BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus

ACADEMIC-GRADUATE STUDIES AND RESEARCH DIVISION

FIRST SEMESTER 2023-24

COURSE HANDOUT

Date: 04.08.2023

In addition to Part I (General Handout for all courses appended to the Time Table), this portion gives further specific details regarding the course.

Course No. : **MSE G521**
Course Title : **WORLD CLASS MANUFACTURING**
Instructor In-charge : **Dr. Ravi Shanker Vidyarthy**

1. Course Description

The world-class manufacturing challenge, developing world-class manufacturing strategy, Lean, Green and Agile manufacturing strategy, Total quality management, Total employee involvement, Total productive maintenance, Decision making methods, World-class information systems, Knowledge management, Managing the change, Monitoring the world-class performance.

2. Scope and Objectives

- To promote a good foundation in World-class Manufacturing,
- To explain the various concepts and philosophies in more detail for design of strategies for World-class Manufacturing,
- To develop familiarity with different decision making tools for evaluation and selection of best practices for world class manufacturing.
- To develop skills for implementation of World-class Manufacturing concepts and philosophies

3. Prescribed Text Book

T1. Todd, Jim “World-class Manufacturing”, McGraw Hill, London, 1995
T2. Nicholas, John M., “Competitive Manufacturing Management”, Tata McGraw Hill Education Pvt. Ltd. New Delhi, 2012.
T3. Mohanty, R. P. and Deshmukh, S.G., “Advanced Operations Management”. Pearson Education, 2003.
T4. Besterfield D. H., et al., "Total Quality Management", Pearson Education, 1999.

4. Reference Books

R1. Voss C.A., "Manufacturing Strategy: Process and Content", Chapman & Hall, London, 1992.
R2. Class notes and Research papers published in WCM domain (will be shared with students)

5. Course Plan

Lecture	Topic to be covered	Reference	Learning Outcome
1-3	Introduction to WCM, Course Objectives and outcomes. Evaluation of Manufacturing from Craft Production to Sustainable Manufacturing. Emerging Trends in Manufacturing	T1, T2, T3 and R2	To understand the importance of world class manufacturing and how the evolution of manufacturing taken place
4-6	Tools and Techniques (Planning and Design). Tools and Techniques (Manufacturing and Distribution). Integration of best practices	T2, T3 and R2	To understand the various tools and techniques available for WCM practices
7-11	Operations strategy, strategic approaches to manufacturing, Application of benchmarking processes. Process of manufacturing strategy formulation and implementation. Case studies and applications	T3, T4, R1 and R2	To understand various manufacturing strategies and to learn how to formulate and implement the strategy
12-17	Introduction to decision making tools, MCDM, MADM and MODM. AHP, TOPSIS, ISM, etc. Fuzzy Set of Theory, Integrated and Hybrid Approaches. Problem solving	R2	Understanding the various decision making tools, techniques and methodologies and their applications
18-21	Introduction, Quality evolution, tools and techniques. Principles and processes of TQM formulation and implementation. TQM Frameworks. Case studies	R2 and T4	To understand the importance and applications of TQM for WCM practices.
22-26	Introduction to lean and Agile Manufacturing. Lean Principles, tools and techniques. Lean manufacturing implementation frameworks. Benefits of Lean and Agile Manufacturing. Case studies	T2 and R2	To understand the importance and applications of LM for WCM practices.
27-30	Introduction to various maintenance system, overview of TPM, TPM Pillars, Tools and Techniques. TPM implementation frameworks. Case studies and meta data analysis	T3 and R2	To understand the importance and applications of TPM for WCM practices.
31-33	Overview of sustainability aspects. Overview of Green Manufacturing and circular economy. Overview of sustainable supply chain	R2	To understand the advances and recent developments in the manufacturing organizations
34	Role of CSR in WCM	R2	To understand CSR importance and need

Lecture	Topic to be covered	Reference	Learning Outcome
35	Industry 4.0 and readiness of Indian manufacturing industries for it	R2	To understand Industry 4.0 and readiness of Indian manufacturing industries
36-40	ISO standards. Various awards, recognitions, certifications, criteria for awards and certifications. Overview of performance measurement systems. Comparison of various PMS for WCM. Development and validation of PM for WCM	T4 and R2	To understand the various standards, awards, certifications and PMS and their importance for WCM

6. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of component (Close Book/ Open Book)
Mid-Semester Test	90 Min.	25	09/10 - 4.00 - 5.30PM	CB
Comprehensive Examination	180 Min.	35	07/12 AN	CB
Lab Assignment		20		OB
Case Discussions/ Group Projects/ Quizzes		20		OB

7. Chamber Consultation Hour: To be announced in the class

8. Notices: All notices concerning the course will be displayed on the CMS notice board.

9. Make-up Policy: Make-up will be permitted only in genuine cases with prior permission.

10. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

11. Note (if any): The border cases in final grading will be decided based on mainly classroom presence and attentiveness in the classroom.

Instructor-in-charge
Course No. MSE G521