



RV Institute of Management

**Master of Business Administration (MBA)
Batch 2024 – 26**

Semester IV

23MBA441 – WORLD CLASS MANUFACTURING (WCM)

Course Pack

2025–2026

VISION

To become a world-class management institute of eminence.

MISSION

To nurture Universal Thought Leaders by offering holistic management education fostering Business Intelligence, Health Care, Innovation and Entrepreneurship for Inclusive Growth and Sustainable Development

AND

To provide value added services to Business, Government and Society through Staff Empowerment, Joint Research and Collaborative Engagement.

Program Educational Objectives (PEOs)

- PEO 1: Graduates will be able to demonstrate effective decision making, cognitive flexibility, and problem-solving capability and adapt to the changing global environment
- PEO 2: Graduates will be capable of innovating, starting new entrepreneurial ventures and be a lifelong learner with multidisciplinary research aptitude
- PEO 3: Graduates will be able to think critically; communicate effectively; demonstrate analytical skills, team spirit and leadership qualities
- PEO 4: Graduates will be able to demonstrate professional values, cultural sensitization, ethical behavior and integrity
- PEO 5: Graduates will be responsible global citizens and contribute towards inclusive growth and sustainable development of the society

Program Objectives (POs)

1. Apply knowledge of management theories and practices to solve business problems with required abilities to understand, analyze and communicate global, economic, societal, cultural, legal and ethical aspects of business
2. Foster Analytical and critical thinking abilities for data-driven decision making
3. Ability to develop value based leadership to lead themselves and others in the achievement of organizational goals and contributing effectively to a team environment through effective communication and Negotiation skills
4. Ability to identify business opportunities, frame innovative solutions and launch new business ventures or be an intrapreneur
5. Ability to deal with contemporary issues using multi-disciplinary approach with the help of advanced Management and IT tools and techniques
6. Ability to apply domain specific knowledge and skills to build competencies in their respective functional area
7. Ability to engage in research and consultancy work with cognitive flexibility to create new knowledge and be a lifelong learner
8. Ability to understand social responsibility and contribute to the community for inclusive growth and sustainable development of society through ethical behavior

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Course Plan

Program	Master of Business Administration
Course Code & Name	23MBA441 – WORLD CLASS MANUFACTURING (WCM)
Semester	Semester IV
Hours & Credits	36 Hours, 3 Credits (1 Credit = 10 hours)
Course Anchor	Faculty – Department of Operations and Supply Chain Management
Course Facilitators	Faculty of World Class Manufacturing / Operations Management RV Institute of Management

WORLD CLASS MANUFACTURING (WCM)

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9	Case – Industry 4.0 and WCM: Digital Transformation in Manufacturing

Course Syllabus

Course Name: WORLD CLASS MANUFACTURING (WCM)	Course Code: 23MBA441
Total number of hours: 36 Hrs	Credits: 3
Total Number of Sessions: 36	Hours per Session: 1 hour

Course Description:

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 continuously improving operations, eliminating waste, and creating Lean organisations, which often results in higher productivity. Combining the philosophies of WCM 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: Having successfully completed this course the students will be able to:

- CO1: Identify the recent trends in manufacturing.
- CO2: Describe the relevance of World Class Manufacturing.
- CO3: Illustrate customization of product for manufacturing.
- CO4: Explain the implementation of new technologies.
- CO5: Evaluate the existing industries with WCM industries.

Pedagogy:

This course uses multiple pedagogies including classroom discussion, PPT and student presentations, project-based teaching, and case study-based teaching.

Syllabus

Module I: Introduction & Overview of WCM (6 Hrs.)

- 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 II: Process Selection & Design (Manufacturing and Services) (6 Hrs.)

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

Module III: WCM Models, Quality & Global Competitiveness (8 Hrs.)

- Manufacturing objective strategy; Malcolm Baldrige National Quality Award; Hall's Framework of Value-added Engineering; Schonberger'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 IV: WCM Systems, Tools & Techniques (8 Hrs.)

- The emergence of information age; Concept of Value Chain; Sheer's Integrated information systems Framework
- Information Management Tools; Material processing and handling tools; 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

Module V: Lean Production Systems (8 Hrs.)

- Lean logic – Elements of Lean Production; 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

Teaching Learning Resources:

Recommended Books:

9. K. Sridhara Bhat, "World Class Manufacturing", HPH.
10. World Class Manufacturing – Strategic Perspective, Sahay B.S., Saxena K B C and Ashish Kumar, Mac Milan Publications, New Delhi.
11. World Class Manufacturing – The Lesson of Simplicity, Schonberger R. J, Free Press, 1986.

Reference Books:

12. B.S. Sahai, K.B.C. Saxena & Ashish Kumar, "World Class Manufacturing", Macmillan Publishing Co.
13. Richard B Chase, Nicholas J Acquilano, Ravi Shankar & F. Robert Jacobs, "Operations Management for Competitive Advantage", Mc Graw Hill.
14. Nicholas, "Competitive Manufacturing Management", TMH.
15. Richard Schonberger, World Class Manufacturing: The Lessons of Simplicity Applied, Free Press, London.
16. Toyota Production Systems – Taichi Ohno; Kaizen – Masaki Imai.

Supplementary Reading:

17. Industry 4.0 and World Class Manufacturing Integration – MDPI: <https://www.mdpi.com>
18. What is World Class Manufacturing and Its Principles: <https://www.managementstudyhq.com>
19. Improving Operations Performance with World Class Manufacturing: <https://www.intechopen.com>
20. Keys for World-class Manufacturing: <https://www.reliableplant.com>

CO-PO Mapping

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

World Class Manufacturing – Session Plan

Module No.	Session No.	Coverage	Pedagogy / Activities	Resource / Reference	Video (Scan QR)
1	1	Overview of course plan; Introduction to WCM: definition, origin, and relevance in global business	Interactive class discussion	Bhat Ch.1 Pg. 1-12	 WCM Basics
1	2	Factors affecting Global Business conditions; Global competitiveness; Hall Marks of Excellence	Interactive class discussion	Bhat Ch.1 Pg. 13-26	 WCM Pillars
1	3	Path to becoming world class; World Class Suppliers and World Class customers	Discussion	Bhat Ch.2 Pg. 28-42	 WCM Course Overview
1	4	Operation Strategy & Competitiveness; Dimensions; Competitive priorities; Globalization; Productivity Measures	Discussion	Bhat Ch.2 Pg. 43-60	 WCM Methodology
1	5	Elements of Operations Strategy; Manufacturing competitiveness to WCM; scorecard	Discussion	Bhat Ch.3 Pg. 62-78	 WCM Factory Example
1	6	Ten Pillars of WCM Business Excellence; Case Discussion: Toyota's Path to WCM Excellence	Case Discussion	Bhat Ch.3 Pg. 79-92	 Ten Pillars of WCM
2	7	Process Design, Planning and Selection; Process analysis; overview of process types	Interactive class discussion	Bhat Ch.4 Pg. 96-110	 SPC Introduction
2	8	Process flowcharting – Types of processes: job, batch, continuous, project	Discussion	Bhat Ch.4 Pg. 111-124	 SPC Control Charts
2	9	Measuring process performances; Product-Process Matrix; Service System design matrix	Discussion	Bhat Ch.4 Pg. 125-140	 SPC Lean Tool

2	10	Process capability studies: Cp and Cpk; SPC & control charts – X-bar, R, p, c charts; Numerical problems	Discussion and Numerical	Bhat Ch.5 Pg. 142-160	 SPC & Process Capability
2	11	SPC charts: interpretation, control limits, special causes vs common causes	Discussion and Numerical	Bhat Ch.5 Pg. 161-176	 Baldrige Framework
2	12	Case Discussion: Process Design and SPC Implementation at a FMCG Manufacturer	Case Discussion	Industry Case Study	 Malcolm Baldrige Award
3	13	Manufacturing objective strategy; Malcolm Baldrige National Quality Award – criteria and framework	Interactive class discussion	Bhat Ch.6 Pg. 180-196	 Baldrige Framework
3	14	Hall's Framework; Schonberger's Framework; Gunn's Model; Maskell's Model	Discussion	Bhat Ch.6 Pg. 197-214	 WCM Quality & Global
3	15	Relationship between Quality and Global Competitiveness	Discussion	Bhat Ch.7 Pg. 216-230	 WCM Global Context
3	16	Deming's 14 Points and PDCA cycle; Shiego Shingo's approach to Quality Management	Interactive class discussion	Bhat Ch.7 Pg. 231-248	 WCM Real Factory
3	17	Competitiveness enhancing manufacturing technologies; Global Integration & Economic Trends	Discussion	Bhat Ch.8 Pg. 250-266	 Lean JIT TPS Overview
3	18	Case Discussion: Malcolm Baldrige Award – Lessons from Award-Winning Companies	Case Discussion	Industry Case Study	 Lean JIT Kanban Kaizen
3	19	Competitive priorities; student presentations on WCM models	PPT Presentations	Bhat Ch.6–8	 Value Stream Mapping

3	20	Case Discussion: Lean and WCM Integration at a Global Automobile Manufacturer	Case Discussion	Industry Case Study	 SMED Kanban
4	21	The emergence of information age; Concept of Value Chain; Sheer's Integrated information systems Framework	Interactive class discussion	Bhat Ch.9 Pg. 270-284	 Value Stream Mapping
4	22	Information Management Tools; Material processing and handling tools; Automation in manufacturing	Discussion	Bhat Ch.9 Pg. 285-300	 SMED Quick Changeover
4	23	Six Sigma: DMAIC methodology; Bar coding; JIT principles; Value Engineering	Discussion	Bhat Ch.10 Pg. 302-318	 Lean Operations & Six Sigma
4	24	Quality Circles; Rapid Prototyping; Poka Yoke – error proofing techniques	Discussion	Bhat Ch.10 Pg. 319-334	 14 Principles TPS
4	25	KANBAN system: concept, cards, and implementation; FMS (Flexible Manufacturing Systems)	Discussion	Bhat Ch.11 Pg. 336-350	 TPS 14 Principles
4	26	SMED (Single Minute Exchange of Die); Value stream mapping – current and future state	Discussion	Bhat Ch.11 Pg. 351-368	 Lean JIT Kanban Overview
4	27	Differential diagnosis as a problem solving tool; Student presentations on WCM tools	PPT Presentations	Bhat Ch.11 Pg. 369-382	 Lean JIT Tools
4	28	Case Discussion: SMED and Kanban Implementation at Maruti Suzuki India	Case Discussion	Industry Case Study	 SMED Lean Changeover
5	29	Lean logic – Elements of Lean Production; Lean Production & JIT; Comparison of Batch Production	Interactive class discussion	Bhat Ch.12 Pg. 386-400	 Lean Batch Comparison

5	30	Mass production and Lean Production; Lot size basics; Push vs Pull systems	Discussion	Bhat Ch.12 Pg. 401-416	 Toyota Production System
5	31	Elimination of waste – Seven wastes (TIMWOOD); Techniques for set-up time reduction	Discussion	Bhat Ch.13 Pg. 418-432	 TPS 14 Principles Lean
5	32	Effect of Lot Size reduction on competitive criteria; set-up time reduction methodology	Discussion and Numerical	Bhat Ch.13 Pg. 433-448	 WCM at Tarkett
5	33	Toyota Production System: history, philosophy, and pillars (JIT + Jidoka)	Interactive class discussion	Ohno TPS Pg. 1-60	 WCM Implementation
5	34	Toyota Production System: tools and practices – Heijunka, Andon, 5S	Discussion	Ohno TPS Pg. 61-120	 WCM Industry Case
5	35	Case Discussion: Value Stream Mapping and Waste Elimination at an Indian SME	Case Discussion	Industry Case Study	 WCM Real Factory
5	36	Case Discussion: Industry 4.0 and WCM – Digital Transformation in Manufacturing; Course Wrap-up	Case Discussion	Industry Case Study	 WCM Pillars Wrap-up

Course Evaluation Plan

Component	Description	Units	Marks Allotted	Timeline
End Term	End Term Exam – All Modules I–V	All Modules	50	At the end of the semester
CIA-I	Mid-Term Test – Modules I, II & III	Modules I, II & III	20	After completion of 2–3 modules
CIA-II	Attendance and Class Participation	NA	5	At the end of the semester
CIA-III	Quiz – Modules I–V (10 questions × 1 mark per module)	All Modules	5 (of 50)	After each module
CIA-IV	Remaining assignments (Quiz, Individual assignment, Cap-Stone project, Major or minor project, Group assignments etc.)	All Modules	25	Full Semester
Total			100	-

EVALUATION DESCRIPTION

COMPONENTS OF CIA-I (CO1, CO2 and CO3) – 20 Marks

Mid Term Exam Syllabus: Module I, II and III

Pattern:

- Evaluation through numerical problems, short theory questions and long theory/case-based questions
- Duration: 1.5 hours
- Closed book exam with invigilation
- Total of 50 marks converted to 20

COMPONENTS OF CIA-II – 5 Marks

Attendance and Class Participation

Pattern:

- Contribution to case discussion, presentations, and project-based activities
- Consistent attendance throughout the course
- Active participation in classroom discussions and student presentations

COMPONENTS OF CIA-III – 5 Marks

Quiz (Syllabus Module I–V) – 5 Marks

- There will be 10 questions from each module carrying 1 mark each. Total of 50 marks will be converted to 5 marks.

COMPONENTS OF CIA-IV – 25 Marks

Capstone Project: WCM and Lean Implementation Analysis (Modules I–V)

Assignment Description:

- Individual / Group project – students select a real-world manufacturing organisation and analyse its WCM and Lean practices
- Students must apply at least two WCM tools (e.g., Value Stream Mapping + SMED, or SPC + Kanban) to identify wastes and recommend improvements
- Students prepare a comprehensive report documenting current-state analysis, WCM tool application, improvement roadmap, and expected outcomes

Expected Outcomes:

- Ability to evaluate manufacturing processes using WCM frameworks including TPS, Lean, Six Sigma, and quality models
- Hands-on experience applying tools such as Value Stream Mapping, SMED, Poka Yoke, Kanban, and SPC to real manufacturing scenarios
- Development of analytical, systems-thinking, and professional report-writing / presentation skills

Rubrics:

S.No.	Parameters	Marks
1	Identification of WCM / Lean problem and Framework Selection	5
2	Application of WCM Tools, Techniques and Quality Models	8
3	Analysis, Recommendations and Business Insights	7
4	Quality of Report / Presentation	5
5	Total	25

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