

Operation Management and Risk Assessment

CHE-436	Subject: Operation Management and Risk Assessment	2CH	
		Theory (2)	
Pre-req.	Nil	Category	Elective
Course Contents as per PEC Guidelines 2023- 2024			
Introduction: Introduction to Evaluation of Management Science: Entrepreneurship, SMEs. Nature & scope of Operation Management. Classification and strategies: Introduction to production management functions and classification of production systems. Production Operation Strategies, Goals tactics and mission. Decisions and implementation: The decision process, characterization of operation decision, General approach to decision making, Decision Environmental, Decision Models, Resource Allocation- Linear Programming: Model Formulation Types/ Classification of Models; Analysis of linear programming model, Graphics approach, Simplex method, Application of linear programming. Forecasting: Forecasting Environments & their modeling. Design of Work System: Facilities layout basic types, line balancing, Waiting Lines Goal. Measuring system performance Quening Models Infinite Source, Finite Source. Reliability & Liability. Product Life Cycle. Process selection & capacity planning; Breakeven Analysis, Linear & Non-Linear. Cost volume analysis. Capacity Management: the meaning of capacity; Capacity factor, Capacity planning; Inventory Management/types & EOQ model, quantity Discount models. Project Management: PERT CPM Analysis, Queuing Analysis/waiting lines. Risk assessment: Major hazard accidents; Basic concepts of risk; Hazard identification risk assessment and determining control, HIRADC procedures and techniques; What-if; HAZOP; FMEA; PHA Analysis: Consequence analysis concerning release of chemical hazards including discharge models, dispersion, and effect models. Fire and Explosion: Fire and explosion models, effect models. Estimation of incident frequencies (estimation of incident frequencies from historical data, frequency modeling techniques, FTA and ETA). planning: Emergency planning and responses; Storage and transportation of hazardous materials. Introduction to International safety standards (e.g., OSHA etc.) A specific case study.			

Risk assessment: Human factors in risk analysis

Week /Lecture	Topic
1-2	Introduction: Introduction to Evaluation of Management Science: Entrepreneurship, SMEs. Nature & scope of Operation Management.
3	Classification and strategies: Introduction to production management functions and classification of production systems. Production Operation Strategies, Goals tactics and mission.
4	Decisions and implementation: The decision process, characterization of operation decision, General approach to decision making, Decision Environmental, Decision Models, Resource Allocation- Linear Programming: Model Formulation Types/ Classification of Models; Analysis of linear programming model, Graphics approach, Simplex method, Application of linear programming.
5-6	Forecasting: Forecasting Environments & their modeling. Design of Work System: Facilities layout basic types, line balancing, Waiting Lines Goal. Measuring system performance Quening Models Infinite Source, Finite Source. Reliability & Liability.
7	Product Life Cycle. Process selection & capacity planning; Breakeven Analysis, Linear & Non-Linear. Cost volume analysis.
8	Capacity Management: the meaning of capacity; Capacity factor, Capacity planning; Inventory Management/types & EOQ model, quantity Discount models.
9	MID TERM
10	Project Management: PERT CPM Analysis, Queuing Analysis/waiting lines.
11-12	Risk assessment: Major hazard accidents; Basic concepts of risk; Hazard identification risk assessment and determining control, HIRADC procedures and techniques; What-if; HAZOP; FMEA; PHA
13-14	Analysis: Consequence analysis concerning release of chemical hazards including discharge models, dispersion, and effect models.
15-16	Fire and Explosion: Fire and explosion models, effect models. Estimation of incident frequencies (estimation of incident frequencies from historical data, frequency modeling techniques, FTA and ETA).
17	Revision
18	End Semester Exam
TEXT AND REFERENCE BOOKS: • Bufo E. S.. "Elements of Production/ Operations Management", New York: John Wiley & Sons, 1980 • Chase Richard B. Aquilano, Nicholas, J. (1973), 'Production of operations management: life cycle approach'. Homewood, ILL: R.D. Irwin. • Raymond R. Mayer, 'Production and Operations Management', McGraw-Hill, 1975 • John V. C. Lawrence R. P. Reavil A. C. Payne (2004), 'Management of Engineers, Scientists & Technologists', 2nd Edition, Wiley & Son. • Fullwood R.R., "Probabilistic Safety Assessment in Chemical and Nuclear Industries".	

