

Course Title	SUPPLY CHAIN DESIGNING, SOURCING AND OPTIMIZATION
Term/Semester	III
Course ID	21MBA432
Credits	3

Introduction:

Supply chain design is the process by which a company structures and manages the supply chain in order to identify the right balance between inventory, transportation, and manufacturing cost. The process of sourcing products or services is the first step in the supply chain. It's about finding the balance between the quality of products, raw materials and the affordability. This course will provide the student with a thorough understanding of Resource Optimization by explaining how and why optimization modelling is used. Learn to explain the modelling process and be able to apply it in a variety of different business situations

Course Outcomes (COs):

Having successfully completed this course student will be able to:

- CO 1** –Understand and appreciate the need for advanced supply chain network design
- CO2** - Apply the appropriate tools and techniques to source the suppliers
- CO3** – Formulate various strategies to achieve Continuous Service Improvement
- CO4** - Apply appropriate techniques to evaluate the project efficiency
- CO5** – Develop and deploy the Business contingency plan for the organisation

Course content and Structure: 36 hours

Module 1- Overview of Supply Chain Design

(6 Hrs.)

- Introduction to Network Flow models
- Supply Chain Network Design: Facility Location and Network Design problems
- Advanced Supply Chain Network Design; Modeling multiple products; multiple echelons; multiple time periods.

Module 2: Supply chain Sourcing

(8 Hrs.)

- Supply chain sourcing; Concept; Types; Levels of sourcing; Best practices in sourcing Purchasing; Types; Make or buy decisions; Insourcing and Outsourcing
- Procurement; Procure to pay system
- Supplier selection process
- Supplier evaluation system

Module 3: Resource Planning and Optimization in Operations

(10 hrs.)

- Resource; Concepts and Classification; Factors affecting utilization of resources
- Resource Optimization; Time, Money, Product, Space, Human
- Overview of Resource Allocation; Problems on Resource Allocation; Product Mix
- Optimization approach of Resource Allocation
- Continuous Service Improvement.



Module 4: Contingency Planning and Risk management in SCM

(6 Hrs.)

- Contingency Planning; Technical Risk; Schedule Risk; Cost Risk; Funding Risk; Environmental Risk
- Business Continuity Plan; Disaster Recovery; Opportunity Management
- Contingency Funding and Time Buffers; Budget Reserves, Management Reserves, Time Buffers; Risk Response Control; Change Control Management.

Module 5: Resource Optimization in Project Management

(6 Hrs.)

- Resource planning; Resource levelling and Resource smoothing
- Quality Function Deployment in Project Management (Industry Standard)
- Sensitivity Analysis; Overview; Methods and Techniques; Interpretation of solution.

Pedagogy:

- Class room discussion
- Project based learning
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching
- Simulation

Teaching Learning Resources:

Recommended Books

1. Supply chain design - Mark J. Schniederjans, Stephen B. LeGrand, Arthur V. Hill, Pearson, 2013
2. Gerardus Blokdyk, "Resource Optimization - A Complete Guide - 2020 Edition", 5starcooks Publication.
3. Manoj Kumar, "Resource Optimisation through Environmental Leadership", K W Publishers Pvt Ltd.
4. Supply Chain Network Design: Understanding the Optimization behind Supply Chain Design Projects – Micheal Watson et al – TMH – 2019

Reference Books

1. Barnali Roy Choudhury, "Resource optimization", UNESCO 2015.
2. Anand J. Kulkarni, Suresh Chandra Satpathy, "Optimization in Machine Learning and Applications", Springer.
3. Project Management Institute's Project Management Body of Knowledge (PMBOK) ©
4. Clifford F. Grey, Erik W. Larson, Gautam V. Desai, "Project Management – The Managerial Process", Tata McGraw Hill Publication.

Supplementary reading

- <https://www.edx.org/course/supply-chain-design>
- <https://www.coursera.org/learn/sourcing#syllabus>
- <https://ocw.mit.edu/courses/sloan-school-of-management/15-763j-manufacturing-system-and-supply-chain-design-spring-2005/>
- <https://blog.leancor.com/supply-chain-design>
- Steven A. Melnyk, Ram Narasimhan & Hugo A. De Campos (2014) Supply chain design: issues, challenges, frameworks and solutions, International Journal of Production Research, 52:7, 1887-1896, DOI: 10.1080/00207543.2013.787175
- Pearson e – library ; <https://elibrary.in.pearson.com/books/helpDashboard>
- EBSCO : <https://www.ebsco.com/search?search=supplychaindesign>
- Jgate: <https://jgateplus.com/home/resources/>
- www.capitaline.com

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	2	-	--	2	3	-	3	-	--
CO2	-	3	2	-	1	-	3	3	3	1	2
CO3	2	3	2	-	-	-	3	1	3	1	2
CO4	-	3	2	-	1	-	3	3	3	1	2
CO5	-	3	2	-	1	-	3	3	3	1	2

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	LOGISTICS MANAGEMENT
Term/Semester	3
Course ID	21MBA433
Credits	3

Introduction:

Logistics is the set of activities involved in the flow of materials and products through an organization and through the supply chain to the market. More specifically, business logistics is the subject that manages efficient, effective flow and storage goods, services, and related information in a supply chain. The key elements of business logistics covered in this course include logistics planning and strategy, customer service, procurement, transport, inventory, warehousing, and handling. This course addresses questions about logistics planning, transport modes selection, vehicle routing, inventory policies, purchasing quantity and timing, and storage selection.

Course Outcomes (COs):

Having successfully completed this course student will be able to:

CO1: Analyze how logistical decisions (e.g., facilities, inventory, and transportation) impact the performance of the firm as well as the entire supply chain.

CO2: Compare and contrast the various types of information management systems in Logistics and SCM

CO3: Deploy appropriate strategies for order management and customer service

CO4: Understand the importance of Inventory management system in SCM and Logistics

CO5: Analyze the strengths and weaknesses of various transportation modes and perform cost analysis.

Course content and Structure: 36 hours

Module 1: Overview of Logistics (6 Hrs.)

- Introduction to physical distribution –
- Logistics management and its elements
- Modern Concepts in Logistics
- Role of logistics in strategy; The Systems and Total Cost Approaches to Logistics; Logistical Relationships within the Firm

Module 2: Logistics and Information Technology (8 Hrs.)

- Types of Information Management Systems
- Office Automation Systems Communication Systems; Transaction Processing Systems (TPS); Management Information Systems (MIS) and Executive Information Systems (EIS); Decision Support Systems (DSS); Logistics Management system (LMS); Enterprise Systems
- The Internet's Influence on Logistics and IoT ; GPS, Geofencing

Module 3: Elements of Logistics Systems (8 Hrs.)

- **Demand Management** - Demand Forecasting Models; Demand Forecasting Issues;
- **Order Management** - Order Transmittal; Order Processing; Order Picking and Assembly Order Delivery
- **Customer Service** - Time; Dependability; Communication; Convenience; Managing Customer Service; Establishing Customer Service Objectives; Measuring Customer Service; Customer Profitability Analysis; Service Failure and Recovery

Module 4: Inventory and Warehousing Management

(8 Hrs.)

- Inventory Classifications
- Inventory Costs
- The Role of Warehousing in a Logistics system; Public Warehousing; Private Warehousing; Contract Warehousing; Multiclient Warehousing
- Design Considerations in Warehousing; General Considerations; Trade-offs; Fixed versus Variable Slot Locations for Merchandise; Degree of Warehouse Automation
- Warehousing Operations; Safety Considerations; Warehousing Security; Cleanliness and Sanitation Issues

Module 5: Transportation Management

(6 Hrs.)

- Transportation Modes; Airfreight; Motor Carrier; Pipeline; Railroads; Water; Intermodal Transportation; Tailored Transportation-
- Transportation Specialists
- Transportation Regulation; Environmental Regulation; Safety Regulation; Economic Regulation
- Transportation Management systems ; Simulation models on TMS
- Legal Classification of Carriers

Pedagogy:

- Class room discussion
- Project based learning
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching
- Simulation

Teaching Learning Resources:

Recommended Books

1. Vinod V. Sople (2009) Logistic Management (2nd Edn.) Pearson Limited.
2. David B. Grant, Chee Yew Wong, Sustainable Logistics and Supply Chain Management: Principles and Practices for Sustainable Operations and Management, Kindle Edition
3. Contemporary Logistics, Paul R. Murphy Jr.; A. Michael Knemeyer, Pearson, 12e
4. Fundamentals of Logistics Management (The Irwin/McGraw-Hill Series in Marketing), Douglas Lambert, James R Stock, Lisa M. Ellram, McGraw-Hill/Irwin, First Edition, 1998.

References

1. David J. Bloomberg, Stephen Le May &: Logistics, Prentice-Hall of India Pvt Joe B. Hanna Ltd., New Delhi, 2003.
2. Donald J. Bowersox & David J. Closs: Logistical Management, Tata McGraw Hill Publishing Co. Ltd, New Delhi, 2004
3. Satish C. Aliabad & Rakesh Singh: Logistics Management, Prentice-Hall of India Pvt Ltd., New Delhi, 2005
4. Donald Waters: Logistics. Palgrave Macmillan, New York, 2004
5. Krishnaveni Muthiah: Logistics Management & World Sea borne Trade, Himalaya Publishing House, Mumbai, 1999.
6. Logistics Management for International Business: Text and Cases, Sudalaimuthu & S. Anthony Raj, PHI Learning, First Edition, 2009.

7. Fundamentals of Logistics Management, David Grant, Douglas M. Lambert, James R. Stock, Lisa M. Ellram, McGraw Hill Higher Education, 1997.
8. Logistics Management, Ismail Reji, Excel Book, First Edition, 2008.

Supplementary reading

- <https://www.edx.org/course/master-control-in-supply-chain-management-and-logi>
- <https://www.coursera.org/specializations/supply-chain-management>
- <https://nasroo.com/topic/business/logistics-and-supply-chain/>
- <https://locus.sh/resources/ebooks/?locale=en>
- Pearson e – library ; <https://elibrary.in.pearson.com/bookshelfDashboard>
- EBSCO : <https://www.ebsco.com/search?search=supplychainmodel>
- Jgate: <https://jgateplus.com/home/resources/>
- Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	1	-	--	2	3	-	3	-	--
CO2	-	3	1	-	1	-	3	3	3	1	2
CO3	2	3	1	-	-	-	3	1	3	1	2
CO4	-	3	-	-	-	3	3	1	3	1	1
CO5	1	3	2	-	-	1	3	1	3	-	1

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	LEAN MANAGEMENT
Term/Semester	III
Course ID	21MBA434
Credits	3

Introduction:

The organization requirements vary industry to industry and Lean Manufacturing has always been challenge. Every business function needs Lean Management -FMCG to Industrial products which involves raw materials to produce a finished product. This means every stage of Manufacturing – required to understand and analyzing production planning and control tools for efficient production systems. Lean Management helps in decision making and helps to eliminate waste in the production Process problems. The purpose of this course is to prepare the students to understand the tools and techniques involved in Lean Management. Moreover, enable them to execute a Lean project to achieve specific goals that will benefit the organisations and society.

Course Outcomes (COs):

Having successfully completed this course student will be able to:

CO1 – Compare and contrast the various elements of Lean Management

CO2 – Apply Lean Tools and Techniques to eliminate waste in the production Process

CO3 – Develop and deploy Lean system for better productivity

CO4 - Apply Appropriate Lean tools for project selection and management

CO5 – Implement and review the Lean projects

Course content and Structure: 36 hours

Module 1- Introduction To Lean Management And Lean Elements (6 Hrs.)

- Introduction to seven waste and their narration
- Evolution of lean; Global competition
- Lean Manufacturing; Value flow and Muda, Muri and Mura; Need for LM; Meeting the stake holders' requirement; Elements of LM.

Module 2: Lean Tools and Techniques (8 Hrs.)

- Various tools of LM
- Fundamental blocks of Lean
- Impact of Seiri, Seiton, Seiso, Seiketsu and Shitsuke (5S)
- Need for Total Productive Maintenance (TPM); Pillars of TPM; Implementation of TPM
- Overall Equipment Effectiveness (OEE) and its computation.
- Six Sigma
- Standardization Vs. Customization

Module 3: Lean System (8 Hrs.)

- Lean systems
- Features of manufacturing and services; Work flow; Small lot sizes; Pull Method; Kanban; A3 problem solving; Just in Time , Kaizen, Quality circles

Module 4: Project Selection for Lean (8 Hrs.)

- Resource and project selection; components of project selection; Selecting projects; Process mapping; Current and future; value stream mapping
- Project suitable for lean initiatives

Module 5: Lean Management And Implementation

(6 Hrs.)

- Standardized work; Continuous improvement
- Lean projects; Selecting the members; Training; preparing project plan; Implementation; Review
- Productivity Improvement tools - Process- Machinery Operator and equipment.

Pedagogy:

- Class room discussion
- Project based learning
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching
- Simulation

Teaching Learning Resources:

Recommended Books

1. Lean Sustainable Supply Chain: How to Create a Green Infrastructure with Lean Technologies, Robert Palevich, Pearson, 2012
2. Harold J. Steudel and Paul Desruelle, "Manufacturing in the nineties – how to become a lean, world - class competitor", Van nor strand Reinhold, New York, 1992
3. John Nicholas, "Competitive manufacturing management - continuous improvement, lean production, and customer-focused qualities", McGraw Hill International Edition, 1998
4. Ronald G. Askin & Jeffrey B. Goldberg, "Design and analysis of lean production systems", John Wiley & Sons, 2003
5. Jeffrey Liker, The Toyota Way: Fourteen Management Principles from the World's Greatest Manufacturer, McGraw Hill, 2004.

References

1. Feld, W. M. (2000). Lean manufacturing: tools, techniques, and how to use them. CRC press.
2. Forrest W. Breyfogle III, Implementing Six Sigma: Smarter solutions Using Statistical Methods, 1999.
3. James P. Womack, Daniel T. Jones, Lean Thinking, Free press business, 2003.
4. Liker, J. K. (1997). Becoming lean: Inside stories of US manufacturers. CRC Press.
5. Mann, D. (2009). The missing link: Lean leadership. Frontiers of health services management, 26(1), 15-26.
6. Michael L. George, Lean Six Sigma, McGraw-Hill, 2002.
7. N. Goplakrishnan, Simplified Lean Manufacture, PHI, 2010
8. Michael L. George, Lean Six SIGMA: Combining Six SIGMA Quality with Lean Production Speed, McGraw Hill, 2002.
9. Taiichi Ohno, Toyota Production System: Beyond Large-Scale Production, Taylor & Francis, Inc., 1988.
10. Jeffrey Liker, The Toyota Way, Tata McGraw-Hill, 2004

Supplementary reading

1. <https://locus.sh/resources/ebooks/?locale=en>
2. <https://www.simplilearn.com/quality-management/lean-management-training>
3. <https://www.edx.org/new/course/lean-production>

4. Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>
5. Arnheiter, E. D., & Maleyeff, J. (2005). The Integration of lean management and Six Sigma. The TQM magazine 17(1), 5-18.
6. Charron, R., Harrington, H. J., Voehl, F., & Wiggin, H. (2014). The lean management systems handbook (Vol. CRC Press.
7. Emiliani, M. L. (2006). Origins of lean management in America: the role of Connecticut businesses. Journal of management History, 12(2), 167-184
8. Pearson e – library ; <https://elibrary.in.pearson.com/books/helpDashboard>
9. EBSCO : <https://www.ebsco.com/search?search=Lean>
10. Jgate: <https://jgateplus.com/home/resources/>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	2	-	--	2	3	-	3	-	--
CO2	-	3	2	-	1	-	3	3	3	1	2
CO3	2	3	2	-	-	-	3	1	3	1	2
CO4	1	3	2	-	--	2	3	-	3	-	--
CO5	-	3	2	-	1	-	3	3	3	1	2
LEVEL	3-Substantial		2-Moderate		1-Slight		- No Co-relation				

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

BUSINESS PROCESS MODELING (BPM) AND ENTERPRISE RESOURCE PLANNING (ERP)	
Course Title	
Semester	IV
Course ID	21MBA435
Credits	3

Introduction:

This course serves as an introduction to the world of Enterprise Resource Planning and also provides foundation for many disciplines in common business modern information systems. Students will examine how and why an ERP system is implemented and how it is integrated with existing business processes. Students will get to know what the impact of ERP on the organization is and how change can be managed. For demonstration an ERP system such as SAP will be used to experience several business processes.

This course also looks at ways in which business processes can be analyzed, redesigned, and improved. Business process management (BPM) is concerned with the concepts, methods, and techniques that support the design, administration, configuration, enactment, and analysis of business processes. By taking this course student will be able to understand business process from a general management perspective, and learn tools, analytical frameworks and general principles for managing business processes.

Course Outcomes (COs):

After successfully completing the course the students will be able to:

CO1: Understand and appreciate the concepts of Business Process Modeling.

CO2: Apply different methods for business process modeling in all stages of organization.

CO3: Compare and contrast various models of ERP and its role in integrating business functions

CO4: Analyze the strategic options for ERP identification and adoption.

CO5: Apply and evaluate the ERP implementation strategies in E-Commerce industry.

Course content and Structure: (36 hours)

Module 1: Introduction to Business Process Modeling (5 Hours)

- Business processes: What is BPM; The evolution of BPM
- Business process; Process discovery; Process scoping
- Business process modeling as a basis for BPM
- Business process modelling methods and tools: an overview of BPMN and EPC

Module 2: Business Process Modeling Process (8 Hours)

- Business process modelling, business rules and ERP systems implementation
- Simulation modelling and business process analysis
- Setting-up a process support organization & Change management
- Process improvement methods – overview
- The role of organizational culture in BPM
- Process Benchmarking
- Process Reengineering

Module 3: Introduction to Enterprise Resource Planning (5 Hours)

- Introduction to Enterprise Resource Planning, Benefits of ERP
- Conceptual Model of ERP
- The Evolution of ERP
- The Structure of ERP

- Reasons for the Growth of ERP
- Scenario and Justification of ERP in India
- Evaluation of ERP
- Various Modules of ERP

Module 4: Understanding ERP

(9 Hours)

- Overview of Enterprise
- Integrated Management Information System
- Business Modelling
- ERP for Small Businesses
- ERP for Make to Order Companies.
- Business Process Mapping: Business Process Mapping in ERP; ERP Implementation Process
- ERP and Related Technologies: Business Process Re-engineering, Management Information System, Executive Information System (EIS); Decision Support Systems (DSS); Supply Chain Management.

Module 5: ERP and E-commerce:

(9 Hours)

- Future Directives in ERP
- ERP and Internet
- Critical Factors Guiding Selection and Evaluation of ERP
- Strategies for Successful ERP Implementation
- Critical Success Factors in ERP Implementation
- Failure Factors in ERP Implementation
- Integrating ERP into Organisation.
- ERP Software and Tools,
- Case Study: SAPR/3 at Tata Steel, Pantaloons, RSST.

Pedagogy:

- 1) Classroom discussion
- 2) Case based teaching
- 3) Interaction with experts
- 4) Experiential learning
- 5) Inquiry based teaching
- 6) Project based learning
- 7) Simulation based teaching

Teaching Learning Resources:

Recommended Books

1. Enterprise Systems for Management, Luvai F. Motiwalla and Jeff Thompson, second edition, Published by PEARSON: ISBN-13: 978-0-13-214576-3.
2. Essential Business Process Modeling. Michael Havey, First Edition, Published by O'Reilly ISBN: 20099780596555153
3. Vinod Kumar Garg and Venkitakrishnan N K, "Enterprise Resource Planning Concepts and Practice", second edition published by PHI. ISBN: 9788120322547
4. Joseph A Brady, Ellen F Monk, Bret Wagner, "Concepts in Enterprise Resource Planning", second Edition published by Thompson Course Technology. ISBN: 9780619216634
5. Mary Summer, "Enterprise Resource Planning", Fourth Edition published by Pearson Education. ISBN: 9788131702406

6. Sharp A. and McDermott P. 2009. Workflow Modeling: Tools for process improvement and application Development 2nd edition. Artech House, Boston | London. ISBN: 13: 978 1 59693 192 3.

Reference Books

1. Alexis Leon, “ERP Demystified”, Second edition published by Tata McGraw Hill. ISBN: 9780070656642
2. Rahul V. Altekar “Enterprise Resource Planning Theory and Practice”, eighth edition published by Tata McGraw Hill,
3. Essentials of Business Processes and Information Systems Simha Magal and Jeffrey Word. ISBN-13: 978-0-470-23059-6

Supplementary readings:

1. <https://www.coursera.org/learn/enterprise-systems>
2. www.elibrary.in.pearson.com
3. <https://jgateplus.com>
4. <https://search.ebscohost.com>
5. <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	3	3	3	3	1	3	1	-	2
CO2	3	2	3	3	3	3	1	3	1	-	2
CO3	2	3	1	2	2	3	3	2	1	-	2
CO4	2	3	1	2	2	3	3	2	1	-	2
CO5	3	3	2	2	2	3	3	3	1	-	1

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	BUSINESS DYNAMICS MODELING AND SIMULATION
Term/Semester	III
Course ID	21MBA436
Credits	3

Introduction:

The business environment is constantly changing and organizations need the ability to rehearse alternative futures. By mimicking the interlocking operations of firms and industries, modelling serves as a 'dry run' for testing ideas, anticipating consequences, avoiding strategic pitfalls and improving future performance. Strategic Modelling and Business Dynamics is an essential guide to credible models; helping to understand modelling as a creative process for distilling and communicating those factors that drive business success and sustainability. The course demonstrates a range of in-depth understanding on dynamics related to firm operations, strategy, public policy, and everyday life.

Course Outcomes (COs):

Having successfully completed this course student will be able to:

CO 1 – Understand and appreciate the concept of systems thinking and its applications in Business dynamics

CO2 – Compare and contrast the various types of system models and its applications in problem solving

CO3 - Develop and deploy the simulation models to address the problems in Industries

CO4 – Understand and appreciate the dynamics of Model building

CO5 - Apply the techniques involved in validating the simulation models

Course content and Structure:

36 hours

Module 1- Introduction to Systems thinking

(6 Hrs.)

- System thinking; Meaning; Characteristics; Emerging properties
- Feedback Systems
- Thinking/Causal Loop Diagrams; Causality; Causal Chains; Causal Loop Diagrams
- Meaning of links and polarities on links; loop polarities

Module 2: System Simulation

(8 Hrs.)

- Systems and system environment; Components of a system; Discrete and Continuous systems;
- Systems approach to problem solving
- Types of system study; System analysis; system design;
- System modeling; Types of Models
- System simulation; Technique of simulation; Comparison of simulation and analytical methods
- Types of system simulation; Steps in simulation study; Monte Carlo simulation.

Module3: Simulation Modeling and Analysis of Manufacturing systems

(8 Hrs.)

- Objectives
- Performance measures
- Issues in simulation of manufacturing systems
- Simulation software for manufacturing applications
- Simulation of job shop manufacturing systems
- Simulation modeling and analysis of single server and single queue systems

Module 4: Cyclical Dynamics and the Process of Model Building

(6 Hrs.)

- An Overview of the Modelling Process
- Employment and Production Instability; Equation Formulations and Computations in Production Control
- Modelling Workforce Management and Factory Production Dynamics; Equation Formulations in Workforce Management; Chronic Cyclicity in Employment and Production
- Modelling for Learning and Soft Systems

Module 5: Verification and validation of Simulation Models

(6 Hrs.)

- Verification of simulation models
- Calibration and validation of models; Face validity; Validation of model assumption; Validating input-output transformation; Input-output validation using historical input data.

Pedagogy:

- Class room discussion
- Project based learning
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching
- Simulation

Teaching Learning Resources:

Recommended Books

1. Banks, J., Carson, J. S., Nelson, B. L., and Nicol, D. M., "Discrete-event system simulation", Third Edition, Pearson Education, Inc., 2001
2. Strategic Modelling and Business Dynamics, 2ed: A Feedback Systems Approach, John D. Morecroft, Wiley India, 2015.
3. Business Dynamics: Systems Thinking and Modeling for a Complex World, John D. Sterman - Tata McGraw Hill: 2010.
4. Gordon G., "System simulation", Prentice Hall Ltd. 1991
5. Deo, N., "System simulation with digital computer", Prentice Hall of India, 1997
6. Askin R. G. and Standridge, C. R., "Modeling and analysis of manufacturing systems", John Wiley & Sons, 1993.

References

1. Ronald G Askin, "Modeling and Analysis of Manufacturing Systems", John Wiley and Sons, Inc, 1993
2. Viswanatham N and Narahari Y "Performance Modeling of Automated Manufacturing Systems", Prentice Hall Inc., 1992.

- Mengchu Zhou, "Modeling, Simulation, and Control of Flexible Manufacturing Systems: A Petri Net Approach", World Scientific Publishing Company Pvt Ltd., 2000.
- Jean Marie Proth and Xiaolan Xie, "Petri Nets: A Tool for Design and Management of Manufacturing Systems", John Wiley and Sons, New York, 1996.
- Brandimarte P and Villa A, "Modeling Manufacturing Systems" Springer Verlag, Berlin, 1999.

Supplementary resources

- <https://www.edx.org/course/dynamics-and-control>
- <https://www.coursera.org/learn/modeling-simulation-natural-processes>
- <https://www.coursera.org/lecture/modeling-simulation-natural-processes/modeling-and-simulation-F7vas>
- <https://www.edx.org/new/course/computational-thinking-for-modeling-and-simulation>
- Pearson e – library ; <https://elibrary.in.pearson.com/bookshelfDashboard>
- EBSCO : <https://www.ebsco.com/search?search=simulation>
- Jgate: <https://jgateplus.com/home/resources/>
- Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	2	-	--	2	3	-	3	-	-
CO2	-	3	2	-	1	-	3	3	3	1	2
CO3	2	3	2	-	-	-	3	1	3	1	2
CO4	1	3	2	-	--	2	3	-	3	-	-
CO5	-	3	2	-	1	-	3	3	3	1	2
LEVEL	3-Substantial			2-Moderate		1-Slight		- No Co-relation			

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title		SCM FOR E -COMMERCE
Term/Semester		III
Course ID		21MBA437
Credits		3

Introduction:

Recent developments and breakthroughs in E-commerce have radically changed the business world. Competition has become just a few clicks away with 24-7 accessibility enabled by Internet technology. In many industries, it has become virtually impossible to have a sustainable business without a proper management of the Internet and information processes and service outcomes associated with product design, sourcing, production, order fulfillment, logistics, and delivery. In this context, the relationships with suppliers and customers, coupled with supply chain management—the planning, operation, and control of material, information, and financial flows across individual firms in the extended enterprise— have become crucial for companies' success. In this course, students will learn to strategically think about integrated supply-chain, procurement, and service management strategies for organizations that rely on E- commerce to transact with suppliers and end consumers

Course Outcomes (COs):

Having successfully completed this course student will be able to:

CO1: Understand and appreciate the opportunities and challenges that E-commerce brings to supply chain management

CO2: Develop and deploy e business models in SCM

CO3: Analyse the role that the Internet and information plays in supply chain synchronization and in the development of relationships with suppliers and customers.

CO4: Apply supply chain management concepts to the design, analysis, and improvement of e-business.

CO5: Compare and contrast the e-SCM Technology architecture

Course content and Structure: 36 hours

Module 1: E- Supply Chain management

(6 Hrs.)

- Defining e-SCM
- Characteristics of e-SCM
- Web enabled network of channel partners

- Supply chain synchronization(SCS)
- Avenues for e- SCS; Understanding the Internet Business Environment; e- Business principles
- e-supply chain business trends

Module 2: E – Business Models (8 Hrs.)

- Enterprise system foundation
- Internet commerce; Electronic data interchange (EDI); I – Marketing; e – business market places; e – collaboration market places; e-SCM business system model; e-business integration framework
- Collaborative planning, Forecasting and Replenishment (CPFR) model

Module 3: E – SCM strategies and CRM (8 Hrs.)

- Changing views of Enterprise strategy
- Value chains
- Barriers to e –SCM
- e –SCM Strategy development; Business value proposition; Value portfolio; Scope of Collaboration; Effective resource management; Pursuing growth management;
- CRM as a strategic tool
- Applying technology to CRM
- Sales force automation (SFA)
- e – CRM Marketing; Electronic Bill Presentment and Payment (EBPP)

Module 4: Supplier Relationship Management (SRM): Integrating the supplier to e-value chain (6 Hrs.)

- Defining SRM; Components of SRM
- Internet driven SRM environment; e-SRM services function; e – SRM processing; e – SRM technology service; e – SRM Marketplace Exchange Environment
- Implementing e- SRM; Performance measurement

Module 5: Architecting the e- SCM Environment (8 Hrs.)

- Foundations of e- SCM technology architecture
- Enterprise business architecture (EBA); Inter Enterprise business architecture (IEBA); Inter Enterprise Technology architecture (IETA)
- Future of e –SCM; Changing face of Information Management

- New generation of Business Applications; Application Service providers (ASP); Wireless; Transforming the organisation to e –SCM environment; Supply chain efficiency; e- SCM integration; Collaborative convergence; Remote sensing and GPS enabled e -tracking

Pedagogy:

- Class room discussion
- Project based learning
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching

Teaching Learning Resources:

Recommended Books

1. Introduction to e-Supply Chain Management: Engaging Technology to Build Market-Winning Business Partnerships, David F Ross, CRC Press, 1st Edition, 2012
2. Modeling and Property Analysis of E-Commerce Logistics Super network, Intelligent Decision Technologies, Chuanmin Mi, Yinchuan Wang, Yetian Chen 2016
3. E-Supply Chain: Using the Internet to Revolt ionize Your Business: How Market Leaders Focus Their Entire Organization to Driving Value to Customers, Charles C Poirier, Berrett-Koehler Publishers, 2000

Reference Books

1. Supply Chain Management: Strategy, Planning, and Operation by Sunil Chopra and Peter Meindl, 2nd Edition, Prentice Hall.
2. Designing and Managing the Supply Chain by David Simchi-Levi, Philip Kaminsky, and Edith Simchi-Levi, 3rd Edition, McGraw Hill.
3. Internet Business Models and Strategies, by Afuah, A., and Tucci, C.L., 2nd Edition, McGraw Hill.
4. Creating and Capturing Value: Perspectives and Cases on Electronic Commerce" by Garth Saloner and A. Michael Spence. John Wiley & Sons, Inc

Supplementary reading

1. Anderson, D. L. & Lee, H. (2000). "The Internet-Enabled Supply Chain: From the First click to the last mile", Ascet Vol. 2.
2. Garcia-Dastugue, S. J. & Lambert, D. M., "Internet-enabled coordination in the Syllabus SCM 612-E-commerce for Supply Chain Management supply chain, "Industrial Marketing Management, 32, 51-263.
3. Shankar, V. and O'Driscoll T (2002). "How wireless networks are reshaping the supply chain", Supply Chain Management Review, July/August, 44-51.
4. Atkinson, W. (2001). "e-logistics and e-procurement: here to stay" Supply Chain Management Review, Nov/Dec Supplement, 13-14.
5. Logistics @ Internet Speed: The Impact of e-Commerce on Logistics <http://bus.utk.edu/ivc/supplychain/Readings/LogisticsInternet.pdf>
6. <http://www.manufacturing.net/scm/index.asp?layout=siteInfoWebzine>
7. ASCET Project: <http://www.ascet.com/>
8. Supply chain brain.com: <http://www.supplychainbrain.com/>
9. Managing the Digital Enterprise: <http://digitaleenterprise.org>
10. Pearson e – library ; <https://elibrary.in.pearson.com/books/helfDashboard>
11. EBSCO : <https://www.ebsco.com/search?search=supplychainmodel>
12. Jgate: <https://jgateplus.com/home/resources/>
13. Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	1	-	--	2	3	-	3	-	2
CO2	-	3	1	-	1	-	3	3	3	1	2
CO3	2	3	1	-	-	-	3	1	3	1	2
CO4	-	3	1	-	1	-	3	3	3	1	2
CO5	1	3	1	-	--	2	3	-	3	-	2
LEVEL	3-Substantial		2-Moderate		1-Slight		- No Co-relation				

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	
WORLD CLASS MANUFACTURING	
Term/Semester	IV
Course ID	21MBA441
Credits	3

Introduction:

World Class Manufacturing is a set of concepts, policies, techniques, and principles for operating and managing a manufacturing company. The concept of World Class Manufacturing is based on the positive results achieved by Japanese manufacturing companies after World War II. In order for companies to compete on the world stage, businesses will need to focus on producing quality products and services, delivering on time, and running operations at the lowest cost possible. Adopting the manufacturing processes will help managers focus on continual improvement in quality, cost, lead time, flexibility, and customer service.

Companies using World Class Manufacturing strategies focus on continuous improving operations, eliminating waste, and creating Lean organizations, which often results in higher productivity. These companies also focus on setting new standards for speed from order capture through delivery without the heavy dependence on inventory. Combining the philosophies of World Class Manufacturing with the tools of Lean will help businesses achieve success and a reduction in waste. Sequential methods of performing work are being replaced with concurrent methods to compress time, and functional and hierarchical divisions of duties are being replaced by team-driven activities.

Course Outcomes (COs):

After completion of this course, students will be able to;

- CO1** Understand and appreciate recent trends in manufacturing
- CO2** Describe the relevance of World Class Manufacturing
- CO3** Illustrate customization of product for manufacturing
- CO4** Appraise the implementation of new technologies.
- CO5** Critically evaluate the existing industries with WCM industries

Course content and Structure: (36 hours)

Module: 1 Introduction & Overview of World Class Manufacturing (WCM) 6 Hours

- Definition; Factors affecting Global Business conditions; Global competitiveness.
- Hall Marks of Excellence; Path to becoming world class; World Class Suppliers and World class customers.
- Operation Strategy & Competitiveness; Dimensions of Competitiveness; Competitive priorities.
- Globalization and international business.
- Productivity Measures; Improving Productivity; Strategy & Competition.
- Elements of Operations Strategy; Manufacturing competitiveness to World Class Manufacturing, scorecard.
- Ten pillars of WCM Business Excellence.

Module: 2 Process Selection & Design (Manufacturing And Services) 6 Hours

- Process Design; Types of processes; Planning and Selection; Process analysis; Process flowcharting.
- Measuring process performances; Product; Process Matrix; Service
- System design matrix; process capability studies; SPC & control charts; Six Sigma.

Module: 3 WCM Models, Quality & Global Competitiveness: 8 Hours

- Manufacturing objective and strategy,
- Malcolm Baldrige National Quality Award; Hall's Framework of Value added Engineering; Schonbergers's Framework; Gunn's model; Maskell's Model;
- Relationship between Quality and Global Competitiveness, Deming's and Shiego Shingo's approach to Quality Management; Competitiveness enhancing manufacturing technologies.
- Global Integration & Economic Trends.

Module: 4: WCM Systems, Tools & Techniques 8 Hours

- The emergence of information age; Concept of Value Chain; Sheer's integrated information systems Framework.
- Information Management Tools; Material processing and handling tool; Automation.
- Six sigma; Bar coding; JIT, Value Engineering; Quality Circles; Rapid Prototyping; Poka Yoke; KANBAN; FMS and SMED; value stream mapping.
- Differential diagnosis as a problem solving tool.
- Inventory Modelling

Module: 5 Lean Production Systems 8 Hours

- Lean logic Elements of Lean Production; Agile Manufacturing; Lean Production & JIT.
- Comparison of Batch Production; Mass production and Lean Production; Lot size basics.

- Elimination of waste; Techniques for set Up time reduction; Effect of Lot Size reduction on competitive criteria & set-up time reduction; Reduction methodology; Toyota Production system; WCM system driven by IOT and Cyber Physical systems.

Pedagogy:

- 1) Classroom Discussion
- 2) Industry Visits
- 3) Project Based teaching
- 4) Case Based teaching
- 5) Scenario analysis and group discussions
- 6) Work Shop from practioners.

Teaching Learning Resources:

Recommended Books

- Total Quality Management, Bester field, D. H., Pearson Education, 1999.
- K. Shridhara Bhat, “World Class Manufacturing”, HPH
- World Class Manufacturing – Strategic Perspective, Sahay B.S., Saxena K B C and Ashish Kumar, Mac Milan Publications, New Delhi.
- World Class Manufacturing - The Lesson of Simplicity, Schonberger R. J, Free Press, 1986

Reference Books:

- B.S. Sahai, K.B.C. Saxena& Ashish Kumar, “World Class Manufacturing”, Macmillan Publishing Co.
- Richard B Chase, Nicholas J Acquilano, Ravi Shankar & F. Robert Jacobs, “Operations Management for Competitive Advantage”, Mc Graw Hill
- Nicholas, “Competitive Manufacturing Management”, TMH
- Richard Schonbeger, World Class Manufacturing: The Lessons of Simplicity Applied, Free Press, London
- Toyota Production Systems - Taichi Ohno, Kaizen, Masaki Imai
- Chronicles of a Quality Detective - Dr Srinivas Gondhalekar, Payal Sheth Beyond T.Q.M - By Robert L. Flood

Supplementary Reading:

<https://www.sevenstepsglobal.com/world-class-manufacturing/>

<https://manufacturingglobal.com/top10/top-10-largest-manufacturing-companies-world>

<https://world-class-manufacturing.com/>

<https://www.slideshare.net/akshayisai/world-class-manufacturing-and-its-implementation-in-india>

<https://blog.bizvibe.com/blog/largest-manufacturing-companies>

<https://www.classcentral.com/course/edx-lean-production-8447>

<https://alison.com/course/manufacturing-strategy-achieving-world-class-manufacturing>

<https://www.coursera.org/projects/create-a-kanban-board-in-google-sheets>

Pearson e – library ; <https://elibrary.in.pearson.com/books/helpDashboard>

EBSCO : <https://www.ebsco.com/search?search=supplychainmodel>

Jgate: <https://jgateplus.com/home/resources/>

Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	1	1	1	2	2	3	1	2
CO2	2	2	1	-	1	-	2	2	2	1	1
CO3	2	1	1	2	1	1	1	3	3	2	2
CO4	2	2	1	1	1	1	2	1	2	1	-
CO5	3	2	1	-	1	2	3	-	2	2	-

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	BUSINESS PROCESS IMPROVEMENT
Term/Semester	IV
Course ID	21MBA442
Credits	3

Introduction:

Business process improvement (BPI) is a management exercise in which enterprise leaders use various methodologies to analyze their procedures to identify areas where they can improve accuracy, effectiveness and/or efficiency and then redesign those processes to realize the improvements. Business process improvement, or BPI, works by identifying the operations or employee skills that could be improved to encourage smoother procedures, more efficient workflow and overall business growth. This process can also be referred to as functional process improvement.

Enterprises use BPI to find ways to reduce the time it takes to complete processes, and to eliminate waste and friction in the processes, and/or improve the quality of the products or services that are produced through these processes.

In IT, business process improvement addresses the root causes of process or system deficiencies to harmonize IT and business goals. Process mapping, which assesses business operations to pinpoint problem areas and adjust workflow, is often the first step in a larger business process improvement effort. With BPI as a discipline capable of producing such improvements, BPI creates value in its ability to help enterprises fine-tune how they operate to ensure they are best positioned to compete in today's competitive, technology-driven business environment.

Course Outcomes (CO)

Having successfully completed this course student will be able to:

- CO1 Define the key terms associated with Business Process Improvement.
- CO2 Explain the various supporting and opposing forces to Business Process Improvement in simple business situations.
- CO3 Understand and appreciate the enablers of BPI
- CO4 Formulate a working plan to establish a Business Process Improvement
- CO5 Evaluate the success of a BPR initiative in relation to the impact on organizational key performance indicators (KPIs.)

MODULE 1: Introduction to Business Process Improvement (BPI):

8 Hour

- Definition of business processes; BPI; Evolution Concept of BPI; BPI guiding principles business process redesign, and Benefits of BPI.
- Need for reengineering; Breakthrough in reengineering model; Business process reengineering & performance improvement;
- Key targets of BPR; Myths about BPR; and other management concepts.
- TQM, Quality function deployment; ISO standards; ERP; BPR and Continuous Improvement.

MODULE 2: Business vision and process objectives:

6 Hours

- The Key Elements of BPI
- Develop BPI Vision; Establish a Responsible Team for implementing BPI.
- Prepare the Organization for Change, and Redesign the Business Process.
- Processes to be redesigned; and selection criteria.
- Measuring existing processes; BPI Goals – Cycle time reduction; Cost reduction; Quality improvement; Customer Satisfaction.
- Case Studies

MODULE 3: Enablers of BPI:

6 Hours

- Enablers of BPI in manufacturing; Agile Manufacturing, Lean Manufacturing; JIT; Collaborative Manufacturing; Intelligent Manufacturing.
- Production Planning; Product design & development.
- Role of information technology in improving production
- Relationship between BPI and information technology.

MODULE 4: BPI implementation methodology

8Hours

- Different BPI Methodologies; Different Phases of BPI; Relationship between BPI phases; Tools used in Modeling the Business; flow-charting; business activity maps; relational diagrams; benefit/cost analysis; Process Modeling.
- KPIs Definition; Measuring Key Performance Indicator (KPIs) Methodologies (Common Assessment Framework (CAF); Balanced Scorecard).
- Fish bone diagram; Benchmarking

- Case Studies

MODULE 5: Change Management:

8 hours

- The Power of Habit in organizations; planned changes in business re-engineering projects; Factors relating to change management systems and culture; Committed and strong leadership;
- Models in change management - Kotter's Change Management Model , McKinsey 7-S Change Management Model, ADKAR Change Management Model, Lewin's Change Management Model
- Factors relating to organizational structure; Factors related to BPI program management;
- Factors related to IT infrastructure;
- Factors Relating to BPI Failure; Problems in communication and organizational resistance; Lack of organizational readiness for change.
- Problems related to creating a culture for change; Lack of training and education; Factors related to management support; Ineffective BPI teams.
- Framework for barrier management

Pedagogy:

- 1) Classroom Discussion
- 2) Activity based teaching,
- 3) Project Based teaching
- 4) Case study based teaching
- 5) Interaction with Experts
- 6) Industrial Visits.

Teaching Learning Resources:

Recommended Books

- Ravi Anupindi, Sunil Chopra, Sudhakar D Deshmukh, Jan A. Van Mieghem- Managing Business Process Flows: Pearson New International Edition, 3rd Edition
- Carr, D.K. and Johansson, H.J.: Best Practices in Re-engineering, McGraw Hill, New York 1995.
- Vikram Sethi and William R.King: Organisational Transformation through Business Process Reengineering, Pearson Education, New Delhi 2003.
- Jayaraman, M.S. et el: Business Process Re-engineering, Tata McGraw Hill, New Delhi 1994.

Suggested Reference Books:

- Harmon, P, Business Process Change: A Guide for Business Managers and BPM and Six Sigma Professionals, Elsevier/Morgan Kaufmann Publishers.
- Kock, N.F., Process Improvement and Organizational Learning: The Role of Collaboration Technologies, Idea Group.
- R. Anupindi et al., Managing Business Process Flows: Principles of Operations Management, Pearson Education Inc.
- Walford, R.B., Business Process Implementation for IT Professionals and Managers, Artech House.
- Hammer, Michael: Re-Engineering the Corporation: A Manifesto for Business Revolution, Nicholas Brealey, London 1993.
- Peppard, J and Rowland P: The Essence of Business Process Re-engineering, Prentice Hall Inc., New York,

Supplementary Reading:

<https://www.cio.com>

<https://mosimtec.com/business-process-improvement-methodology/>

<https://centricconsulting.com> › operational-excellence

<https://tallyfy.com/business-process-improvement-bpi/>

<https://www.mooc-list.com/tags/process-improvement>

<https://www.my-mooc.com/en/mooc/business-process-management/>

<https://www.edx.org/course/operations-management>

Pearson e – library; <https://elibrary.in.pearson.com/bookshelfDashboard>

EBSCO: <https://www.ebsco.com/search?search=supplychainmodel>

Jgate: <https://jgateplus.com/home/resources/>

Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	2	2	1	1	2	2	2	3	2	2
CO2	2	1	2	-	1	-	2	1	2	1	1
CO3	3	1	1	-	2	-	1	3	1	2	3
CO4	2	2	1	1	2	1	2	1	2	1	-
CO5	1	-	1	2	-	1	-	-	2	2	-

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title		BUSINESS ANALYTICS FOR SCM
Term/Semester	IV	
Course ID	21MBA443	
Credits	3	

Introduction:

Analytics represent the ability to make data-driven decisions, based on a summary of relevant, trusted data, often using visualization in the form of graphs, charts and other means. Supply chains typically generate massive amounts of data. Supply chain analytics helps to make sense of all this data — uncovering patterns and generating insights. Supply chain analytics is also the foundation for applying cognitive technologies, such as artificial intelligence (AI), Robotics, ICT tools and Big Data to the supply chain process. Cognitive technologies understand, reason, learn and interact like a human, but at enormous capacity and speed. This advanced form of supply chain analytics is ushering in a new era of supply chain optimization. It can automatically examine through large amounts of data to help an organization improve forecasting, identify inefficiencies, respond better to customer needs, drive innovation and pursue breakthrough ideas.

Course Outcomes (COs):

Having successfully completed this course student will be able to:

- CO 1** –Understand and appreciate the Applications of Analytics in SCM
- CO2** - Apply the appropriate ICT tools for enhancing the Supply Chain capabilities
- CO3** – Analyse the applications of Big Data Analytics in Supply Chain Framework
- CO4** – Compare and Contrast the various AI tools used in SCM
- CO5** –Deploy the Robotic Process Automation for Supply Chain functions

Course content and Structure: 36 hours

Module 1- Overview of Supply Chain Analytics

(4 Hrs.)

- Meaning and concept of Supply chain analytics
- Growth and Evolution of SC Analytics
- Types of Supply Chain Analytics – Descriptive, Diagnostic, Predictive, Prescriptive
- Supply chain analytics software – SAP SCM; E2open; Logility; Watson Supply chain; Blujay SCM etc.,
- Features of SC Analytics
- Benefits of SC Analytics
- Latest trends in SC Analytics – Block chain; Graph Analytics; Hyper Automation

Module 2: ICT Tools for Supply Chain Management

(6 Hrs.)

- Functional Roles of ICT in SCM – Transaction Execution; Collaboration and Coordination; Decision Support
- Benefits of ICT Deployment for SCM; ICT value-add for enterprises
- ICT tools for SCM: Electronic Data Interchange (EDI); Bar coding and Scanner; Enterprise Resource Planning (ERP) Systems; Warehouse MS WMS, Transportation MS and Inventory Management Systems; RFID; Decision Support Systems (DSS); Social, Mobile, Analytics and Cloud (SMAC) stack; Cloud Computing; Web Services;
- Assessment Framework for measuring impact of ICT in SCM

Module3: Supply chain Analytics

(8 Hrs.)

- The Scale, Scope and Depth of Big data for supply chain
- Big Data for Suppliers Network, Knowledge sharing and Collaboration
- Big Data for Resource Optimisation, Demand Forecasting and Risk analysis
- Geoanalytics based on big data to merge and optimize delivery networks.
- Big data for Supply Chain Performance
- Specific used cases in SC Analytics
(Case studies demonstration using R)

Module 4: Artificial Intelligence in SCM

(10 Hrs.)

- Chatbots for Procuring Operations; Automated and Augmented chatbot
- Managing Logistics with Predictive Analysis; strategic planning, procuring raw materials, controlling inventory, developing newer products
- AI in Logistics for Predicting Demand
- Optimizing Logistics Route
- Predicting Peak Hours in Logistics Center
- Automated Quality Checking
- Challenges of Using AI in Supply Chain

Module 5: Emerging trends in SC Analytics

(8 Hrs.)

- Robotic Process Automation (RPA); Features and Capabilities; Benefits
- Levels of Robotics in SCM; Robotic Packaging; Robotic Palletization – Benefits
- Autonomous Mobile Robots (AMRs); Fleet Management and Systems; Pick optimization robots
- Store Robots that Aid in Replenishment
- Autonomous Trucks
- Autonomous Last Mile Deliveries
- Spend analytics
- Allocation of resources
- Procurement analytics
- Optimization of routes
- Warehouse location

Pedagogy:

- Class room discussion
- Software linked practice based teaching
- Workshop from practioners
- Case based teaching
- Experiential learning
- Inquiry based teaching
- Simulation

Teaching Learning Resources:

Recommended Books

1. Supply Chain Management, Sunil Chopra, and Peter Meindl, Pearson
2. Jeremy F. Shapiro, Modelling the Supply Chain. Duxbury, Thomson Learning
3. D. Simchi-Levi, P. Kaminsky, E. Simchi-Levi, and Ravi Shankar, Designing and Managing the Supply Chain concepts, Strategies and Case studies, Third Edition, Tata McGraw Hill, New Delhi, 2008.
4. Rahul Saxena, Anand Srinivasan, Business Analytics

Reference Books

1. Sridhar Tayur, Ram Ganeshan, Michael Magazine (editors). Quantitative Models for Supply Chain Management. Kluwer Academic Publishers, 1999.
2. Márquez Adolfo Crespo (2010) “Dynamic Modelling for Supply Chain Management: Dealing with Front-end, Back-end and Integration Issues”, Springer
3. Simchi-Levi, David, Chen, Xin, Bramel, Julien (2014), “The Logic of Logistics Theory, Algorithms, and Applications for Logistics Management”, Third Edition, Springer, ISBN- 978-1-4614-9149-1
4. Tang Christopher S, Teo Chung-Piaw and Wei Kwok-Kee (Eds) (2008), “Supply Chain Analysis: A Handbook on the Interaction of Information, System and Optimization”, Springer, ISBN-13: 978-0-387-75239-6

Supplementary reading

- Supply Chain Management: An International Journal (Available on www.emeraldinsight.com)
- Supply Chain Management Review
- Purchasing World
- International Journal of Purchasing and Materials Management
- International Journal of Physical Distribution & Logistics Management
- <http://www.supply-chain.com>
- <http://www.transportlink.com>
- <http://www.transportlaw.com>

- <http://www.apics.org>
- <http://www.clm1.org>
- <https://www.edx.org/new/course/supply-chain-analytics>
- <https://www.coursera.org/learn/supply-chain-analytics>
- https://onlinecourses.nptel.ac.in/noc20_mg27/preview
- Pearson e – library ; <https://elibrary.in.pearson.com/booksshelfDashboard>
- EBSCO : <https://www.ebsco.com/search?search=supplychainmodel>
- Jgate: <https://jgateplus.com/home/resources/>
- Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	1	3	2	-	--	2	3	-	3	-	--
CO2	-	3	2	-	1	-	3	3	3	1	2
CO3	2	3	2	-	-	-	3	1	3	1	2
CO4	-	3	2	-	1	-	3	3	3	1	2
CO5	-	3	2	-	1	-	3	3	3	1	2

LEVEL 3-Substantial 2-Moderate 1-Slight - No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester

Course Title	STRATEGIC QUALITY MANAGEMENT
Term/Semester	IV
Course ID	21MBA444
Credits	3

Introduction:

Total quality management (TQM) is the continual process of detecting and reducing or eliminating errors in manufacturing, streamlining supply chain management, improving the customer experience, and ensuring that employees are up to date with training. Total quality management aims to hold all parties involved in the production process accountable for the overall quality of the final product or service.

TQM was developed by William Deming, a management consultant whose work had a great impact on Japanese manufacturing. While TQM shares much in common with the Six Sigma improvement process, it is not the same as Six Sigma. TQM focuses on ensuring that internal guidelines and process standards to reduce errors, while Six Sigma looks to reduce defects.

While TQM originated in the manufacturing sector, its principles can be applied to a variety of industries. With a focus on long-term change over short-term goals, it is designed to provide a cohesive vision for systemic change. With this in mind, TQM is used in many industries, including, banking and finance, and only limited to manufacturing sector.

Course Outcomes (COs):

After completion of this course, students will be able to;

- CO1** Understand and appreciate various Principles and Practices of TQM
- CO2** Classify the Quality Control and Improvement Tools
- CO3** Understand and appreciate the Philosophies of Quality Management
- CO4** Illustrate the Implementation of Total Quality Management
- CO5** Critically evaluate the Quality Standards adopted in industry

Course content and Structure: (36 hours)

MODULE 1: Principles and Practices of TQM

8 Hours

- Introduction: Definition of TQM; Gurus of TQM; TQM Framework; Defining Quality for Goods and Services; Benefits of TQM.
- Importance of Leadership for Successful TQM; The Deming's Philosophy.
- Quality Councils: Definition; Principles and Roles of Quality Councils for Implementation of TQM. Continuous Process Improvement: The Juran's Trilogy; PDCA Cycle (Plan-do-check-act); Kaizen and Six Sigma.
- Performance Measures; Concept of Cost of Quality; Basics of Customer Satisfaction and Customer Satisfaction Index.

MODULE 2: Quality Control and Improvement Tools

8 Hours

- Statistical Quality Control: basic concepts; product control; process control; variations in quality.
- Applications of control charts: types of control charts; mean charts, range charts, P chart, np charts, C charts.
- Quality control graph: Affinity diagram, Tree diagram; Matrix diagram, Process decision program chart, Arrow diagram; Zero defect program (POKA-YOKE).

MODULE 3: Philosophies of Quality Management

6 Hours

- Overview of the contributions of Deming, Juran's Crosby; Masaaki Imai; Feigenbaum; Ishikawa; Taguchi techniques.
- Concepts of Quality circle; Japanese 5S principles and 8D methodologies

MODULE 4: Implementing Total Quality Management

8 Hours

- Strategic quality planning; organizing for TQM; Training for TQM.
- Benchmarking: Rationale of benchmarking Prerequisites of benchmarking; Benefits of benchmarking; Obstacles to successful benchmarking; perpetual benchmarking.
- Concept of Kaizen; Kaizen vs Innovation; Kaizen and management; Kaizen practice.
- TQM in service organizations; implementing TQM through out the organization.

Module 5: Quality Standards

6 Hours

- BIS; AGMARK, ISO 9000; Quality systems under ISO 9000- 20000; ISO 14000; ISO Certification process.
- Quality awards; Maccolm Baldrige Award; Deming's Prize; Golden Peacock Award etc.
- Case studies of implementation of ISO quality systems; TQM verses Six Sigma.
- (Case studies- Mahindra & Mahindra, Mumbai Dabbawallahs, NTPC, TVS Motor etc).

Pedagogy:

- 1) Classroom Discussion
- 2) Activity based teaching,
- 3) Project Based teaching
- 4) Case study based teaching
- 5) Interaction with Experts
- 6) Industrial Visits.

Teaching Learning Resources:

Recommended Books

- 1) Dale H. Bester filed, et at., "Total quality Management", Pearson Education Asia, Third Edition, Indian Reprint 2006.
- 2) Shridhara Bhat K, Total Quality Management – Text and Cases, Himalaya Publishing House, First Edition 2002
- 3) H. Lal, Organizational Excellence through TQM New Age Publications, 2008

Reference Books:

1. James R. Evans and William M. Lindsay, "The Management and Control of Quality", 8th Edition, First Indian Edition, Cengage Learning, 2012.
2. Suganthi.L and Anand Samuel, "Total Quality Management", Prentice Hall (India) Pvt. Ltd., 2006.
3. Janaki Raman. B and Gopal.R.K., "Total Quality Management – Text and Cases", Prentice Hall (India) Pvt. Ltd., 2006.
4. Managing for Quality and Performance Excellence by James R. Evans and William M Lindsay, 9th edition, Publisher Cengage Learning.
5. A New American TQM, four revolutions in management, Shoji Shiba, Alan Graham, David Walden, Productivity press, Oregon, 1990

Supplementary reading:

<https://www.investopedia.com>

<https://managementhelp.org>

<https://www.isixsigma.com>

<https://www.managementstudyguide.com>

<https://www.smartsheet.com>

<https://mooc.es/course/total-quality-management-i/>

<https://www.coursera.org/courses?query=quality%20management>

<https://www.coursera.org/specializations/six-sigma-fundamentals>

Pearson e – library ; <https://elibrary.in.pearson.com/bookshelfDashboard>

EBSCO <https://www.ebsco.com/search?search=supplychaindesign>

Jgate: <https://jgateplus.com/home/resources/>

Capitaline: <https://www.capitaline.com/SiteFrame.aspx?id=1>

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	3	2	2	1	1	1	2	2	3	1	2
CO2	2	2	1	-	1	-	2	2	2	1	1
CO3	2	1	1	2	1	1	1	3	3	2	2
CO4	2	2	1	1	1	1	2	1	2	1	-
CO5	2	2	1	-	1	-	2	2	2	1	1

LEVEL

3-Substantial

2-Moderate

1-Slight

- No Co-relation

Course Evaluation Plan:

Sl. No.	Evaluation Item	Unit of Evaluation	Marks Allotted	Timeline
1	End Term Exam	Individual	50	At the end of the semester
2	Internal test 1	Individual	5	After completion of 2-3 modules
3	Internal test- 2	Individual	5	After completion of all the modules
4	Attendance and Class participation	Individual	10	At the end of the semester
5	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	Individual	30	Full Semester