



Mandsaur University, Mandsaur(M.P.)

Department of Mechanical Engineering

M. Tech. Industrial Engineering & Management

II Semester

W.e.f.(session2016-17)

Subject Code	Subject Name	Theory			Practical			Hours/Week			Credits	Total Marks
		End Sem	Mid Sem	Quiz/ Ass.	End Sem	Lab Work	Quiz/ Ass.	L	T	P		
MEC190	KNOWLEDGE MANAGEMENT	60	30	10	0	0	0	3	1	0	4	100

COURSE OUTCOMES:

1. Appreciate the role and use of knowledge in organizations and institutions, and the typical obstacles that KM aims to overcome
2. Describe the core concepts, methods, techniques, and tools for computer support of knowledge management
3. Apply and integrate appropriate components and functions of various knowledge management systems

Unit1: Knowledge society- Drivers of knowledge management-Intellectual capital- KM and learning organizations-Strategic alignment- Evaluation and strategic alignment .

Unit2: Infrastructural development and deployment- Role of CKO-Analyzing business environment-knowledge audit and analysis – designing KM team, system–Technology components- Intranet and Groupware solutions- tools for collaborative intelligence .

Unit3: Social networking-package choices- knowledge security-Integrating with web -based and internal operational & support systems- change management- reward systems- continuous improvement – Intellectual Property Rights.

References:

1. Text Book of Knowledge Management by Mruthyunjaya :PHI Learning
 2. Knowledge Management by Diana Barbosa : PHI Learning
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Name of Subject With Code No.	Maximum Marks Allocation				Lectures per week			Credits	Total Marks
	Theory Paper		Practical Examination	Continuous Evaluation	L	T	P		
	Mid Sem. Test (MST) F ₁	End Sem. Test (EST) F ₂							
Modeling and Simulation (MEC160)	30	60	-----	10	4	0	0	4	100

COURSE OUTCOMES:

1. Develop Manufacturing Models of Discrete event systems
2. Generation of Uncertainty using Random numbers and Random Variates
3. Perform Input, Output Analysis: Verification & Validation of Models and Optimization

Unit 1: Introduction to systems and modeling - discrete and continuous system - Monte Carlo Simulation. Simulation of Single Server Queuing System. Simulation of manufacturing shop Simulation of Inventory System , Markov Analysis.

Unit 2: Random number generation Properties of Random Numbers –Generation of Pseudo Random Numbers –Techniques –Tests for Random Numbers ,Random variates-Inverse Transform Technique –Direct Transform Techniques Convolution Method .

Unit 3: Acceptance Rejection Technique– Routines for Random Variate Generation Testing -Analysis of simulation data-Input modeling – verification and validation of simulation models – output analysis for a single model.

Unit 4: Simulation languages and packages-Case studies in WITNESS; FLEXSIM, ARENA, Simulation based optimization-Modeling and Simulation with Petrinets-case studies in manufacturing systems .

References

1. NarsinghDeo, “ System Simulation with Digital Computer”, Prentice Hall
2. Jerry Banks & John S.Carson, Barry L Nelson, “Discrete event system simulation” ,Prentice Hall
- 3 Law A.M, “Simulation Modelling and Analysis”, Tata Mc Graw Hill

- Experiments should be according to the above syllabus.



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Quality & Reliability Engineering (MEC150)	30	60	-----	10	4	0	0	4	100

COURSE OUTCOMES:

1. Summarize the fundamentals and significance of Quality
2. Develop control charts for variables and attributes
3. Implement kaizen techniques for improved production environment

Unit 1:Basics of quality – Process capability analysis – Quality Gurus and their philosophies
Quality standards – ISO 9000 series and 14000 series , Quality circle, Product and design Quality.

Unit 2:Design of experiments – Reliability, MTBF – MTTR, Markov models for reliability
Acceptance sampling by variables and attributes , AOQL , System Reliability, Process Reliability.
Product Reliability.

Unit 3:Control charts for variables and attributes - X & X Bar Chart, R & R bar Chart, C Hart , P Chart, Taguchi methods.

Unit 4:Concurrent engineering Quality function deployment – FMEA – Quality circles - Total quality management –Kaizen.

References

1. Quality and Reliability : S. C. Mahajan
 - 2.. “Reliability Maintainability and Risk; Practical methods for engineers”, Butterworth-Heinemann, New Delhi.
 3. Grant, E.L. and Leavenworth, R.S., “Statistical Quality Control”, TMH, 2000.
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	Mid Sem. Test (MST) F ₁	End Sem. Test (EST) F ₂							
Supply Chain Management (MEC170)	30	60	-----	10	4	0	0	4	100

COURSE OUTCOMES:

1. Explain the major building blocks, major functions, major business processes, performance metrics, and major decisions in supply chain networks
2. Summarize the foundation for design and analysis of supply chains and synthesize advanced and specialized concepts, principles and models for operational and strategic improvement
3. Analytically examine the supply chain of organizations and measure performance improvement

Unit1:Introduction to supply chain management - Supply Chain Performance: Achieving Strategic Fit and Scope - Supply Chain Drivers and Metrics ,Planning in Supply chain - Demand Forecasting in a Supply Chain - Aggregate Planning in a Supply Chain – Inventories in supply chain .

Unit2:Designing the Supply chain network – Distribution networks – Transportation networks - Network Design in an Uncertain Environment - supply chain optimization

Unit3:Managing cross-functional drivers in supply chain - Sourcing Decisions in a Supply Chain - Pricing and Revenue Management in Supply Chain - Information Technology in Supply Chain - Coordination in Supply Chain .

Unit4:Modern Supply chain management - Reverse supply chain strategies – Green and sustainable practices of Supply chain – Supply chain cases. Application in Modern Systems.

References

1. Sunil Chopra And Peter Meindl, “Supply Chain Management, strategy, planning, and operation” 6/e – PHI, second edition, 2014
 2. V.V. Sople, “Supply Chain Management, text and cases”, Pearson Education South Asia,2012
 3. Janat Shah, “Supply Chain Management, text and cases”, Pearson Education South Asia,2009
 4. Jeremy F.Shapiro, Thomson Duxbury, “Modeling the Supply Chain”, 2002.
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MEC180	SUSTAINABLE MANUFACTURING	60	30	10	0	0	0	3	1	0	4	100

COURSE OUTCOMES:

1. Explain the importance of sustainable development
2. Exhibit competence on the usage and applicability of sustainability tools
3. Compute sustainability performance through the indicators

Unit1: Sustainability need and cause:sustainability and sustainable development – Need for sustainable development - Components of sustainability- Social, Economic, Environmental dimensions - Linkages between technology and sustainability - Sustainable Manufacturing –Scope, Need and Benefits., Comparative Analysis.

Unit2: Techniques of Sustainable Manufacturing – Environmental Conscious Quality Function Deployment, Life cycle assessment, Design for Environment, Design for Disassembly -Sustainable Product Development – Various Phases.

Unit3: Methods of EIA , ISO 14001 EMS & PAS 2050 standards, Environmental Impact parameters - Interactions between energy and technology and their implications for environment and sustainable development.

Unit4:Design for recycling – Eco friendly product design methods – Methods to infuse sustainability in early product design phases – Multi-Criteria Decision Making in Sustainability. Frameworks for measuring sustainability- Indicators of sustainability – Environmental, Economic, Societal Models ,and Various Approaches, Product Sustainability and Risk/Benefit assessment– Corporate Social Responsibility.

REFERENCES

1. G. Atkinson, S. Dietz, E. Neumayer, — “Handbook of Sustainable Manufacturing”. Edward Elgar.
 2. Rogers, P.P., Jalal, K.F. and Boyd, J.A., “An Introduction to Sustainable Development.
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