**26**	**160**	**260**	**380**		**20**	**9**	**17**	**39**	**800**

L-Lecture, T-Tutorial, P-Practical, UT-Unit Test, FA-Formative Assessment, SA-Summative Assessment,*Exit Policy: Available as a separate document

Course Syllabus

Second Year MBA. Semester III

Program	MBA (OP)					Semester: III	
Course	Strategic Management					Course Code	MB25GC-301
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 301.1	REMEMBERING	DESCROPE the basic terms and concepts in Strategic Management.
CO 301.2	UNDERSTANDING	EXPLAIN the various facets of Strategic Management in a real-world context.
CO 301.3	UNDERSTANDING	DESCROPE the trade-offs within and across strategy formulation, implementation, appraisal.
CO 301.4	APPLYING	INTEGRATE the aspects of various functional areas of management to develop a strategic perspective.
CO 301.5	ANALYSING	EXPLAIN the nature of the problems and challenges confronted by the top management team and the approaches required to function effectively as strategists.
CO 301.6	CREATING	DEVELOP the capability to view the firm in its totality in the context of its environment.

Course Contents

Unit	Description	Duration [Hrs.]
I	**Understanding Strategy**: Concept of strategy, Levels of Strategy - Corporate, Business and Functional. Strategic Management - Meaning and Characteristics. Distinction between strategy and tactics, Strategic Management Process, Stakeholders in business, Roles of stakeholder in strategic management. Strategic Intent – Meaning, Hierarchy, AttrOPutes, Concept of Vision & Mission - Process of envisioning, Difference between vision & mission. Characteristics of good mission statements. Business definition using Abell's three dimensions. Objectives and goals, Linking objectives to mission & vision. Components of a strategic plan, Analyzing Company's External Environment: Environmental appraisal, Scenario planning – Preparing an Environmental Threat and Opportunity Profile (ETOP). Analyzing Industry Environment: Industry Analysis - Porter's Five Forces Model of competition, Entry & Exit Barriers.	(7+2)
II	**Analyzing Company's Internal Environment**- Resource based view of a firm. Analyzing Company's Resources and Competitive Position - meaning, types & sources of competitive advantage, competitive parity & competitive disadvantage. VRIO Framework, Core Competence, characteristics of core competencies, Distinctive competitiveness. Benchmarking as a method of comparative analysis. Value Chain Analysis Using Porter's Model: primary & secondary activities. Organizational Capability Profile: Strategic Advantage Profile, Concepts of stretch, leverage & fit, ways of resource leveraging – concentrating, accumulating, complementing, conserving, recovering. Portfolio Analysis: Business Portfolio Analysis – BCG Matrix – GE 9 Cell Model.	(7+2)
III	**Generic Competitive Strategies**– Meaning of generic competitive strategies, Low cost, Differentiation, Focus – when to use which strategy. Grand Strategies: Stability, Growth (Diversification Strategies, Vertical Integration Strategies, Mergers, Acquisition & Takeover Strategies, Strategic Alliances & Collaborative Partnerships), Retrenchment – Turnaround, Divestment, Liquidation, Outsourcing Strategies.	(7+2)

IV	**Strategy Implementation**– Barriers to implementation of strategy, Mintzberg's 5 Ps – DelOPerate & Emergent Strategies. Mc Kinsey's 7s Framework. Organization Structures for Strategy Implementation: entrepreneurial, functional, divisional, SBU, Matrix, Network structures, Cellular/ Modular organization, matching structure to strategy, organizational design for stable Vs. turbulent environment, Business Continuity Planning. Changing Structures & Processes: Reengineering & strategy implementation – Principles of Reengineering. Corporate Culture: Building Learning organizations, promoting participation through technique of Management by Objectives (MBO). Strategy Evaluation: Operations Control and Strategic Control - Symptoms of malfunctioning of strategy – Concept of Balanced scorecard for strategy evaluation.	**(7+2)**
V	**Blue Ocean Strategy**- Difference between blue & red ocean strategies, principles of blue ocean strategy, Strategy Canvass & Value Curves, Four Action framework. Business Models: Meaning & components of business models, new business models for Internet Economy– E Commerce Business Models and Strategies – Internet Strategies for Traditional Business Virtual Value Chain. Sustainability & Strategic Management: Startups - growth and reasons for decline. Threats to sustainability, Integrating Social & environmental sustainability issues in strategic management, meaning of triple bottom line, people-planet-profits.	**(7+2)**
	Total	**45**

Suggested Text Book:

1. Strategic Management and Business Policy by Azhar Kazmi, Tata McGraw-Hill
2. Strategic Management by Ireland, Hoskisson & Hitt, Indian Edition, Cengage Learning
3. Crafting and Executing Strategy- The Quest for Competitive Advantage by Thompson, Strickland, Gamble & Jain, Tata McGraw-Hill
4. Concepts in Strategic Management & Business Policy by Thomas L. Wheelen & J. David Hunger, Pearson

Suggested Book References:

1. Strategic Management by Dr. Yogeshwari L. Giri
2. Competitive Strategy: Techniques for Analyzing Industries and Competitors by Michael E. Porter, First Free Press Edition
3. Competing for the Future by Gary Hamel & C.K. Prahlad,
4. Blue Ocean Strategy by Kim & Mauborgne

Suggested Online Link:

1. https://nptel.ac.in/courses/106105031
2. https://nptel.ac.in/courses/106106248
3. https://www.coursera.org/learn/crypto
4. https://www.coursera.org/learn/information-security-foundations

Program	MBA (OP)				Semester: III		
Course	Cyber Security				Course Code	MB25GC-302	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
0	-	-	-	-	YES	-	AC/NC

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 302.1	REMEMBERING	Recall and descrOPe the phases of ethical hacking, CIA triad, cybersecurity principles, and basic security concepts.
CO 302.2	UNDERSTANDING	Explain Linux basics, virtualization setup, cloud-based virtual machines, and cybersecurity tool configuration.
CO 302.3	UNDERSTANDING	Interpret networking fundamentals, scanning techniques, network vulnerabilities, and security components like IDS/IPS and firewalls.
CO 302.4	APPLYING	Apply ethical hacking tasks such as reconnaissance, exploitation, privilege escalation, post-exploitation, OSINT, and persistence techniques..
CO 302.5	ANALYSING	Analyze web application vulnerabilities using OWASP Top 10, evaluate security flaws, and assess governance, risk, and incident response strategies

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction**: Phases of ethical hacking, Understanding the underlying principles cyber security, Understanding CIA Triads, Information Security Vs Cyber Security. **Basics of Linux:** Windows-based Setup, Installing VirtualBox or VMware for virtualization, Setting up Kali Linux as a virtual machine, Installing and configuring essential cybersecurity tools. Linux-based Setup, Using a Linux distrOPution as the host OS, Installing and configuring essential cybersecurity tools. Linux basic commands and filesystem architecture, Cloud-based Setup (AWS or Azure),Creating a virtual machine instance on a cloud platform. Installing Kali Linux or other distrOPutions. Configuring cloud security policies and networking, Registration on - TryHackMe HackTheBox, PortSwigger Web Academy	(4+2)
II	**Network Hacking:** Networking Fundamentals, Understanding the fundamentals of networking. OSI and TCP/IP models. IP and MAC addresses, subnetting, and IPv4/IPv6. Introduction to routers, switches, and firewalls. Types of Viruses, worms, and trojan horses and how they spread through the network. Role of Firewalls and Intrusion Detection Systems (IDS) and Intrusion Prevention Systems (IPS). Secure Network architecture and design principles, **Network Sniffing:** Packet capturing and analysis with Wireshark and TCP Dump. **Scanning and Reconnaissance:** Network scanning with Nmap, Network Vulnerability Assessment with Nessus, Identifying open ports, services, and potential vulnerabilities. **Initial Foothold:** Phishing attacks and email-based threats, Exploiting software vulnerabilities, social engineering techniques. **Privilege Escalation:** Windows Privilege Escalation Linux Privilege Escalation Cheetsheets and Payloads. **Post Exploitation:** Post Exploitation Tools and frameworks Creating backdoors and maintaining control Deleting digital Footprints, File system manipulation and data exfiltration, Techniques for maintaining access and evading detection. Concept of Persistence.	(4+2)
III	**OSINT (Open-Source Intelligence Techniques):** Information Gathering Tools and Techniques for OSINT of - Website, mail, FaceBook Instagram Twitter, Phone Number, Data Leak Lookups,	(4+2)

IV	**Web Application Security:** Web Application Fundamentals and Lab Setup: Web App Technologies Basics (HTML, CSS and JS) Client Server Model, Burp Suite Installation, Burp Suite Proxy Setup and Practical, **OWASP Top 10:** Broken Access Control SQL Injection, Cross Site Scripting XML External Entity, Security Misconfiguration - Access Control Vulnerabilities Vulnerable and Outdated Component Vulnerabilities, Authentication Vulnerabilities, Server Side Request Forgery, Business Logic Vulnerabilities Session Management Vulnerabilities **Automation Testing for Web Apps** Practical of Tools - ZAP, Nikto, Nuclei.	**(4+2)**
V	**Cybersecurity Governance, Risk, and Strategy for Business Leaders:** Cybersecurity as a Business Imperative Risk Management Frameworks Security Policies & Compliance, **Incident response and decision making:** Incident Response & Business Continuity Strategic Decision-Making	**(4+2)**
	Total	**30**

Suggested Textbooks:

1. Principles of Information Security (7th Edition), Authors: Michael E. Whitman & Herbert J. Mattord, Publisher: Cengage Learning, Edition: 7th Edition (2023)
2. Cryptography and Network Security: Principles and Practice, Author: William Stallings, Publisher: Pearson, Edition: 8th Edition (latest widely adopted)
3. Cybersecurity: With Cryptography Essentials, Authors: Shishir Kumar Shandilya, Agni Datta & Bong Jun Choi, Publisher: McGraw Hill / Higher Education Press, Edition: 1st Edition (2025)

Suggested Reference books:

1. Security in Computing, Authors: Charles P. Pfleeger, Shari Lawrence Pfleeger & Jonathan Margulies, Publisher: Pearson Education, Edition: 6th Edition (2023)
2. Information Security: Principles and Practice, Author: Mark Stamp, Publisher: Wiley India, Edition: 3rd Edition (2023)
3. cryptography, Network Security, and Cyber Laws, Authors: Bernard L. Menezes & Ravinder Kumar, Publisher: Cengage Learning India Private Limited, Edition: 1st Edition (2018)

Suggested Online Link:

1. https://nptel.ac.in/courses/106105031
2. https://nptel.ac.in/courses/106106248
3. https://www.coursera.org/learn/crypto
4. https://www.coursera.org/learn/information-security-foundations

Program	MBA (OP)					Semester: III	
Course	Supply Chain Management					Course Code	MB25SCOP-303
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 303.1	REMEMBERING	Identify key concepts, components, and terminologies of supply chain management and logistics systems.
CO 303.2	UNDERSTANDING	Explain supply chain processes, functions, and the role of supply chain partners in value creation.
CO 303.3	UNDERSTANDING	Describe various strategies related to procurement, inventory management, warehousing, transportation, and distribution.
CO 303.4	APPLYING	Apply supply chain tools and techniques to improve operational efficiency, demand forecasting, and material flow management.
CO 303.5	ANALYSING	Analyze supply chain performance using cost, quality, responsiveness, and sustainability parameters to identify gaps and improvement opportunities.
CO 303.6	CREATING	Design effective supply chain strategies and solutions to enhance competitiveness, customer satisfaction, and organizational performance.

Course Contents

Unit	Description	Duration [Hrs.]
I	**Fundamentals of Purchasing and Supply Management -** Evolution and Importance of Purchasing & Supply Management, Strategic vs. Tactical Role of Procurement, Organizational Structure of the Purchasing Function, Procurement Cycle and Processes, Performance Indicators (KPIs) in Purchasing, Case Study: Procurement Transformation in FMCG Sector.	(7+2)
II	**Supplier Selection, Evaluation, and Development -** Supplier Identification and Market Research, Supplier Evaluation Criteria and Methods, Supplier Selection Techniques: Scorecard, Weighted Point Model, Supplier Relationship Management (SRM), Vendor Development and Partnership Building, Practical Exercise: Designing a Supplier Evaluation Framework.	(7+2)
III	**Strategic Sourcing and Global Procurement -** Principles of Strategic Sourcing, Make-or-Buy Decisions, Global Sourcing: Opportunities and Challenges, Cost Analysis and Total Cost of Ownership (TCO), E-Procurement and Digital Sourcing Tools, Case Study: Global Sourcing Strategy of an Automotive Company.	(7+2)
IV	**Contract and Negotiation Management -** Types of Purchasing Contracts, Legal Aspects in Procurement, Contract Development and Administration, Negotiation Strategies and Tactics in Supply Management, Risk Management in Procurement Contracts, Role Play: Contract Negotiation Simulation.	(7+2)

V	**Sustainable and Ethical Supply Management -** Green Procurement and Sustainable Sourcing, Social Responsibility and Ethical Issues in Purchasing, Risk and Disruption Management in Supply Chains, Technology Trends: Blockchain, AI, and IoT in Procurement, Future Directions in Purchasing & Supply Management, Discussion: Ethical Dilemmas in Global Procurement.	**(7+2)**
	Total	**45**

Suggested Text Book:

1. Monczka, Handfield, Giunipero & Patterson – *Purchasing and Supply Chain Management*.
2. Baily, Farmer, Jessop & Jones – *Procurement Principles and Management*.
3. Lambert, D. M. (2008). *Supply Chain Management: Processes, Partnerships, Performance*. Supply Chain Management Institute.
4. Mentzer, J. T. et al. (2001). *Defining Supply Chain Management*. Journal of Business Logistics.

Suggested Book References:

1. Selected Harvard Business Review Articles on Strategic Procurement.
2. Case Studies from IIM Ahmedabad/Bangalore on Supply Management.
3. Reports by CIPS (Chartered Institute of Procurement & Supply) and Deloitte.
4. Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2008). *Designing and Managing the Supply Chain*. McGraw-Hill.
5. Wisner, J. D., Tan, K. C., & Leong, G. K. (2019). *Principles of Supply Chain Management*. Cengage Learning.
6. Hugos, M. H. (2018). *Essentials of Supply Chain Management*. Wiley.
7. Slack, N., Brandon-Jones, A., & Burgess, N. (2022). *Operations Management*. Pearson Education. *(Relevant SCM chapters)*

Suggested Online Link:

1. https://www.ibm.com/think/topics/supply-chain-management
2. https://simfoni.com/supply-chain-management/
3. https://www.accenture.com/in-en/insights/supply-chain-operations/supply-chain-management-operations-index
4. https://www.ibm.com/products/planning-analytics/supply-chain-planning?utm_content=SRCWW&p1=Search&p4=10209221&p5=e&p9=157733835578&gclsrc=aw.ds&gad_source=1&gad_campaignid=19792302673&gbraid=0AAAAAD-_QsQDxzF-aVSTcUyptsNbKESZ-&gclid=Cj0KCQiA0p7KBhCkARIsAE6XlampEVCRCYBG6lzgeMNifxcUoKAaj_6Kj4ydKEQX1QQDkIg63IZpgbwaAgfgEALw_wcB

Program	MBA (OP)					Semester: III	
Course	On the Job Training				Course Code	MB25OJTOP-304	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	PR	
8	0	2	14	0	100	100	200

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO304.1	REMEMBERING	IDENTIFY and DESCROPE the fundamental aspects of the organization and industry where the OJT is conducted, including the company's profile, core business activities, and organizational structure.
CO304.2	UNDERSTANDING	EXPLAIN the relevance and application of theoretical concepts learned in the classroom to real-world business practices observed during the OJT
CO304.3	APPLYING	UTILIZE relevant theoretical knowledge and technical skills in real-world tasks and projects during the OJT in a professional setting
CO304.4	ANALYSING	EXAMINE and break down the problems or tasks undertaken during the OJT, identifying the key issues, underlying causes, and possOPle solutions.
CO304.5	EVALUATING	ASSESS the effectiveness of the strategies and solutions implemented during the OJT, from the standpoint of utility to the host organization, the feedback from the industry mentor.

Course Contents

Unit	Description	Duration [Hrs]
	A] Preamble: On Job Training (OJT) is an integral component of the MBA program that provides students with a unique opportunity to bridge the gap between theoretical knowledge gained in the classroom and practical application in a real-world environment. This training aims to equip students with both technical and non-technical skills that are essential for success in the industry. **Each student shall undertake an On-the-Job Training (OJT) at the end of Second Semester and complete the same before the commencement of the Third Semester.**	**(14+2)**
	B] Guidelines for the On-Job Nature of the OJT: The On-the-Job Training (OJT) program shall be of 12 weeks (3 months). 1. 8 weeks of training in the organization (industry / bank etc.) with 30 hours of work per week. 2. 4 Weeks of pre and post training work including proposal making, analysis, report preparation and etc. 3. OJT must be conducted outside the academic institution to expose students to real-world work environments. 4. **<u>OJT must be related to the intended specialization of the student.</u>** 5. OJT must be done individually. Group projects are not permitted. 6. OJT may involve actual tasks relevant to the area of specialization of the student and as per the demands of the industry / organization where the student is carrying out the OJT.	

	7. OJT should involve fieldwork / desk work in the organisation; **online OJT is not permitted**. 8. Primary data collection is mandatory for Research based OJT. 9. Research based OJT can be quantitative / qualitative in nature or even use mixed approaches. 10. Research based OJT can involve surveys, interviews, case studies or observation studies.	
	A] Training (OJT) B 1] Nature of 1. -Job Training (OJT) program shall be of 12 weeks (3 months). **B] The OJT:** 1. The On-the 8 weeks of training in the organization (industry / bank etc.) with 30 hours of work per week. 2. 4 Weeks of pre and post training work including proposal making, analysis, report preparation and etc. 3. OJT must be conducted outside the academic institution to expose students to real-world work environments. **4. OJT must be related to the intended specialization of the student.** 5. OJT must be done individually. Group projects are not permitted. 6. OJT may involve actual tasks relevant to the area of specialization of the student and as per the demands of the industry / organization where the student is carrying out the OJT. 7. OJT should involve fieldwork / desk work in the organisation; **online OJT is not permitted**. 8. Primary data collection is mandatory for Research based OJT. 9. Research based OJT can be quantitative / qualitative in nature or even use mixed approaches. 10. Research based OJT can involve surveys, interviews, case studies or observation studies. 11. It is mandatory for the student to seek advance written approval from the faculty mentor and the Director of the Institute about the type of work and organization before commencing the OJT.	
	B-2] PermissOPle Partner Organizations: Students have the flexOPility to conduct the OJT with any of the following organizations: 1. Companies listed on either NSE or BSE in India /abroad 2. Unlisted subsidiaries of Listed Companies. 3. Government / Semi-Government Undertaking / PSU 4. Government Offices 5. Start Ups with an existence of 3 years or more and/or manpower more than 10. 6. Family managed businesses with an existence of 10 years or more and manpower more than 100. 7. Large Cooperative Societies / NGOs with an existence of 5 years or more operating in areas such as agriculture, food processing, health care, retail, banking, etc.	

	B-3] OJT mentors: **a)** Each student shall be assigned two mentors i. a faculty mentor from the institution ii. an industry mentor from the host organization where the student undertakes the OJT. **b)** **Industry Mentor Role:** The industry mentor plays a crucial role in guiding the student during the internship. They ensure that the internee fulfils the requirements of the organization and successfully meets the demands of the assigned project. Through their expertise and experience, industry mentors provide valuable insights into real-world practices and industry expectations. **c)** **Faculty Mentor Role:** The faculty mentor serves as the overall coordinator of the OJT program of the assigned / allotted students. They oversee the entire internship process and evaluate the quality of the OJT in a consistent manner across all the assigned students. The faculty mentor ensures that the OJT aligns with the MBA program's objectives and provides valuable learning opportunities. They also facilitate communication between the institution, industry mentor, and student to ensure a fruitful OJT experience.	

B-4] Submission of documentation for OJT:

a) **OJT Progress diary**: Each student shall maintain an OJT Progress Diary detailing the work carried out and the progress achieved on a daily basis. Daily entry can be of 3- 4 sentences giving a very brief account of the learning/activities/ tasks / interaction taken place. The faculty mentor will be monitoring the entries in the diary regularly. The student shall submit the duly signed and stamped OJT Progress Diary along with the OJT Report. Soft copy diaries (with time stamp) are also permitted.

b) **Formal Evaluation from the industry mentor**: The students shall also seek a formal evaluation cum feedback of their OJT from the industry mentor. The formal evaluation cum feedback by the industry mentor shall comment on the nature and quantum of work undertaken by the student, the effectiveness and overall professionalism. The learning outcomes of the OJT and utility of the OJT to the host organization must be specifically highlighted in the formal evaluation cum feedback by the industry mentor. The OJT evaluation sheet duly signed and stamped by the industry mentor shall be included in the final OJT report.

c) **OJT report**: A student is expected to make a report based on the OJT he or she has done in an organization. The student shall submit TWO hard copies & soft copy of the OJT report to the institute. One hard copy of the OJT report is to be returned to the student by the Institute after the External Viva-Voce. In the interest of

environmental considerations, students are encouraged to print their OJT reports on both faces of the paper. Spiral bound copies may be accepted.

B-5] OJT report should contain the following:

The OJT report should be well documented and supported by –

1. Institute's Certificate
2. Certificate by the Company
3. Formal feedback from the company guide
4. Executive Summary
5. Organization profile
6. Outline of the problem/task undertaken
7. Research methodology & data analysis *(in case of research projects only)*
8. Relevant activity charts, tables, graphs, diagrams, pictures, screenshots, AV material, etc.
9. Learning of the student through the OJT
10. Consideration to factors such as environment, safety, ethics, cost, professional (national & international) standards
11. ContrOPution to the host organization
12. References in appropriate referencing styles. (APA, MLA, Harvard, Chicago Style etc.)

B-6] Interaction between mentors:

It is suggested that a meet-up involving the intern, industry mentor, and the faculty mentor should be done as a mid- term review to ensure the smooth conduct of the OJT. The meeting can preferably be online to save time and resources. The meeting ensures the synergy between all stakeholders of the OJT. A typical meeting can be of around 15 minutes where at the initial stage the intern briefs about the work and interaction goes for about 10 minutes. This can be followed by the interaction of the mentors in the absence of the intern. This ensures that issues between the intern and the organization, if any, are resolved amicably.

B-7] OJT workload for the faculty: Every student is provided with a faculty member as a mentor. So, a faculty mentor will have a few students under him/her. A faculty mentor is the overall in-charge of the OJT of the allocated students. He/she constantly monitors the progress of the OJT by regularly overseeing the diary, interacting with the industry mentor, and guiding on the report writing etc.

B-8] Evaluation Pattern:

Total Marks: 200
Formative Assessment:100 Marks

Summative Assessment:100 Marks

1] Formative Assessment Weightage (100 marks):

1. Executive Summary

   - 05 marks
2. Organization profile

   - 05 marks
3. Outline of the problem/task undertaken

   - 10 marks
4. Research methodology & data analysis (in case of research projects only)

   - 10 marks

   OR

   Relevant activity charts, tables, graphs, diagrams, pictures, screenshots, AV material, etc. - 10 marks
5. Learning of the student through the OJT

   - 10 marks
6. Consideration to factors such as environment, safety, ethics, cost, professional (national & international) standards

   - 10 marks
7. ContrOPution to the host organization

   - 10 marks
8. References in appropriate referencing styles. (APA, MLA, Harvard, Chicago Style etc.) - 10 marks
9. Formal feedback from the company guide

   - 05 marks
10. Regularity of interaction with the faculty mentor

    - 05 marks
11. Overall quality of the OJT report

    - 05 marks
12. Internal Viva-Voce

    - 15 marks

2] Summative Assessment Weightage (100 marks):

1. There shall be a panel of 2 examiners for the Final Viva-Voce
2. University shall nominate External Examiners
3. Director shall nominate Internal Examiners
4. Presentation by each student along with a spiral bound report is mandatory
5. Students will deliver a presentation of 15 minutes about their OJT project.
6. Weightages for summative assessment shall be as follows
   a) Presentation

      – 20 marks
   b) Viva-Voce

      – 30 marks
   c) Report

      – 30 marks
   d) Ability to connect with the theoretical & conceptual frame work

      – 20 marks

	The Internal & the External viva-voce shall evaluate the candidate based on: 1. Adequacy of work undertaken by the student 2. Application of concepts learned in Sem I and II 3. Understanding of the organization and business environment 4. Analytical capabilities 5. Technical Writing & Documentation Skills 6. Outcome of the project – sense of purpose 7. Utility of the project to the organization 8. Variety and relevance of learning experience **Presentation could be through any of the enlisted formats** (this is an indicative list and innovative formats if any beyond this list may be adopted) - 1. Traditional Slide Deck Presentation 2. Infographics 3. Video presentation 4. Paper presentation 5. Poster presentation 6. Webinar or online presentation 7. TED-style presentation 8. Storytelling Presentation etc.	

Program	MBA (OP)					Semester: III	
Course	Planning & Control of Operation				Course Code		MB25SEOP-305
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 305.1	REMEMBERING	Identify concepts, functions, and terminology related to operations planning and control in manufacturing and service systems.
CO 305.2	UNDERSTANDING	Explain the principles, processes, and techniques used in aggregate planning, capacity planning, scheduling, and materials management.
CO 305.3	APPLYING	Describe production planning systems, inventory control methods, and demand forecasting techniques.
CO 305.4	ANALYSING	Apply planning and control tools—such as MRP, EOQ, scheduling charts, and production control techniques—to real-world operational scenarios.
CO 305.5	EVALUATING	Analyze production and inventory data to identify bottlenecks, resource utilization issues, and efficiency improvement opportunities.
CO 305.6	CREATING	Develop integrated operations planning and control strategies to enhance productivity, minimize costs, and improve organizational performance.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Operations Planning & Control -** Nature, scope & importance of operations planning and control, Role of operations in manufacturing & service sectors, Operations systems & types (continuous, batch, project, job shop), Objectives & functions of production planning & control (PPC), PPC organization & responsibilities	(7+2)
II	**Demand Forecasting & Capacity Planning -** Concept & importance of forecasting, Qualitative & quantitative forecasting techniques, Moving average, Exponential smoothing, Trend analysis, Forecasting errors & measures of accuracy, Capacity planning: definition, need & types, Capacity strategies & capacity utilization	(7+2)
III	**Aggregate Planning, Master Scheduling & Material Planning -** Aggregate production planning: strategies & techniques, Master Production Schedule (MPS), Material Requirements Planning (MRP), Bill of Materials (BOM) & Inventory Status File, Manufacturing Resource Planning (MRP-II)	(7+2)
IV	**Inventory Management & Control** - Role of inventory in operations, Types & classification of inventory, Inventory costs & inventory control policies, EOQ, EPQ, Safety stock & Reorder point, ABC, VED, FSN & other classification techniques. Just-in-Time (JIT), Kanban & Lean inventory practices	(7+2)
V	**Scheduling, Dispatching & Shop-Floor Control -** Production scheduling: goals & methods, Sequencing rules (FCFS, SPT, LPT, EDD, CR), Gantt Charts & Load charts, Dispatching procedures & priority rules, Shop-floor control & monitoring, Work measurement & productivity improvement tools, Time study, Motion study, Work sampling	(7+2)
	Total	45

Suggested Textbooks:

1. Slack, N., Brandon-Jones, A., & Johnston, R. (2022). *Operations Management*. Pearson Education. *(Strong coverage of planning, scheduling, and control)*
2. Stevenson, W. J. (2021). *Operations Management*. McGraw-Hill Education.
3. Krajewski, L. J., Malhotra, M. K., & Ritzman, L. P. (2019). *Operations Management: Processes and Supply Chains*. Pearson.
4. Chase, R. B., Jacobs, F. R., & Aquilano, N. J. (2020). *Operations Management for Competitive Advantage*. McGraw-Hill

Suggested References:

1. Vollmann, T. E., Berry, W. L., Whybark, D. C., & Jacobs, F. R. (2018). *Manufacturing Planning and Control Systems*. McGraw-Hill.
2. Buffa, E. S., & Sarin, R. K. (2007). *Modern Production/Operations Management*. Wiley India.
3. Heizer, J., Render, B., & Munson, C. (2023). *Operations Management: Sustainability and Supply Chain Management*. Pearson.
4. Hill, T., & Hill, A. (2012). *Manufacturing Operations Strategy*. Palgrave Macmillan.
5. Nahmias, S., & Olsen, T. L. (2015). *Production and Operations Analysis*. McGraw-Hill.
6. Silver, E. A., Pyke, D. F., & Thomas, D. J. (2017). *Inventory and Production Management in Supply Chains*. CRC Press.

Suggested Online Link:

1. https://www.globalspec.com/reference/37288/203279/operations-planning-and-control
2. https://www.studeersnel.nl/nl/document/universiteit-twente/operations-management/operations-management-chapter-10/1249016
3. https://egyankosh.ac.in/handle/123456789/84942

Program	MBA (OP)					Semester: III	
Course	Productivity Management				Course Code		MB25SEOP-306
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 306.1	REMEMBERING	Define productivity and identify its components, determinants, and performance indicators used in organizations.
CO 306.2	UNDERSTANDING	Explain various productivity concepts, measurement frameworks, and improvement techniques across manufacturing and service sectors.
CO 306.3	APPLYING	Discuss the role of technology, human resources, quality systems, and innovation in enhancing productivity.
CO 306.4	ANALYSING	Apply productivity measurement tools and models to evaluate organizational efficiency in real or simulated business scenarios.
CO 306.5	EVALUATING	Analyze productivity problems using cause-and-effect tools and identify factors affecting productivity at individual, departmental, and organizational levels.
CO 306.6	CREATING	Design and propose productivity improvement strategies incorporating lean techniques, performance metrics, and resource optimization.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Productivity -** Meaning, nature and importance of productivity, Productivity vs Efficiency vs Effectiveness, Productivity in manufacturing & service industries, Productivity measurement levels: individual, department, organizational & national, Determinants & factors influencing productivity, Productivity cycle & productivity audit	(7+2)
II	**Productivity Measurement Techniques -** Approaches to productivity measurement, Partial productivity, Total factor productivity (TFP), Multifactor productivity, Productivity indices, Work study techniques: Method study, Time study, Work sampling, Measuring labor, machine & material productivity	(7+2)
III	**Productivity Improvement Tools & Techniques -** Kaizen & Continuous Improvement, Lean Management & Waste Elimination (7 wastes), 5S system, Total Quality Management (TQM), Six Sigma basics, Benchmarking & BPR (Business Process Reengineering), Value Engineering & Value Analysis	(7+2)
IV	**Technology & Human Factors in Productivity -** Role of automation, AI & digital transformation, ERP systems, Industry 4.0, Smart factories, Human factor engineering & ergonomics, Motivation & productivity, Work environment & organizational culture, Training & employee involvement programs, Quality circles, Suggestion schemes, Empowerment & participative management	(7+2)
V	**Productivity Planning, Analysis & Control -** Productivity planning process, Productivity analysis models, Productivity improvement strategies & programs, Performance standards & measurement systems (KPIs, Balanced Scorecard), Productivity benchmarking and reporting, Case studies in productivity improvement, Future trends in productivity management	(7+2)
	Total	**45**

Suggested Textbooks:

1. Sumanth, D.J. – *Productivity Engineering and Management*
2. Mundel & Danner – *Motion and Time Study*
3. Telsang – *Industrial Engineering & Production Management*
4. Sink, D.S. – *Productivity Management*
5. Heizer, J., Render, B., & Munson, C. (2023). *Operations Management: Sustainability and Supply Chain Management*. Pearson.

Suggested References:

1. Slack, N., Brandon-Jones, A., & Johnston, R. (2022). *Operations Management*. Pearson.
2. ILO (2015). *Sustaining Competitive and Responsible Enterprises (SCORE)*. International Labour Organization.
3. Groover, M. P. (2019). *Automation, Production Systems, and Computer-Integrated Manufacturing*. Pearson.
4. Drucker, P. F. (1999). *Management Challenges for the 21st Century*. HarperBusiness. *(Knowledge worker productivity)*
5. OECD (2016). *The Future of Productivity*. OECD Publishing.

Suggested Online Link:

1. https://www.activtrak.com/blog/productivity-management-techniques/
2. https://www.geprom.com/en/productivity-management/
3. https://www.linkedin.com/pulse/what-productivity-management-why-important-john-rampton
4. https://nsb.ac.in/how-to-use-management-to-improve-productivity/

Program	MBA (OP)					Semester: III	
Course	Theory of Constraint				Course Code	MB25SEOP-307	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 307.1	REMEMBERING	Define the Theory of Constraints and key concepts such as bottlenecks, constraints, throughput, and drum-buffer-rope.
CO 307.2	UNDERSTANDING	Explain the TOC philosophy and its application in improving operational performance and organizational efficiency.
CO 307.3	APPLYING	Describe the five focusing steps and the throughput accounting approach used in TOC.
CO 307.4	ANALYSING	Apply TOC principles to identify and manage constraints in manufacturing and service processes.
CO 307.5	EVALUATING	Analyze real-world process flows to detect bottlenecks and evaluate their impact on system throughput and performance.
CO 307.6	CREATING	Design TOC-based improvement strategies, including constraint exploitation and subordinate process adjustments, to enhance productivity and profitability.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Theory of Constraints -** Concept and philosophy of TOC, Traditional vs TOC approaches, Types of constraints: Physical & Non-physical, Key concepts: Throughput, Inventory, Operating Expense, Performance measurement and TOC perspective	(7+2)
II	**The Five Focusing Steps -** Identifying the constraint, Exploiting the constraint, Subordinating other processes, Elevating the constraint, Repeating the cycle – Continuous improvement, Applications in manufacturing and services	(7+2)
III	**Drum-Buffer-Rope Scheduling & Buffer Management -** Drum-Buffer-Rope system: Concept & mechanics, Buffer types: Time buffer, Stock buffer, Capacity buffer, Buffer management rules & priority system, Throughput scheduling vs traditional scheduling, Case examples in production & project environments	(7+2)
IV	**TOC in Project Management (Critical Chain) -** Limitations of traditional CPM/PERT, Critical Chain Project Management (CCPM), Resource constraints & buffer sizing, Project buffers & feeding buffers, Multi-project scheduling & buffer monitoring, Case studies & practical examples	(7+2)

V	**Throughput Accounting & Strategic Applications -** TOC vs traditional cost accounting, Throughput Accounting metrics: Throughput (T), Investment/Inventory (I), Operating Expense (OE), Decision-making using TOC (make/buy, pricing, product mix), TOC in service sector & supply chain, Integration of TOC with Lean & Six Sigma, Real-world industrial case studies	**(7+2)**
	Total	**45**

Suggested Textbooks:

1. Goldratt, E.M. – *The Goal*
2. Goldratt, E.M. – *It's Not Luck*Goldratt, E.M. – *The Goal*

References books

1. Cox, J. & Schleier – *Theory of Constraints Handbook*
2. Dettmer, H. William – *Goldratt's Theory of Constraints*
3. Gupta & Boyd – *Theory of Constraints – A Theory for Operations Management*

Suggested Online Link:

1. https://www.leanproduction.com/theory-of-constraints/
2. https://www.tocinstitute.org/theory-of-constraints.html
3. https://www.lean.org/the-lean-post/articles/what-is-the-theory-of-constraints-and-how-does-it-compare-to-lean-thinking/
4. https://www.google.com/interstitial?url=http://brharnetc.edu.in/br/wp-content/uploads/2018/11/5.pdf

Program	MBA (OP)					Semester: III	
Course	Manufacturing Resource Planning				Course Code		MB25SEOP-308
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 308.1	REMEMBERING	Define the concepts and components of MRP and MRP-II, including BOM, routing, master production schedule, and capacity planning.
CO 308.2	UNDERSTANDING	Explain the structure, functions, and integration of MRP-II with other business systems such as finance, marketing, and inventory management.
CO 308.3	APPLYING	Describe data requirements, information flow, and system architecture involved in implementing MRP-II.
CO 308.4	ANALYSING	Apply MRP and MRP-II techniques to production planning, scheduling, inventory management, and capacity planning scenarios.
CO 308.5	EVALUATING	Analyze production environments to evaluate material planning, capacity requirements, and system performance under MRP-II frameworks.
CO 308.6	CREATING	Develop integrated planning models and improvement strategies for optimizing manufacturing operations using MRP-II concepts.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to MRP & MRP-II -** Evolution of production planning systems, MRP, Closed-loop MRP, MRP-II, ERP, Objectives & benefits of MRP-II, Components & structure of MRP-II, Functions of MRP-II in manufacturing systems, Relationship between MPS, MRP & CRP, MRP vs MRP-II vs ERP	(7+2)
II	**Master Production Scheduling (MPS) & Material Planning -** Master Production Schedule: purpose & design, Inputs to MPS (forecast, backlog, capacity, BOM), Bill of Materials (BOM) – types & coding, Product structure diagrams, Material Requirements Planning (MRP) logic, Lot sizing techniques: EOQ, LFL, LUC, POQ, Time-phased planning, lead time offsetting	(7+2)
III	**Capacity Planning & Shop-Floor Control -** Capacity Requirements Planning (CRP), Rough-Cut Capacity Planning (RCCP), Finite vs Infinite capacity scheduling, Capacity management strategies, Shop floor planning & control, Dispatching rules & priority control, Feedback & production reporting systems	(7+2)
IV	**Data Management & System Integration -** Database requirements for MRP-II, Item master, BOM database, routing files, Engineering change control, Integration with:Inventory management, Purchasing & vendor systems, Finance, cost control & budgeting, Simulation & "what-if" analysis in MRP-II, Information system architecture for MRP-II	(7+2)
V	**Implementation, Performance & Advances -** MRP-II implementation stages & success factors, Human, software & organizational requirements, Common challenges, errors & failure causes, Performance measurement & KPIs, MRP-II & Lean Manufacturing, Transition from MRP-II to ERP Systems, Case studies in MRP-II implementation, Recent trends: Smart manufacturing, Industry 4.0, IoT in MRP systems	(7+2)
	Total	**45**

Suggested Textbooks:

1. Vollmann, Berry, Whybark & Jacobs – *Manufacturing Planning & Control Systems*
2. Joseph Orlicky – *Material Requirements Planning*Vollmann, Berry, Whybark & Jacobs – *Manufacturing Planning & Control Systems.*

Reference book:

1. Blackstone – *APICS Dictionary & MRP references*
2. Telsang – *Industrial Engineering & Production Management*
3. Chase, Jacobs & Aquilano – *Operations Management*

Suggested Online Link:

1. https://www.aligni.com/aligni-knowledge-center/material-resource-planning-for-manufacturing/
2. https://tallysolutions.com/business-guides/material-requirements-planning-and-manufacturing-resource-planning-software/?srsltid=AfmBOop2sp9PKrJC95WTM5LXcqe5gSMeoh4ZibKiKtrcMxa7-Vfm8klj
3. https://www.egyankosh.ac.in/bitstream/123456789/81759/3/Unit-3.pdf

Program	MBA (OP)					Semester: III	
Course	Quality Management Standards				Course Code		MB25SEOP-309
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 309.1	REMEMBERING	Define quality, quality standards, and terms related to quality systems and regulatory frameworks.
CO 309.2	UNDERSTANDING	Explain the purpose, structure, and scope of major quality management standards including ISO 9001, ISO 14001, and ISO 45001.
CO 309.3	APPLYING	Describe quality management system (QMS) documentation, auditing requirements, certification processes, and compliance obligations.
CO 309.4	ANALYSING	Apply quality management principles, standard guidelines, and procedures to organizational quality planning, documentation, and audits.
CO 309.5	EVALUATING	Analyze organizational quality systems to identify gaps, evaluate risk, and determine compliance with quality standards.
CO 309.6	CREATING	Develop QMS frameworks, audit checklists, and continuous improvement plans aligned with global quality standards.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Quality & Standards -** Concept of quality and evolution of quality management, Dimensions of quality — product & service quality, Quality assurance vs. quality control, International Standardization Bodies (ISO, BIS, ANSI, IEC), Importance and benefits of Quality Management Standards, Overview of TQM, Kaizen, Six Sigma, Lean principles	(7+2)
II	**ISO 9001 – Quality Management System (QMS) -** Structure & principles of ISO 9001:2015, Customer focus, leadership, process approach, continual improvement, Requirements & clauses of ISO 9001, Documentation: Quality Manual, Procedures, Work Instructions, Records, Risk-based thinking in ISO 9001, Implementation steps & certification process	(7+2)
III	**ISO 14001 & ISO 45001 -** ISO 14001 – Environmental Management System (EMS), Need & significance of EMS, terms, structure & requirements, Environmental impact assessment & life cycle perspective, ISO 45001 – Occupational Health & Safety (OHS), Evolution from OHSAS 18001 to ISO 45001, Hazard identification, risk assessment, control measures, Safety culture & workplace safety standards	(7+2)
IV	**Quality Audits -** Compliance & Documentation, Types of quality audits (internal, supplier, certification audits), Audit planning, execution & reporting, Corrective & preventive actions (CAPA), Non-conformity management & root cause analysis (RCA), Process mapping, SOPs & record-keeping requirements, Management review & continual improvement cycle	(7+2)
V	**Global and Sector-Specific Standards -** ISO 22000 – Food Safety Management System (FSMS), ISO/IEC 27001 – Information Security Management, IATF 16949 – Automotive quality standards, GMP & GLP – Pharmaceutical and laboratory standards, Quality maturity models & excellence frameworks (EFQM, Malcolm Baldrige), Case studies on QMS implementation in manufacturing & services	(7+2)
	Total	**45**

Suggested Textbooks:

1. K.C. Arora – *Total Quality Management*
2. Dale H. Besterfield – *Quality Control*
3. ISO 9001:2015, ISO 14001,
4. ISO 45001 official standards
5. Juran's *Quality Handbook.*

Suggested Reference Books

1. Feigenbaum – *Total Quality Control*

Suggested Online Link:

1. .https://www.nibusinessinfo.co.uk/content/what-are-quality-management-standards
2. https://www.iso.org/standards/popular/iso-9000-family
3. https://www.aicpa-cima.com/topic/audit-assurance/quality-management

Program	MBA (OP)					Semester: III	
Course	Strategic Supply Chain Management				Course Code		MB25SEOP-310
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 310.1	REMEMBERING	Define supply chain concepts, functions, and terminologies including logistics, procurement, distribution, and value networks.
CO 310.2	UNDERSTANDING	Explain the strategic role of supply chains in improving competitiveness, efficiency, and customer value.
CO 310.3	APPLYING	Describe supply chain strategies, integration models, network design principles, and digital supply chain trends.
CO 310.4	ANALYSING	Apply supply chain analytical tools, forecasting models, and inventory management practices to real business scenarios.
CO 310.5	EVALUATING	Analyze global supply chain structures to identify bottlenecks, cost drivers, risks, and improvement opportunities.
CO 310.6	CREATING	Develop innovative and sustainable supply chain strategies incorporating technology, coordination mechanisms, and risk mitigation plans.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Operations Strategy -** Role of Operations Strategy in Business Competitiveness, Relationship between Corporate, Business, and Operations Strategy, Operations Performance Objectives: Cost, Quality, Flexibility, Speed, Order Winners and Qualifiers, Trade-offs in Operations Strategy, Case Study: Dell's Direct Model.	(7+2)
II	**Strategic Capacity and Facility Planning -** Capacity Strategy and Long-Term Capacity Decisions, Facility Location and Layout Strategy, Process Design and Technology Selection, Make-or-Buy Decisions, Flexibility and Scalability Considerations, Exercise: Capacity Planning Model for a Service Industry.	(7+2)
III	**Supply Chain and Sourcing Strategy -** Supply Chain Design and Network Configuration, Outsourcing and Off shoring Decisions, Global Sourcing Strategies, Supplier Selection and Relationship Management, Risk Management in Global Operations, Case Study: Zara's Fast Fashion Supply Chain Strategy.	(7+2)
IV	**Technology, Innovation, and Sustainability in Operations -** Technology Strategy in Manufacturing and Services, Product and Process Innovation Strategies, Sustainable Operations and Green Manufacturing, Operations and Digital Transformation (Industry 4.0, IoT, Big Data), Circular Economy Principles, Discussion: Industry 4.0 Impact on Indian Manufacturing Firms.	(7+2)
V	**Operations Strategy Implementation and Performance Measurement -** Strategy Deployment (Hoshin Kanri), Balanced Scorecard and Operations Metrics, Operations Risk Management, Organizational Learning and Continuous Improvement, Challenges in Strategy Execution, Simulation/Game: Operations Strategy Development for a Start-up.	(7+2)
	Total	**45**

Suggested Textbooks:

1. Nigel Slack & Michael Lewis – *Operations Strategy*.
2. Terry Hill – *Manufacturing Strategy: Text and Cases*.Nigel Slack & Michael Lewis – *Operations Strategy*.
3. Chopra & Meindl – *Supply Chain Management: Strategy, Planning, and Operation*.
4. Harvard/IIM Case Studies on Global and Indian Firms.

Reference Textbooks:

5. McKinsey Reports on Operations Digitalization and Sustainability.

Suggested Online Link:

1. https://www.maersk.com/industry-sectors/fmcg?utm_campaign=IMEA_IN_FMCG_EN_NA_NA_GLOBAL-PPC_Q1_2025_522757_CNV_STA_5100002654_GO-GEN-VERTICALS-FMCG&utm_source=google&utm_medium=cpc&utm_term=supply+chain+management+in+fmcg+industry&utm_content=search-gen-supply-chain&gclsrc=aw.ds&gad_source=1&gad_campaignid=21269523549&gbraid=0AAAAAC7YVf2rDVGf3iKt36_d6DJF43CdA&gclid=Cj0KCQiA0p7KBhCkARIsAE6Xlann_oostsym7zlQ1_hPwiTqdlIqwWS8HDSO9_o4cL1XRK99_1fh6EoaAqJ2EALw_wcB
2. google.com/aclk?sa=L&ai=DChsSEwiN5pnF0NCRAxVFCnsHHdgqBJQYACICCAEQABoCdG0&co=1&ase=2&gclid=Cj0KCQiA0p7KBhCkARIsAE6XlambeyeSFqvFg8AKOl1ajDqB_dUxkclYV280nT0vwcyRRscP7qVLuaIaAk26EALw_wcB&cid=CAASWeRocOZMYKtDdxV00SnkqeTJ3teVRYq4m9A6ZUgVeQs9Ly_5a_GbjLJxVwiMAmPvnQkJ-xV5JF-35bf4v-JJvPISeKeIgnxvVCrNDGd2THGgmQlWYzk0Aqdg&cce=2&category=acrcp_v1_32&sig=AOD64_00OUo1sYy-KqzUV8yRloSkHVQ6QA&q&nis=4&adurl&ved=2ahUKEwjeoJHF0NCRAxUoafUHHXaaAO8Q0Qx6BAgUEAE
3. https://supplychainmanagementedu.org/faq/what-is-strategic-supply-chain-management/
4. https://www.zycus.com/blog/supplier-management/optimizing-supply-chain-operations-with-strategic-supplier-management

Course Syllabus

Second Year MBA. Semester IV

Program	MBA (OP)				Semester: IV		
Course	Entrepreneurship, Innovation and Design Thinking			Course Code		MB25GC-401	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 401.1	REMEMBERING	DESCROPE the fundamentals of entrepreneurship, innovation and design thinking.
CO 401.2	UNDERSTANDING	UNDERSTAND the prerequisites of entrepreneurship and innovation.
CO 401.3	APPLYING	APPLY the Design Thinking process to real-world challenges.
CO 401.4	ANALYSING	IDENTIFY business opportunities and create viable business models.
CO 401.5	EVALUATING	EVALUATE entrepreneurial ideas and innovation strategies using design thinking principles and business model frameworks to determine their feasOPility, viability, and desirability in real-world contexts.
CO 401.6	CREATING	Develop entrepreneurial mindsets and skills and Pitch ideas effectively to stakeholders or investors.

Course Contents

Unit	Description	Duration [Hrs]
I	**Entrepreneurship & Innovation –** Definition, Objective and Features: Entrepreneurship; Difference between Entrepreneurship and Traditional Businesses; Entrepreneurs and Intrapreneurs; Corporate Entrepreneurship, Technological Entrepreneurship, Life Cycle of Startup, Focus on Valley of Death, Why Startups Fail? Innovation: Culture of innovation - process and Types of innovation – Continuous and Disruptive, Radical Innovation, Challenges in innovation, Agile/Lean Innovation, Steps of Innovation Management, Idea Management System, Divergent V/s Convergent Thinking, Design Thinking and Entrepreneurship Creating Value through Innovation. Management of Innovation, Types of IPR	**(7+2)**
II	**Entrepreneurial Theories and Entrepreneurial Environment, Entrepreneurial Development-** Theories of Entrepreneurship; Successful Entrepreneurs and Their Traits; Types of Entrepreneurs; Entrepreneurial Environment- PESTEL and Their Effects; Business Environment Analysis, Business Planning; Mid-career Dilemmas; Entrepreneurial Growth and Competitive Advantage; Changing Role of Entrepreneurs. Women Entrepreneurs, Entrepreneurship Development Institute; Entrepreneurship Development Programs	**(7+2)**
III	**Design Thinking –** Introduction, Definitions and Meaning; Design Thinking –as an Art and Science; Stages of Design Thinking –Empathise, Define, Ideate, Prototype and Test; Entrepreneurship Design Thinking, Need of Design and Design Thinking Writing the Problem Statement; Understanding Stakeholders and Users; Personas, Empathy Maps;	**(7+2)**

	Current Scenarios to identify pain points; Ideation and Storyboarding; Deriving Goals from Ideas; Future Scenarios and Moments of Max Impact; Prototyping	
IV	**Design Thinking in Start-Up –** 5 stages integration Empathise–Listening to People involved and the End User Problems Realisation, Understanding User Needs: User Research Techniques, Observation, Interviewing, Surveys, Persona Mapping; Define– Identifying User Problems, Problem Statement Formulation, Reframing Problems; Ideate – Generating Ideas, Brainstorming Techniques, Mind Mapping, Scenarios - Finding the solutions most effectively; Prototype – Making the samples to Launch, Different Types of Prototypes, Testing and Iterating; Test – Evaluating offerings, Usability Testing, User Feedback. Design thinking with AI	**(7+2)**
V	**Opportunity Recognition & Business Models-** Model of opportunity recognition (Corbett, 2005), Identifying opportunities through Design Thinking, Market research basics, Value Proposition Canvas, Business Model Canvas (BMC), Minimum Viable Product (MVP): Lean Startup & Validation- Lean Startup methodology (Eric Ries), Build-Measure-Learn cycle, Customer validation, Metrics and KPIs, Agile iteration. Teamwork and Collaboration. Business Model Failure: Reasons and Remedies. Sustainability Innovation and Entrepreneurship. Emerging technologies such as artificial intelligence, augmented reality, virtual reality	**(7+2)**
		45

Suggested Books:

1. Steps to Innovation: Going from Jugaad to Excellence – Rishikesha T. Krishnan and Vinay Dabholkar
2. Innovation and Entrepreneurship - Peter Drucker
3. Entrepreneurship: Business and Management – Dr. R.C. Bhatia, Sultan Chand & Sons, 2020
6. Entrepreneurship - Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, Sabyasachi Sinha. 11th Edition
7. The Lean Startup – Eric Ries
8. Creative Confidence – Tom Kelley & David Kelley

Suggested Reference Books:

1. Ten Types of Innovation – Larry Keeley, Helen Walters, Ryan Pikkel & Brian Quinn
2. Design Thinking for Strategic Innovation – Idris Mootee

Suggested Online Link:

1. https://onlinecourses.nptel.ac.in/noc21_mg63/preview

2. https://onlinecourses.nptel.ac.in/noc25_mg81/preview

3. https://www.coursera.org/learn/design-thinking-entrepreneurship

4. https://www.coursera.org/specializations/innovation-entrepreneurship

Program	MBA (OP)				Semester: IV		
Course	Project Management				Course Code	MB25GC-402	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
2	1	0	0	10	10	30	50

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 402.1	REMEMBERING	DESCROPE the basic terms and concepts in Project Management.
CO 402.2	UNDERSTANDING	EXPLAIN the various parameters of cost, time and quality in project management
CO 402.3	APPLYING	INTEGRATE the aspects of various functional areas of management to develop a Project perspective.
CO 402.4	ANALYSING	EXPLAIN techniques as cpm/pert/earned value analysis and projected financial statements
CO 402.5	CREATING	DEVELOP the capability of student to conceive an idea, evaluate it's feasOPility and make it workable.

Course Contents

Unit	Description	Duration [Hrs]
I	**Overview of Project Management:** Concepts and attrOPutes of Project, Project lifecycle and stake holders, Project Organization, WBS, Scope and priorities, Project Identification, Market feasOPility with Moving Average and Exponential smoothing methods, Techno economic feasOPility, Government policy to location, legal aspects, Preparation of DPR	(4+2)
II	**Project Planning**: Time and cost estimates with AON and AOA conventions, Budget estimates, Network analysis, Float analysis, crashing concepts	(4+2)
III	**Project scheduling and Risk Management:** Gantt chart, splitting and multitasking, Risks in time estimates PERT analysis **Project Organization:** Role and responsOPilities of Project Manager, Team development model, sources of conflicts, conflict resolution	(4+2)
IV	**Earned value analysis: '**S' curve, Cost and schedule performance indices using network, Revised estimates of cost and time **Financial analysis:** Profitability analysis, Using NPV, IRR, Payback and discounted Payback period, PI. Preparation of projected statements of Income- expenditure and balance-sheet	(4+2)

V	**Computer applications and Software for Project Management :**Computer applications and Software for Project Management, Project Management Cases	**(4+2)**
		30

Suggested Textbooks:

1. Project Planning estimation and assessment by Prasanna Chandra
2. Project Management : The Managerial Process by Gray and Larson 3E Tata McGraw- Hill
3. Quantitative Techniques in Management by N D Vohra

Suggested Reference Books:

1. Project Management Managerial Emphasis by Meredith and Mantel
2. Project Management: A Managerial Approach, Authors: Jack R. Meredith, Samuel J. Mantel Jr. & Scott M. Shafer, Publisher: John Wiley & Sons, Edition: 9th Edition (2016)
3. A Guide to the Project Management Body of Knowledge (PMBOK® Guide), Author: Project Management Institute (PMI), Publisher: Project Management Institute, Edition: 7th Edition (2021)
4. Project Management: A Systems Approach to Planning, Scheduling, and Controlling, Author: Harold Kerzner, Publisher: John Wiley & Sons, Edition: 12th Edition (2022 / reprint)

Suggested Online Link:

1. https://onlinecourses.nptel.ac.in/noc25_mg127/preview
2. https://elearn.nptel.ac.in/shop/nptel/project-management/
3. https://www.coursera.org/learn/predictive-project-methodologies
4. https://www.coursera.org/learn/project-planning-and-execution-

Program	MBA (OP)					Semester: IV	
Course	Innovation and Entrepreneurship lab				Course Code		MB25SCOP-403
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 403.1	REMEMBERING	Recall concepts of innovation, creativity, entrepreneurship, business models, and startup ecosystem.
CO 403.2	UNDERSTANDING	Explain the process of opportunity identification, idea generation, problem validation, and design thinking.
CO 403.3	APPLYING	Describe components of a business model, value proposition design, financial basics, and go-to-market strategies.
CO 403.4	ANALYSING	Apply design thinking methods, prototyping tools, and business model frameworks to real-world entrepreneurial problems.
CO 403.5	EVALUATING	Analyze customer needs, market trends, and competitive landscape to evaluate the feasibility of innovative business ideas.
CO 403.6	CREATING	Build and present a functional prototype, business pitch, and business model canvas for a startup or innovative solution.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Innovation and Entrepreneurship -** Concept and Types of Innovation, Innovation vs. Invention vs. Creativity, Entrepreneurial Mindset and Opportunity Recognition, Role of Entrepreneurs in Economic Development, Case Studies on Start-ups and Disruptive Innovation.	**(7+2)**
II	**Design Thinking and Ideation -** Design Thinking Process and Tools, Empathy Mapping and Problem Identification, Brainstorming and Idea Generation Techniques, Ideation Workshops and Concept Development, Value Proposition Canvas, Practical Exercise: Ideation for a Social Enterprise.	**(7+2)**
III	**Business Model Development -** Business Model Canvas (BMC) Framework, Customer Segments and Problem-Solution Fit, Revenue Models and Cost Structures, Competitive Analysis and Differentiation Strategies, Lean Start-up Methodology, Practical Activity: BMC Preparation for Selected Startup Idea.	**(7+2)**
IV	**Prototyping, MVP, and Market Validation -** Prototyping Tools and Techniques, Minimum Viable Product (MVP) Development, Customer Discovery and Feedback Loops, Pivoting and Iterative Product Development, Go-to-Market (GTM) Strategies, Case Study: MVP Development in Indian Startups.	**(7+2)**

V	**Pitching, Funding, and Scaling Ventures -** Elements of an Effective Investor Pitch, Preparing Pitch Decks, Sources of Funding: Angel, VC, Crowd funding, Start-up Incubators, Accelerators, and Ecosystem Support, Scaling and Growth Strategies, Practical: Final Business Plan Presentation and Investor Pitch Simulation.	**(7+2)**
	Total	**45**

Suggested Textbooks:

1. Eric Ries – *The Lean Startup*.
2. Alexander Osterwalder & Yves Pigneur – *Business Model Generation*.Eric Ries – *The Lean Startup*.

Suggested Reference books:

1. Tim Brown – *Change by Design: How Design Thinking Creates New Alternatives*.
2. IIM Startup Case Studies (FreshMenu, Zomato, Razorpay).
3. NASSCOM and Startup India Reports.

Suggested Online Link:

1. https://online.hbs.edu/subjects/entrepreneurship-innovation/
2. https://solutionshub.epam.com/blog/post/innovation-and-entrepreneurship
3. https://study.ed.ac.uk/programmes/postgraduate-taught/897-entrepreneurship-and-innovation
4. https://digitalleadership.com/blog/the-innovation-entrepreneurship-relationship/

Program	MBA (OP)				Semester: IV		
Course	Research Project				Course Code	MB25RPOP-404	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	PR	
6	0	2	10	0	100	50	150

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 404.1	REMEMBERING	Carry out a substantial research-based project
CO 404.2	UNDERSTANDING	Demonstrate capacity to improve student achievement, engagement and retention
CO 404.3	UNDERSTANDING	An understanding of the ethical issues associated with practitioner research
CO 404.4	APPLYING	Applying domain knowledge and foundational research skills to address a research problem.
CO 404.5	ANALYSING	Analyse data and synthesize research findings.
CO 404.6	CREATING	Report research findings in written and verbal forms and use research findings to advance education theory and practice.

Course Contents

Unit	Description	Duration [Hrs]
A]	**Preamble:** A research project is a systematic and organized endeavour undertaken to investigate a specific topic, question, or problem in order to gain new insights, knowledge, or understanding. The objective of the research project is to further develop the student's ability to carry out and contrOPute to business research. The student should demonstrate, through his/her thesis and orally, an ability to plan, conduct, and present a scientific investigation of relevance to the subject of Business Administration and the student's chosen Master's program. A further aim is to develop skills for the critical examination of investigations and research reports and to provide the student with the opportunity for a deeper level of theoretical study within a chosen area. These projects involve a structured process of inquiry, data collection, analysis, and interpretation to arrive at meaningful conclusions. **Learning Objectives** 1. Understand the purpose and significance of research in business management. 2. Develop skills in research methodology, data analysis, and interpretation. 3. Learn to conduct a thorough literature review and critically evaluate existing research. 4. Learn to formulate a clear research question and develop a compelling research proposal. 5. Master the art of writing a well-structured and coherent dissertation.	**(10+2)**

	6. Gain confidence in presenting research findings to an academic audience.	
B - 1]	**Conducting research projects can offer benefit and advantages to the students:** 1. **Intellectual Growth:** Engaging in research projects allows students to explore and develop their intellectual curiosity. It encourages critical thinking, problem-solving skills, and the ability to analyse complex issues. 2. **Skill Development:** Research projects help students develop a variety of skills such as information gathering, data analysis, literature review, writing, presentation, and time management. These skills are valuable both academically and in future careers. . 3. **Deepened Understanding:** Research enables students to delve deeply into a specific topic, gaining a more comprehensive understanding of it beyond what's covered in regular coursework. 4. **Independent Learning:** Research projects encourage self-directed learning. Students learn how to set their own goals, manage their time, and work independently, fostering a sense of responsOPility and initiative. 5. **Problem Solving:** Through research, students confront real-world problems and work towards finding innovative solutions. This experience prepares them to tackle challenges in various aspects of their lives. 6. **Personal Growth:** Research projects can boost students' confidence as they overcome obstacles, contrOPute to knowledge, and present their findings to peers and professors. This can positively impact their self-esteem and personal growth. 7. **Networking:** Engaging in research projects often involves collaboration with professors, peers, and sometimes professionals in the field. This can lead to valuable networking opportunities and connections that might be beneficial for future academic or career pursuits. 8. **Enhanced Resume/CV:** Having research experience on a resume can make students stand out to potential employers or graduate programs. It demonstrates their commitment to learning and their ability to handle complex tasks. 9. **ContrOPution to Knowledge:** Even in the early stages of their academic careers, students can contrOPute to the existing body of knowledge. Their research findings might lead to new insights or perspectives in their chosen field. 10. Preparation for undertaking Research: For students considering post graduate, engaging in research during their postgraduate years can provide a taste of the kind of work they might encounter at the next academic level PhD. 11. **Career Exploration**: Research projects can help students explore potential career paths within their field of study. They might discover specific areas they are particularly passionate about. 12. **Personal Interest Pursuit**: Research projects often allow students to delve into topics that deeply interest them, providing a fulfilling and enjoyable learning experience. 13. **Exposure to Research Methods:** Students gain exposure to various research methodologies, which can be beneficial not only in academia but also in fields where data analysis and evidence-based decision-making are crucial. 14. **Critical Evaluation:** Research requires students to evaluate existing literature, sources, and information critically. This skill helps them become more discerning consumers of information. **Long-Term Impact:** Some research projects can have lasting impacts beyond the academic realm,	**(10+2)**

	contrOPuting to policy changes, technological advancements, or improvements in various industries	
B-2]	In Semester IV the student shall work under the supervision of the faculty and carry out a Research Project and submit a structured report in TWO hard bound copies (Blackbook) & one soft copy (PDF). In the interest of environmental considerations, students are encouraged to print their Research Project reports on both faces of the paper. The student is required to conduct advanced research on a topic related to one (or more) of contemporary issues in management. The topic is chosen in consultation with the student's supervisor. The student will prepare and present a detailed research proposal prior to starting the work. It is mandatory for the student to seek advanced written approval for Research Report Proposal from the faculty Supervisor and the Director of the Institute about the topic before commencing the Research Project work. A Research Project outlining the entire problem, including a survey of literature and the various results obtained along with their solutions, is expected to be produced. The student must submit the completed Research Project and make an oral presentation of the same. Through the Research Project, the student is expected to furnish evidence of competence in understanding varied aspects of the theme/topic selected and a deep understanding of the specialty area. The completion of the Research Project / project shall be certified by the Faculty Supervisor, HOD & approved by the Director of the Institute. 1) All sheets are to be A4 size. 2) The Text in all the chapters shall be in Times New Roman 12 Font, Regular, justified with line spacing of 1.15. 3) The margins shall be as follows: Top & Bottom: 0.8 inches; Left: 1 inch, Right: 0.5 inches 4) One extra line spacing should be left in between paragraphs. 5) All Chapter headings are to be centred in the Font Times New Roman 14 size Bold. 6) All headings of section shall be in Times New Roman 12 Bold 7) All sub-section headings shall be in Times New Roman , size, 12, Bold, Italic. 8) All minor sub-section headings shall be in Times New Roman , size, 12, Regular. 9) It is advised that the sections and sub- sections are to be limited to 3rd level a. Zero Level - Chapter Headings b. First Level - Main sections in each chapter : to be numbered as 1.1, 1.2, 2.1, 3.1 etc. c. Second level - Sub- sections in each section : to be numbered as 1.1.1, 1.2.2, 2.1.3, 3.2.1 etc. d. Third level - Minor sub-sections ie., sections in sub-sections. : to be numbered as 1.1.1.1, 1.2.2.1, 2.1.3.2, 3.2.1.4 etc. - to be avoided to the extent possOPle. 10) All the references / BOPliography are to be listed at the end, arranged in the chronological order and are to be numbered 1, 2, 3 etc. 11) The reference No. should be given as superscript in the report wherever they appear. 12) All the figures are to be numbered as Fig. 1.1, Fig. 2.3 etc indicating chapter No and the sl. No. of the figure in that chapter. The title of the figure should at the bottom of the figure and should be numbered as shown below. Fig. 1.1 Study Area Fig. 2.1 Definition Sketch Fig. 3.2 Experimental Setup etc… 13) All the figures are to be placed at the end of each chapter. Alternatively,	

	they can be placed after the page where they are first referred to. Uniformity should be maintained and under no circumstances should these two alternatives indicated be mixed. **Research projects may include:** ➢ Developing a research question or statement ➢ Finding and evaluating sources ➢ Conducting research ➢ Writing a report etc **Students can do-** ➢ Survey based research. ➢ Secondary data analysis such as decision analysis, cost effectiveness analysis or Meta-analysis. ➢ Observation based/Interview based research. Each student must work under the supervision of a faculty mentor. Depending on the area of research interest or the research topic,	
B-3]	**Research Project Process** **I. SELECTION OF THE RESEARCH TOPIC:** **The first major challenge in conducting research** 1. The easiest way is working with a faculty mentor who is active in research and may have defined one or more researchable questions. 2. Consulting with leading faculty in your area of interest and asking for advice on researchable topics is another avenue for research ideas. 3. Developing research ideas from loose ends discovered during: a) desk research/FP/SIP/OJT, b) literature review c) reviewing journal article(s), and d) discussions, critique of research articles in journal club, could be an interesting, and a rewarding experience. **II. DEVELOPING THE RESEARCH PROPOSAL** A research proposal helps to develop research idea into a valid, scientific research project. A general outline of the elements of a Research Proposal is presented. Although the Research Project Outline provides a description of all the elements of a research project, students are required to complete the writing up of the Methodology section before beginning the project implementation. Writing of the research proposal has a twofold purpose: 1. it provides the researcher, with the blueprint for implementing the project, and 2. it has to be submitted to the research supervisor, HOD and Director of the Institute) for securing approval. **III. PROJECT IMPLMENTATION** In order to conduct a valid, scientific study, it is important that student rigorously follow the study design outlined in your research proposal and approved by the research supervisor. To ensure timely completion of the project, it is important to stay within the framework discussed in the Timeline. **IV. WRITE-UP OF PROJECT RESULTS AND DISCUSSION** This should follow directly from your research proposal. The research	

	project outline provides a 'how to' write-up of the results and discussion sections. **V. RESEARCH PRESENTATION** Once the research project is complete, student have to make a public oral presentation to present the work. .	
B-4]	**OUTLINE OF A RESEARCH PROJECT** **I. TITLE PAGE (**Page 1, DO NOT NUMBER) ➢ Study Title ➢ Names of the Supervisor (faculty mentor) ➢ Discipline ➢ Name of the Institute ➢ Date: month and year proposal prepared/submitted **II.** ***SUMMARY (Page2, 1-2 pages; DO NOT NUMBER)*** The summary should be brief and include: 1) a few sentences introducing the topic of current study (could include a couple of references); 2) statement of the problem; 3) a brief description of the methodology to be used including duration of study, subject selection criteria, tests to be performed, and/or data to be collected; 4) significance and implications of the study (why is it important to do the study, and what are the benefits: fill in gap in knowledge; develop further understanding of a clinical situation; modify current approach to treatment; cost-benefit analysis etc., etc.). **III. INTRODUCTION** (Page 3; up to 2 – 3 pages) This section consists of an overview of the research question and some indication of the study's worth and the contrOPution it is apt to make to the field of study. It should include the rationale for the research project. **IV. REVIEW OF THE LITERATURE** (Page 4; up to 4 –6 pages; a minimum of 10 references required). Use references to establish the link between the proposed study and previous work done on the topic, lay the groundwork for the proposed study, and demonstrate why it is important and timely. The literature review is not just a compilation of facts, but a coherent argument that leads to the description of the proposed study. **V. PROBLEM STATEMENT & RESEARCH HYPOTHESES** (up to 1/2-1 page) The problem statement descrOPes the problem posed by the proposed study and specifies it in the form of Research Hypotheses. The research hypotheses should flow logically from the discussion presented in the Review of Literature and the Statement of the Problem. The hypotheses should be very specific in presenting what aspects of the research topic will be studied, and how. The hypotheses (If any) should be optimally clear, concise, meaningful, and typically written in the present tense. One recommended statement of the criteria for a good hypothesis is that is: a) be free of ambiguity, b) express the relationship between two variables or concepts, and c) imply an empirical test. AVOID having more than one hypothesis embedded in a single, complex statement. A conceptual model	**(**

represents a visual depiction of the relationship between all the variables in your study. It is a good place to start when planning your research project, and also helps in developing your hypotheses.

VI. RESEARCH METHODOLOGY (up to 2-3 pages)

1. Study Duration: DescrOPe the time frame during for which data will be collected (retrospective study; chart reviews), or intervention administered (prospective study; etc). If any
2. Subject Selection: Of particular importance in this section are:

a) the sampling procedure to be used – random, stratified, convenience, b) the source of the subjects, c) the criteria for selection – clearly state inclusion/exclusion d) the rationale for determining sample size – use power test to determine sample size for significance; realistic estimates of crossovers, dropouts must be used in calculating sample size

3. Instrumentation or Measures: This section lists all the variables (intervention as well as outcome variables) you would be examining in your study, and descrOPes what particular measures, or forms, or data collection sheets you will be using to measure the variables.
4. Procedures: This section provides a detailed description of the exact steps to be taken to conduct your research. This includes the procedure used to contact subjects, obtaining Informed Consent, and collecting the data.
5. Data Analysis: In this section descrOPe the statistical tests that will be used to address the research hypotheses. Although intimidating, this section forces you to think how you will analyze (or have it analyzed) at the time the proposal is generated rather than after the data are collected. This way, you can avoid wasting time collecting data that are not analysable because they are not in the collected in the correct format.
6. Study Limitations: DescrOPe the shortcomings and weakness of your study most likely to impact the internal validity of your study.

VII. RESULTS

In this section, you present your findings as clearly as possOPle. The Results section contains JUST THE FACTS: tables, figures, transcript summaries, and your description of what is noteworthy and important about these. Begin with a description of the sample. Simple demographics can be presented in tabular form. Follow with presenting your findings in terms of the research questions/hypotheses tested.

VIII. DISCUSSION

This section typically contains:

- An overview of significant findings
- A consideration of the finding in light of previous research
- A careful examination of findings that fail to support your hypotheses
- Limitations of the study that may affect the generalizability of the results
- Recommendations for further research
- Implications of study for professional practice

IX. REFERENCES

Students must cite all studies referred to in the proposal, using the APA citation method

B-5]	**Evaluation Pattern:** Total Marks: 150 Forma tive Assess ment: 50 Marks Summ ative Assess ment: 50 Marks **1] Formative Assessment Weightage 50 marks** 1. Project Proposal 2. Three Progress Reports 3. Final Research Project Report 4. Pre- submission Presentation a) Research Project Objectives, Research Question and Hypotheses b) Introduction and literature Review c) Methodology d) Quality of Analysis and Research, discussion and findings e) Documentation and Reporting f) References g) Reflection **2] Summative Assessment Weightage 50 marks** 1. There shall be a panel of 2 examiners for the Final Viva-Voce 2. University shall nominate External Examiners 3. Director shall nominate Internal Examiners 4. Presentation by each student along with a spiral bound report is mandatory 5. Students will deliver a presentation of 15 minutes about their OJT project. 6. Weightages for summative assessment shall be as follows a) Presentation – 05 marks b) Viva-Voce – 20 marks c) Report – 15 marks d) Ability to connect with the theoretical & conceptual frame work – 10 marks **The Internal & the External viva-voce shall evaluate the candidate based on:** 1. Adequacy of work undertaken by the student 2. Application of concepts learned in Sem I, II and III 3. Analytical capabilities 4. Technical Writing & Documentation Skills 5. Outcome of the project – sense of purpose 6. Utility of the project to the organization	

	7. Variety and relevance of learning experience **Presentation could be through any of the enlisted formats** (this is an indicative list and innovative formats if any beyond this list may be adopted) - 1. Traditional Slide Deck Presentation 2. Infographics 3. Video presentation 4. Paper presentation 5. Poster presentation 6. Webinar or online presentation 7. TED-style presentation Storytelling Presentation etc.	
	Total	**12**

Program	MBA (OP)				Semester: IV		
Course	Manufacturing System Analysis & Management			Course Code		MB25SEOP-405	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO405.1	REMEMBERING	Define the concepts, components, and classifications of manufacturing systems and production environments.
CO405.2	UNDERSTANDING	Explain the structure, design, and functioning of various manufacturing systems including job shop, batch, and flexible systems.
CO405.3	APPLYING	Describe methods for performance evaluation, capacity analysis, and productivity measurement in manufacturing systems.
CO405.4	ANALYSING	Apply analytical tools and modeling techniques to assess efficiency, bottlenecks, and flow performance in production systems.
CO405.5	EVALUATING	Analyze manufacturing data to identify areas for process improvement, system optimization, and resource allocation.
CO405.6	CREATING	Design and develop strategies to enhance manufacturing system performance through integration of automation, technology, and lean principles.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Manufacturing Systems-** Definition, scope, and objectives of manufacturing systems, Classification of manufacturing systems: job shop, batch, mass, and continuous production, Evolution of manufacturing — from craftsmanship to smart manufacturing, Elements of a manufacturing system: men, machines, materials, methods, and information, Product–process matrix and system characteristics, Performance metrics — productivity, flexibility, quality, cost, and responsiveness	(7+2)
II	**System Design & Modeling -** System design process — concept to execution, Process planning, facility layout, and material flow analysis, Line balancing and workstation design, Modeling approaches: deterministic and stochastic models, Use of simulation in manufacturing system analysis, Decision support systems in manufacturing	(7+2)
III	**Capacity, Performance & Productivity Analysis -** Capacity planning and measurement, Bottleneck identification and throughput analysis, Performance indices: utilization, efficiency, cycle time, WIP, Time study, method study, and work measurement, OEE (Overall Equipment Effectiveness) and TPM basics, Lean manufacturing and waste elimination techniques	(7+2)
IV	**Automation, Integration & Technology Management -** Role of automation in manufacturing systems, Flexible Manufacturing Systems (FMS) and CIM (Computer Integrated Manufacturing), Robotics, AGVs, and automated material handling systems, CAD/CAM integration and Industry	(7+2)

	4.0 technologies, IoT, AI, and data analytics in manufacturing system management, Human–machine collaboration and safety consideration	
V	**Strategic Manufacturing System Management -** Strategic planning for manufacturing competitiveness, Facility location and network design decisions, Production planning and control integration, Supply chain linkages and global manufacturing networks, Sustainability and green manufacturing systems, Case studies: Toyota Production System, Siemens Digital Factory, and Smart Factory models	**(7+2)**
	Total	**45**

Suggested Text Books

1. Buffa & Sarin – *Modern Production/Operations Management*
2. Groover, M.P. – *Automation, Production Systems, and Computer-Integrated Manufacturing*
3. Mikell P. Groover – *Work Systems and the Methods, Measurement, and Management of Wor*

Reference Books

4. Krajewski, Ritzman & Malhotra – *Operations Management*
5. Telsang – *Industrial Engineering and Production Management*

Suggested Online Link:

1. https://www.iima.ac.in/executiveeducation/manufacturing-strategy
2. https://letstranzact.com/blogs/manufacturing-strategies

Program	MBA (OP)				Semester: IV		
Course	Operation Strategy				Course Code	MB25SEOP-406	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO406.1	REMEMBERING	Define the fundamental concepts, objectives, and scope of operations strategy within the overall business strategy framework.
CO406.2	UNDERSTANDING	Explain the strategic role of operations in achieving competitive advantage through cost, quality, flexibility, and delivery.
CO406.3	APPLYING	Describe various approaches and models used in developing and implementing effective operations strategies.
CO406.4	ANALYSING	Apply strategic decision-making tools to operations areas such as capacity, facility location, technology, and process design.
CO406.5	EVALUATING	Analyze case situations to identify strategic operations issues and evaluate alternative strategies for performance improvement.
CO406.6	CREATING	Develop integrated operations strategies aligned with corporate goals, market dynamics, and sustainability objectives.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Operations Strategy** - Role of Operations Strategy in Business Competitiveness, Relationship between Corporate, Business, and Operations Strategy, Operations Performance Objectives: Cost, Quality, Flexibility, Speed, Order Winners and Qualifiers, Trade-offs in Operations Strategy, Case Study: Dell's Direct Model.	(7+2)
II	**Strategic Capacity and Facility Planning -** Capacity Strategy and Long-Term Capacity Decisions, Facility Location and Layout Strategy, Process Design and Technology Selection, Make-or-Buy Decisions, Flexibility and Scalability Considerations, Exercise: Capacity Planning Model for a Service Industry.	(7+2)
III	**Supply Chain and Sourcing Strategy -** Supply Chain Design and Network Configuration, Outsourcing and Off shoring Decisions, Global Sourcing Strategies, Supplier Selection and Relationship Management, Risk Management in Global Operations, Case Study: Zara's Fast Fashion Supply Chain Strategy.	(7+2)
IV	**Technology, Innovation, and Sustainability in Operations -** Technology Strategy in Manufacturing and Services, Product and Process Innovation Strategies, Sustainable Operations and Green Manufacturing, Operations and Digital Transformation (Industry 4.0, IoT, Big Data), Circular Economy Principles, Discussion: Industry 4.0 Impact on Indian Manufacturing Firms.	(7+2)

V	**Operations Strategy Implementation and Performance Measurement -** Strategy Deployment (Hoshin Kanri), Balanced Scorecard and Operations Metrics, Operations Risk Management, Organizational Learning and Continuous Improvement, Challenges in Strategy Execution, Simulation/Game: Operations Strategy Development for a Start-up.	**(7+2)**
	Total	**45**

Suggested Text Books

1. Nigel Slack & Michael Lewis – *Operations Strategy*.
2. Terry Hill – *Manufacturing Strategy: Text and Cases*.
3. Chopra & Meindl – *Supply Chain Management: Strategy, Planning, and Operation*.

Suggested Reference Books

4. Harvard/IIM Case Studies on Global and Indian Firms.
5. McKinsey Reports on Operations Digitalization and Sustainability.

Suggested Online Link:

1. https://www.indeed.com/career-advice/career-development/operations-strategy
2. https://www.virtusa.com/digital-themes/operations-strategy
3. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SBAA7027.pdf

Program	MBA (OP)				Semester: IV		
Course	Industry 5.0				Course Code	MB25SEOP-407	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO407.1	REMEMBERING	Understand the evolution from Industry 4.0 to Industry 5.0 and its conceptual foundations.
CO407.2	UNDERSTANDING	Analyze human–machine collaboration models in smart and intelligent manufacturing systems.
CO407.3	APPLYING	Evaluate the role of AI, robotics, IoT, and digital twins in Industry 5.0 environments.
CO407.4	ANALYSING	Examine sustainability, resilience, and circular economy principles in modern industries.
CO407.5	EVALUATING	Assess ethical, social, and governance challenges related to Industry 5.0 adoption.
CO407.6	CREATING	Apply Industry 5.0 concepts to real-world business, manufacturing, and service sector cases.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Industry 5.0 -** Evolution of Industrial Revolutions (Industry 1.0 to 5.0), Limitations of Industry 4.0, Concept, definition, and objectives of Industry 5.0, Human-centric, sustainable, and resilient industry, Industry 5.0 vs Industry 4.0, Global initiatives: EU Industry 5.0 framework	(7+2)
II	**Human–Machine Collaboration -** Role of humans in intelligent systems, Collaborative robots (Cobots), Human-in-the-loop systems, Augmented intelligence vs artificial intelligence, Skill transformation and workforce upskilling, Ergonomics, safety, and human well-being	(7+2)
III	**Core Technologies of Industry 5.0 -** Artificial Intelligence and Machine Learning, Internet of Things (IoT) and Industrial IoT (IIoT), Digital Twins and Cyber-Physical Systems, Advanced robotics and automation, Big Data analytics and cloud computing, Edge computing and smart sensors	(7+2)
IV	**Sustainability, Resilience, and Circular Economy -** Sustainable manufacturing and green technologies, Circular economy models, Energy efficiency and carbon neutrality, Resilient supply chains, Industry 5.0 and climate change mitigation, ESG (Environmental, Social, Governance) integration	(7+2)

V	**Ethics, Governance, and Applications of Industry 5.0 -** Ethical AI and responsible innovation, Data privacy and cybersecurity, Social implications and inclusive growth, Policy and regulatory frameworks, Industry 5.0 applications in - Manufacturing, Healthcare, Agriculture, Smart cities, Case studies (Global & Indian perspective)	**(7+2)**
	TOTAL	**45**

Suggested Text Books

1. European Commission (2021). *Industry 5.0: Towards a Sustainable, Human-Centric and Resilient European Industry*.
2. Nahavandi, S. (2019). *Industry 5.0—A Human-Centric Solution*. Sustainability.
3. Xu, X., Lu, Y., Vogel-Heuser, B. (2021). *Industry 4.0 and Industry 5.0—Inception, Conception, and Perception*. Journal of Manufacturing Systems

Suggested Reference Books

1. Frank, A. G., Dalenogare, L. S., Ayala, N. F. (2019). *Industry 4.0 technologies: Implementation patterns*. International Journal of Production Economics.
2. Kagermann, H., Wahlster, W., Helbig, J. (2013). *Recommendations for Implementing Industry 4.0*
3. OECD (2022). *AI, Ethics, and Human-Centered Digital Transformation*

Suggested Online Link:

1. https://www.twi-global.com/technical-knowledge/faqs/industry-5-0
2. https://research-and-innovation.ec.europa.eu/research-area/industrial-research-and-innovation/industry-50_en
3. https://engineeringmastersonline.rutgers.edu/articles/industry-4-0-vs-5-0-whats-the-difference/

Program	MBA (OP)				Semester: IV		
Course	World Class Manufacturing				Course Code	MB25SEOP-408	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO 408.1	REMEMBERING	Define the concept, principles, and evolution of World Class Manufacturing and its relevance in global competitiveness.
CO 408.2	UNDERSTANDING	Explain various manufacturing philosophies such as Lean, Just-in-Time (JIT), Total Productive Maintenance (TPM), and Total Quality Management (TQM).
CO 408.3	APPLYING	Describe the key performance indicators, benchmarking techniques, and practices used in achieving world-class standards.
CO 408.4	ANALYSING	Apply world-class manufacturing tools and techniques to improve productivity, quality, and operational performance.
CO 408.5	EVALUATING	Analyze existing manufacturing systems to identify gaps and bottlenecks in achieving world-class standards.
CO 408.6	CREATING	Develop strategic implementation plans for transforming a traditional manufacturing system into a world-class manufacturing organization.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to World Class Manufacturing -** Concept, evolution, and scope of World Class Manufacturing (WCM), Importance of manufacturing excellence in global competitivenes, Characteristics and elements of world-class organizations, Evolution from mass production to lean and agile manufacturing, Principles of WCM and its relevance in the modern industrial context, WCM models: Schonberger's model, Hayes & Wheelwright framework, and, Toyota Production System	(7+2)
II	**Building Blocks of World Class Manufacturing -** Strategic planning and vision for WCM implementation, Performance measures and benchmarking in manufacturing,Lean manufacturing and Just-In-Time (JIT) concepts, Total Quality Management (TQM) and Continuous Improvement (Kaizen), Total Productive Maintenance (TPM) and 5S practices, Waste identification and elimination (Muda, Mura, Muri)	(7+2)
III	**Enablers of World Class Manufacturing -** Technology as a driver of world-class performance, Automation, robotics, and flexible manufacturing systems (FMS), Enterprise Resource Planning (ERP) and Manufacturing Execution Systems (MES), Human resource empowerment and participative management, Role of leadership, training, and organizational culture in WCM, Supplier partnerships and integrated supply chain management	(7+2)
IV	**Measuring and Sustaining World Class Performance -** Key performance indicators (KPIs) for world-class operations, Productivity, quality, cost, delivery, safety, and morale metrics, Benchmarking techniques and best practices, Business Excellence Models – Malcolm Baldrige,	(7+2)

	EFQM, and Deming Prize, Continuous improvement and innovation for long-term sustainability, Role of Six Sigma and Lean Six Sigma in achieving world-class performance	
V	**World Class Manufacturing** – Implementation & Future Trends -WCM implementation framework and roadmap, Challenges and barriers in WCM implementation, Change management and employee involvement, Case studies: Toyota, Bosch, Tata Motors, and Honda, Integration with Industry 4.0 and Smart Manufacturing, Emerging trends: Digital transformation, sustainability, and circular economy in WCM	**(7+2)**
	Total	**45**

Suggested Textbooks

1. Richard Schonberger – *World Class Manufacturing: The Lessons of Simplicity Applied*
2. B.S. Sahay, K.B. C. Saxena, & Ashish Kumar – *World Class Manufacturing: Strategic Perspective*
3. Schonberger, R. J. (1986). *World Class Manufacturing: The Lessons of Simplicity Applied*. Free Press. *(Foundational book on WCM)*
4. Hayes, R. H., Wheelwright, S. C., & Clark, K. B. (1988). *Dynamic Manufacturing: Creating the Learning Organization*. Free Press..

Suggested Reference Books:

1. Womack, J. P., Jones, D. T., & Roos, D. (1990). *The Machine That Changed the World*. Free Press. *(Lean manufacturing roots of WCM)*
2. Maskell, B. H., & Baggaley, B. L. (2006). *Lean Accounting*. Productivity Press. *(Financial alignment with WCM)*
3. Shingo, S. (1989). *A Study of the Toyota Production System*. Productivity Press.

Suggested Online Link:

5. google.com/aclk?sa=L&pf=1&ai=DChsSEwjE_Iix7NCRAxUE2kwCHZj1KbUYACICCAEQARoCdG0&co=1&ase=2&gclid=CjwKCAiA9aPKBhBhEiwAyz82J5IGUw2k3eW8vI9qab8XCflOxvvbiMl2BJcVI5VBrZbKaL8BTnS5TxoCkAYQAvD_BwE&cid=CAASWuRo3fhdofPWxmVxCgeyE6IQL-j0orWwyDjyZAc5U5qEXiAcMTN-PXOhYf-F13YLAvW0TItIy3CRBfo9MaIdAgnGAZoY6wd5VDG9zTSJCSID8XixHl8_XzfxfQ&cce=2&category=acrcp_v1_32&sig=AOD64_3IE1VaZfiQn74e6Vbqo7BmuLMUZQ&q&nis=4&adurl=https://faberinfinite.com/lean-management-and-manufacturing-

Program	MBA (OP)				Semester: IV		
Course	Six Sigma for Operation Management				Course Code	MB25SEOP-409	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO409.1	REMEMBERING	Define the fundamental concepts, principles, and history of Six Sigma and its relevance to operations management.
CO409.2	UNDERSTANDING	Explain the DMAIC methodology and key Six Sigma tools used for process improvement and quality enhancement.
CO409.3	APPLYING	Describe the roles and responsibilities of Six Sigma professionals and the structure of Six Sigma implementation in organizations.
CO409.4	ANALYSING	Apply Six Sigma tools and techniques to analyze and improve operational processes.
CO409.5	EVALUATING	Analyze process performance data to identify root causes, variations, and improvement opportunities.
CO409.6	CREATING	Design a Six Sigma improvement project and develop strategies for achieving sustainable operational excellence.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Six Sigma and Quality Concepts -** Concept and evolution of quality management, History and origin of Six Sigma, principles of Six Sigma, Comparison of Six Sigma with TQM, Lean, and Kaizen, Benefits and importance of Six Sigma in operations management, Overview of process capability and sigma level	**(7+2)**
II	**DMAIC Methodology** – Define and Measure Phases - Define Phase: Project selection, problem definition, SIPOC diagram, voice of the customer (VOC), project charter, Measure Phase: Process mapping, data collection planning, measurement system analysis (MSA), Process capability indices (Cp, Cpk, DPMO, Yield), Tools used in Define & Measure phases: Pareto charts, check sheets, cause-and-effect diagrams	**(7+2)**
III	**DMAIC Methodology** – Analyze, Improve, and Control Phase -Analyze Phase: Root cause analysis, hypothesis testing, correlation and regression analysis, FMEA (Failure Modes and Effects Analysis), Improve Phase: Design of Experiments (DOE), brainstorming, mistake proofing (Poka-Yoke), and pilot testing, Control Phase: Statistical Process Control (SPC), control charts, standardization, and documentation, Sustaining improvements and continuous improvement culture	**(7+2)**
IV	**Lean Six Sigma and Process Optimization -** Integration of Lean principles with Six Sigma, Elimination of waste (Muda, Mura, Muri), Value Stream Mapping (VSM), Process flow improvement and cycle time reduction, Role of technology and automation in process optimization, Case studies of Lean Six Sigma implementation in manufacturing and services	**(7+2)**

V	**Six Sigma Implementation and Contemporary Trends -** Six Sigma organization structure: Champion, Black Belt, Green Belt, Yellow Belt, Training and certification programs, Challenges and success factors in Six Sigma implementation, Cost-benefit analysis and project prioritization, Six Sigma in different sectors: manufacturing, healthcare, banking, and IT, Emerging trends: Digital Six Sigma, Industry 4.0 integration, and sustainability in Six Sigma	**(7+2)**
	Total	**45**

Suggested Text Books:

1. Pande, Neuman & Cavanagh – *The Six Sigma Way*
2. Pyzdek & Keller – *The Six Sigma Handbook*
3. Evans & Lindsay – *Managing for Quality and Performance Excellence*
4. Harry & Schroeder – *Six Sigma: The Breakthrough Management Strategy*
5. Montgomery, D. C. (2019). *Introduction to Statistical Quality Control*.

Suggested Reference Books

1. Antony, J. (2014). *Readiness factors for the Lean Six Sigma journey*. International Journal of Productivity and Performance Management.
2. Harry, M., & Schroeder, R. (2000). *Six Sigma: The Breakthrough Management Strategy*. Doubleday.
3. Chase, R. B., Jacobs, F. R., & Aquilano, N. J. (2020). *Operations Management for Competitive Advantage*. McGraw-Hill. *(Six Sigma in OM context)*
4. Gijo, E. V., & Antony, J. (2014). *Reducing patient waiting time in a hospital using Six Sigma*. Quality and Reliability Engineering International

Suggested Online Link:

1. https://en.wikipedia.org/wiki/Six_Sigma
2. https://asq.org/quality-resources/six-sigma?srsltid=AfmBOoqUZtrdMyLuWinmWeAUXeHvk-dHS9lzfW5f0fGB_gOXDpGbh17Q

Program	MBA (OP)				Semester: IV		
Course	Supply Chain Strategy				Course Code	MB25SEOP-410	
Credits	Teaching Scheme (Hrs./Week)			Evaluation Scheme and Marks			
	Lecture	Tutorial	Practical	FA		SA	Total
				UT	CA	TH	
3	2	1	1	25	25	50	100

Course Outcomes:

After learning the course, the students should be able to:

CO#	COGNITIVE ABILITIES	COURSE OUTCOMES
CO410.1	REMEMBERING	Define the fundamental concepts, objectives, and scope of supply chain management and its strategic significance.
CO410.2	UNDERSTANDING	Explain various supply chain models, frameworks, and strategies for achieving competitive advantage.
CO410.3	APPLYING	Describe the role of logistics, sourcing, and inventory management in shaping supply chain strategies.
CO410.4	ANALYSING	Apply strategic tools and techniques to design and evaluate effective supply chain networks.
CO410.5	EVALUATING	Analyze supply chain performance and identify strategic improvements through case-based analysis.
CO410.6	CREATING	Develop integrated and sustainable supply chain strategies aligned with business and global market objectives.

Course Contents

Unit	Description	Duration [Hrs]
I	**Introduction to Supply Chain and Strategy -** Definition, objectives, and importance of supply chain management (SCM), Evolution of SCM and its link to business strategy, Elements and flows in a supply chain: material, information, and financial flows, Supply chain decision phases – strategic, tactical, and operational, Supply chain drivers and performance metrics (cost, quality, responsiveness, agility), Role of supply chain in achieving competitive advantage	(7+2)
II	**Strategic Framework for Supply Chain Management -** Strategic fit between competitive strategy and supply chain strategy, Push, pull, and push-pull supply chain strategies, Supply chain models – efficient, responsive, agile, and lean supply chains, Supply chain configuration and network desig, Outsourcing and make-or-buy decisions, Case studies on strategic alignment of supply chains	(7+2)
III	**Supply Chain Planning and Coordination -** Demand forecasting and aggregate planning in supply chais, Inventory management and optimization strategies, Procurement and supplier relationship management (SRM), Role of coordination and collaboration in supply chain, Bullwhip effect – causes, consequences, and mitigation strategies, IT and digital technologies enabling supply chain coordination	(7+2)
IV	**Global Supply Chain and Risk Management -** Globalization and its impact on supply chain strateg, Design and management of global supply network, Strategic sourcing and international logistics, Supply chain resilience and risk management frameworks, Managing disruptions,	(7+2)

	geopolitical risks, and sustainability challenges, Case studies: Apple, Unilever, and Toyota global supply networks	
V	**Emerging Trends and Sustainable Supply Chain Strategy -** Green supply chain management and circular economy, Sustainable sourcing and ethical supply chain practices, Role of Industry 4.0 in supply chain strategy (IoT, AI, Blockchain), Supply chain analytics and data-driven decision-making, Digital transformation and future of supply chain strategies, Designing agile, resilient, and customer-centric supply chains	**(7+2)**
	Total	**45**

Suggested Text Books

1. Chopra, S. & Meindl, P. – *Supply Chain Management: Strategy, Planning, and Operation*
2. Sunil Sharma – *Supply Chain Management: Concepts, Practices and Implementation*
3. David Simchi-Levi – *Designing and Managing the Supply Chain*
4. Bowersox, Closs & Cooper – *Supply Chain Logistics Management*
5. Lee, H. L. (2002). *Aligning supply chain strategies with product uncertainties*. California Management Review

Suggested Reference Books

1. Hugos, M. H. (2018). *Essentials of Supply Chain Management*. Wiley.
2. Mentzer, J. T. et al. (2001). *Defining Supply Chain Management*. Journal of Business Logistics.
3. Lambert, D. M., Cooper, M. C., & Pagh, J. D. (1998). *Supply Chain Management: Implementation issues and research opportunities*. International Journal of Logistics Management.
4. Ivanov, D. (2020). *Predicting the impacts of epidemic outbreaks on global supply chains*. Transportation Research Part E.
5. Sheffi, Y. (2005). *The Resilient Enterprise*. MIT Press.

Suggested Online Link:

1. https://www.google.com/aclk?sa=L&pf=1&ai=DChsSEwjS2tDU7dCRAxVy2UwCHU_GLPEYACICCAEQABoCdG0&co=1&ase=2&gclid=CjwKCAiA9aPKBhBhEiwAyz82JxQ_Vce0vzFaUD-2SwulQDGrURxP2ns94y9J2A0UZDMlr3EqsAj_KxoCj3EQAvD_BwE&cid=CAASWuRonumgUYHTFlhDhWbRzC753-jZ6Y-3EVdqkhBQUE9ZJ4Q2JGPIJKSqeh_WYBz2-sG65bjN8UIjxyozpo4ARGUSokQyWBjs-3vrOCbA27BVodq7QVYpJIYFpw&cce=2&category=acrcp_v1_32&sig=AOD64_3PCtX1p7rQd8XxacpBKXevSkJlbA&q&nis=4&adurl=https://certifications.spjain.org/digital-supply-chain-management-course?utm_source%3Dgoogle%26utm_medium%3Dcpc%26utm_term%3Dsupply%2520chain%2520management%2520courses%26utm_content%3D22633852532-180700548659-