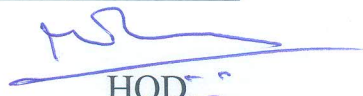# Department of Industrial Engineering and Management
Dr.Ambedkar Institute of Technology

Lesson Planning of the Even Sem-2018 Batch

Name of staff Member: Dr.N.Mohan	Designation: Professor	Subject: Manufacturing Technology	Sub.Code:18IM34
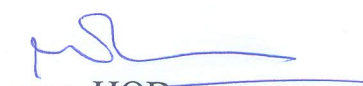
Chapter No:	Portion to be Covered	No.of Hrs
1	**Introduction:** Concept of Manufacturing process and its importance. Classification of Manufacturing processes. Introduction to Casting process & steps involved. Varieties of components produced by casting process. Advantages Limitations and application of casting process.	3
	Patterns: Materials and classification of patterns, various pattern allowances and their importance and colour coding of pattern.	2
	Sand Moulding: Types of base sand, Method used for sand moulding, such as Green sand, dry sand and skin dried moulds.	1
	Binder: Definition and Types of binder **Additives**: Need, Types of additives used. **Cores:** Definition, Need, Types. Method of making cores, Binders used, core sand moulding.	1
	Concept of Gating & Rising. Principle and types. **Moulding Machines** and its types	1
2	**Welding process:** Definition, Principles, Classification, Application, Advantages & limitations of welding.	2
	Arc Welding: Principle, Metal Arc welding (MAW), Flux Shielded Metal Arc Welding (FSMAW),	2
	Tungsten Inert Gas Welding (TIG & MIG) Submerged Arc Welding (SAW)	2
	Atomic Hydrogen Welding processes. (AHW)	1
	Principles of soldering & brazing: Parameters involved & Mechanism. Different Types of Soldering & Brazing Methods.	1
3	**Theory of metal cutting:** Single point tool nomenclature, geometry, orthogonal & oblique cutting	2 Hrs

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		Mechanism of chip formation, types of chips, Merchants analysis, shear angle relationship.	2
		Tool wear & tool failure effects of cutting parameters, Tool life criteria, Taylor's tool life equation, problems on Merchants analysis & tool life evaluation	2
		Cutting tool materials: Desired properties, types of cutting tool materials- HSS carbides, coated carbides, ceramics. Cutting fluids- properties, types & selection. Machinability, factors affecting machinability.	2
4		**Production lathes**: Constructional features of Engine lathe,	1 Hrs
		Capstan & turret lathes-constructional features.	2
		Drilling machines: Classification, constructional features.	1
		Types of drill, drill bit nomenclature, geometry of twist drill.	2
		Drilling & related operations. Problems on calculating the machining time.	2
5		**Milling machines:** Classification, constructional features.	1 Hrs
		Milling cutters & nomenclatures. **Milling operations** - up milling & down milling concepts.	1
		Indexing: Purpose of indexing, indexing methods. Problems on indexing.	2
		Grinding machines: Types of Abrasives, Bonding process,	1
		Grinding machines classification, constructional features of surface, cylindrical & center less grinding machines & operations.	2

Signature of Staff

Name of Staff Member: **RAJENDRA.S K**		Designation: **Assoc. Prof.**
Sub: **Computer Integrated Manufactuting**	Code: **18IM52**	Credits: (3:0:0)

Chapter No.	Portion to be Covered	No. of Hrs
1	***Introduction***	
	Introduction to Automation, CAD/CAM	1
	Automation types	1
	Organization and information processing in manufacturing	1
	Product cycle, conventional, computerized	1
	Design process, Application of Computers for Design	1
	Comparison of general design process and CAD process Creating of manufacturing database	1
	Advantages & Disadvantages of CAD & CAM.	1
2	**Hardware in cad**: color CRT,Raster scan monitors	1
	Input devices CPU and storage devices.	1
	Computer Graphics Software & Data Base Introduction Software Configuration of a Graphics System,	1
	Functions of a Graphics Package	1
	Constructing the Geometry ,Wire-Frame, Surface, Solid Modeling.	1
	Desirable modelling facilities	1
	Transformations-2D, 3D	1
3	**NC : Introduction**,Elements , NC Procedure	1
	NC co-ordinate system, motion control system	1
	Advantages and applications of NC.	1
	Problems with conventional NC	1
	Functions of computers in CNC.	1
	Functions of computers in DNC.	1
	Group Technology: Introduction	1
	Part families, Parts Classification and coding	1
4	**Manual part Programming**: Introduction	1
	ISO G and M codes for manual part programming	1
	Tool length compensation, cutter radius compensation	1
	Use of CANNED cycle in Manual part programming	1
	Drilling exercises	1
	Milling exercises	1
	Milling exercises	2
	Turning Center Programming exercises	1

		Turning Center Programming exercises	1
		CNC Machine tools, CNC machining center	1
5		**Introduction to Robotics**	1
		Robot configurations	1
		Robot motions, End effectors	1
		Robot Sensors, Robot applications	1
		Programming the robots	1
		Robot-Programming Languages	1

S.K. Rajendra
Signature of faculty :

HOD

Name of Staff Member: **RAJENDRA.S K**		Designation: **Assoc. Prof.**
Sub: Human Resource Management	**Code:** IM 814	Credits: (3:0:0)

Chapter No.	Portion to be Covered	No. of Hrs
1	***Introduction***	
	Introduction: Definition of HRM	1
	Objectives of HRM AND Functions of HRM	1
	Human Resource Planning: Uses and Benefits	1
	Man Power Inventory and Forecasting	1
	Methods of Man Power Forecasting	1
	Job Description	1
	Job Specification.	1
2	**Recruitment**- Introduction	1
	Sources of Man power	1
	Process of Recruitment	1
	Advertisement	1
	Short Listing of Candidates calling Candidates for selection Process.	1
	Case studies	1
3	**Selection**- Introduction	1
	Selection process	1
	Selection procedure – Written Test, Group Discussion	1
	Interview – Different methods	1
	Advantages and Limitations	1
	Psychological testing – Advantages and limitations	1
	Induction procedure	1
	transfers, (Tutorial on written test, Group Discussion, Interviews)	1
	Promotion exit interview, (Tutorial on written test, Group Discussion, Interviews)	1
	Case studies	1
4	**Training and Development**:- Introduction	1
	Identification of Training needs	1
	Training Evaluation	1
	Training Budget, Executive Development – Different Approaches	1
	Non-executive development – Different methods	1
	Performance Appraisal- Introduction	1
	Components (all round performance appraisal	1
	Methods, Advantages and limitations of different methods	1

		Personal Counselling based on Annual Confidential Reports	1
		Case studies	1
5		**Industrial Relations**- Introduction	
		Meaning Characteristics of Industrial Relations	1
		Factors of Industrial, Relations, the Three Actors of Industrial Relations,	1
		Importance of Harmonious Industrial Relations	1
		Objectives of Industrial Relations, Functions of Industrial Relations	1
		Code of Industrial Relations, Conditions for Congenial Industrial Relations	1

S.K.Rajendra.

Signature of faculty :

HOD
Professor & HOD
Dept. of Industrial Engineering & Management
Dr. Ambedkar Institute of Technology
Near Jnanabharathi Campus
BDA Outer Ring Road
Mallathahalli, Bangalore-560 056

Name of Staff Member: Dr.Rajeshwari.P	Designation: Associate Professor	Sub: Operations Management	Code: IM 72

Unit No.	Portion to be Covered No. of Credits: 4= 4 : 0 : 0 (L-T-P)	No. of Hrs
1	**Operations Management Concepts:** Introduction, definition and Historical development	2
	The Trend; Information and Non manufacturing systems, factors affecting productivity	2
	International dimensions of productivity, the environment of operations	2
	System Design And Capacity: Introduction, Manufacturing and service systems, Design and systems capacity, Capacity planning.	2
2	**OPERATIONS DECISION MAKING:** Introduction, Management as a science, Characteristics of decisions and Framework for decision making,	1
	Decision tree problems	3
	Economic models-break even analysis in operations, p/v ratio.	3
	FORECASTING DEMAND: Forecasting objectives and uses, Forecasting variables,	1
	Opinion and Judgmental methods, Delphi technique, Time series methods, moving average methods,	2
	Exponential smoothing, Trend adjusted Exponential smoothing,	2
	Regression and correlation methods, Application and control of forecasts-Mean Absolute Deviation, BIAS, and tracking signals	2
3	**AGGREGATE PLANNING AND MASTER SCHEDULING**: Introduction- planning and scheduling, Objectives of aggregate planning,	1
	Aggregate planning methods and problems	3
	Master scheduling objectives, Master scheduling methods.	3
	MATERIAL AND CAPACITY REQUIREMENTS PLANNING: Overview: MRP and CRP, MRP: Underlying concepts, System parameters,	2
	MRP logic, System refinements, Capacity management, CRP activities.	1
4	**SCHEDULING AND CONTROLLING PRODUCTION ACTIVITIES:** Introduction, PAC, Objectives and Data requirements,	1
	Loading-finite and infinite, Scheduling methodology, priority sequencing.	1
	SINGLE MACHINE SCHEDULING: Concept, measures of performance, SPT rule, Weighted SPT rule, EDD rule.	2
	FLOW -SHOP SCHEDULING: Introduction, Johnson's rule for n jobs on 2 and 3 machines, CDS heuristic.	2
	JOB-SHOP SHEDULING: scheduling 2 jobs on 'm' machines.	3

Unit No.	Portion to be Covered No. of Credits: 4= 4 : 0 : 0 (L-T-P)	No. of Hrs
5	**LEAN SYSTEMS:** Pull method of materials flow, consistently high quality, small lot sizes,	2
	Uniform workstation loads, Standardized components and work methods,	2
	close supplier Ties, Flexible workforce, Line flows,	2
	Automated production, Prevention maintenance, continuous improvement.	2

Signature of Faculty:

Rajeshwari. P

Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY
Lesson Planning of the ODD semester- 2015
Department of IEM

Name of Staff Member: RAJESHWARI.P	Designation: Assistant Professor	Sub: Statistics for Engineers	Code: IM54

Unit No.	Portion to be Covered	No. of Hrs
1	**THE ROLE OF STATISTICS IN ENGINEERING [7 hrs]** Statistical thinking, Collecting data, Statistical Modeling framework, Designing experimental investigation	2
	measurement of central tendency and variance,	2
	Importance of Data Summary & display, Tabular & Graphical Display: Stem and Leaf diagrams, Frequency Distribution, Histograms, Box Plots & Time sequence plots	4
2	**DISCRETE RANDOM VARIABLES AND PROBABILITY DISTRIBUTIONS [6+3 hrs]** Discrete Random variables, Probability distributions and Probability mass functions,	2
	Cumulative distribution functions, Mean and Variance of a discrete random variable,	3
	Discrete uniform distribution, Binominal distribution,	2
	Hyper Geometric distribution, Poisson distribution and their Applications.	2
3	**CONTINUOUS R.V.S & PROB. DISTRIBUTIONS [6+3 Hrs]** Continuous Random Variables, Probability distributions and Probability density Functions.	2
	Cumulative distribution functions, Mean and Variance of a Continuous Random Variable	3
	Continuous Uniform Distribution, Normal distribution,	3
	Normal approximation to Binomial & Poisson Distribution	1
	Exponential Distribution and their Applications.	
4	**ESTIMATION THEORY [6 hrs]** Statistical Inference, Random sampling, Properties of Estimators, Sampling distribution,	2
	Sampling distribution of mean, variance and proportion.	2
	Introduction to confidence intervals	2
	STATISTICAL INFERENCE FOR A SINGLE SAMPLE AND TWO SAMPLES[6+3 Hrs] Hypothesis testing, Inference on the mean of a population (variance known and unknown),	2
	Inference on the variance of a normal population, Inference on a population proportion.	2
	Inference for a difference in Means, Variances known, Inference for a difference in means of two normal distributions,	2
	Testing for Goodness of Fit,	1
	Variances unknown, Inference on the Variances of two normal populations, Inference on two population proportions.	2

Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY
Lesson Planning of the ODD- 2015
Department of IEM

Name of Staff Member: Dr.RAJESHWARI.P	Designation: Associate Professor	Sub: Statistics for Engineers	Code: IM54

Unit No.	Portion to be Covered	No. of Hrs
5	**SIMPLE LINEAR REGRESSIONS AND CORRELATION [6+3 Hrs]** Simple Linear Regression, Properties of Least square Estimators and Estimation of variances,	3
	Common abuses of regression, Prediction of new observations, Assessing the adequacy of regression model, Transformations to a straight line,	2
	Introduction to multiple regression (no problems), Correlation.	1
	DESIGN OF EXPERIMENTS: Strategy of experimentation, completely randomized single - factor experiment,	1
	Tests on individual treatment means, the random effects model,	1
	The randomized complete block design, one way analysis of variance and two way analysis of variance.	1

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Professor & HOD
Dept. of Industrial Engineering & Management
Dr. Ambedkar Institute of Technology
Near Jnanabharathi Campus
BDA Outer Ring Road
Mallathahalli, Bangalore-560 056

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Lesson Planning of the EVEN – 2018 and 2019

Department of IEM

Name of Staff Member: Dr.RAJESHWARI.P	Designation: Associate Professor	Sub: QA & R	Code: IM62

Unit No.	Portion to be Covered	No. of Hrs
1	**INTRODUCTION: [08]**	
	Definition of Quality, Quality function, Dimensions of Quality, Quality Engineering terminology	2
	Brief history of quality methodology, Statistical methods for quality improvement, Introduction to Seven QC tools.	1
	Quality costs – four categories costs and hidden costs, Brief discussion on sporadic and chronic quality problems.	2
	QUALITY ASSURANCE: [6]	
	Definition and concept of quality assurance, departmental assurance activities	2
	Quality audit concept, audit approach etc. structuring the audit program, planning	2
	performing audit activities, audit reporting, ingredients of a quality program ISO Series.	1 1
2	**STATISTICAL PROCESS CONTROL: [3]**	
	Introduction to statistical process control – chance and assignable causes variation.	1
	Basic principles of control charts, choice of control limits, sample size and sampling frequency, rational subgroups.	1
	Analysis of patterns of control charts. Case Studies on application of SPC. Process capability – Basic definition, standardized formula, relation to product tolerance and six sigma concept of process capability	1
	CONTROL CHARTS FOR VARIABLES: [10+(6T)] Control charts for X bar and Range, Statistical basis of the charts, Development and use of X bar R charts,	4
	Interpretation of charts for X bar and Standard Deviation (S), Development and use of X bar S control charts with Variable sample size,	3
	Control charts for individual measurements, cumulative-sum chart, Moving-range charts.	3

Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

Lesson Planning of the EVEN – 2018 and 2019

Department of IEM

Name of Staff Member: RAJESHWARI.P	Designation: Associate Profrssor	Sub: QA & R	Code: IM62

3	**CONTROL CHARTS FOR ATTRIBUTES:** Controls chart for fraction non- conforming (defectives) development and operation of control chart, brief discussion on variable sample size.	3
	Control chart for non-conformities (defects) – development and operation of control chart for constant sample size and variable sample size. Choice between variables and attributes control charts. Guidelines for implementing control charts.	3
4	**SAMPLING INSPECTION, USE OF PUBLISHED SAMPLING PLANS [10+(6T)]**	
	SAMPLING INSPECTION: Concept of accepting sampling, economics of inspection, Acceptance plans – single, double and multiple sampling.	3
	Acceptance plans –double and multiple sampling.	5
	Operating characteristic curves – construction and use. Determinations of average outgoing quality, average outgoing quality level, average total inspection, producer risk and consumer risk.	4
	USE OF PUBLISHED SAMPLING PLANS: Gauge Repeatability & Reproducibility & Measurement system analysis.	4
5	**RELIABILITY AND LIFE TESTING: [6]**	
	Failure models of components, definition of reliability, MTBF, Failure rate, common failure rate curve,	2
	types of failure, reliability evaluation in simple cases of exponential failures in series, paralleled and series-parallel device configurations,	3
	Redundancy and improvement factors evaluations.	1

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Professor & HOD
Dept. of Industrial Engineering & Management
Dr. Ambedkar Institute of Technology
Near Jnanabharathi Campus
BDA Outer Ring Road
Mallethahalli, Bangalore-560 056

Operations Management (18IM71)
(A seventh semester course: BE-IEM 2018 Batch)

Faculty: Rajeshwari.P

1. The Course and its Objectives

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization.

In today's globalized world, the highly competitive market is pressurizing every organization to get into a frantic race to find new ways to create and deliver value to customers. Businesses are consistently striving hard to attain the goals of cost reduction and service enhancement to revitalize their supply chains into value chains. In this scenario, Operations strategy concerns policies and plans of use of the firm productive resources with the aim of supporting long term competitive strategy. Metrics in operations management can be broadly classified into efficiency metrics and effectiveness metrics.

This course aims to cover high level Operations strategy and concepts. It would also enable the students develop a solid understanding of the analytical tools necessary to solve production operations problems.

The basic objectives of this course are identified under three key areas:

1. Making efficient use of the labor.
2. Making best possible use of the equipment that are available for the use.
3. Increasing the profit.
4. Increasing the output.
5. Improving the service level.
6. Maximizing the delivery performance i.e. meeting the delivery dates.
7. Minimizing the inventory.
8. Reducing the manufacturing time.
9. Minimizing the production costs.
10. Minimizing the worker costs.

2. Pedagogy

> Predominantly lectures and interactive sessions
> Case discussions
> Individual and group assignments
> Presentations
> Problems and exercises
> Internal assessment tests
> Feedback and discussions

3. Role of the faculty

The role of the faculty is to introduce various concepts to the students, encourage active class participation to bring in various points of view, thus clearing doubts and clarifying concepts and further reinforce the concepts through assignments/cases/tests etc. However, the onus lies with a student to take initiative to interact with the faculty to take maximum use of the sessions.

4. Expectations from the students

As the pedagogy consists of many aspects of learning, students are expected to respond to the specific requirements from class to class, viz., preparing for a session based on readings from text and suggested external sources before and after every session, submitting/preparing the specific assignments/cases on time and tests seriously, etc to ensure smooth functioning of the sessions.

5. Syllabus & Course Plan

Session No.	Topic Details No. of Credits: 3 = 2: 1 : 0 (L-T-P)	35 Hours
Unit-1		
1	**OPERATIONS MANAGEMENT CONCEPTS**: Introduction, Historical development, The trend: Information and Non-manufacturing systems, Operations management, Factors affecting productivity, International dimensions of productivity, The environment of operations.	02
2	**OPERATIONS DECISION MAKING**: Introduction, Management as a science, Characteristics of decisions, and Framework for decision making, Decision methodology, Decision support systems. (Problems on Decision Making)	04
Unit- 2		
3	**FORECASTING DEMAND**: Forecasting objectives and uses, Forecasting variables, Opinion and Judgmental methods, Time series methods, Exponential smoothing, Regression and correlation methods, Application and control of forecasts. (Problems on Forecasting methods)	06
Unit- 3		
4	AGGREGATE PLANNING: Introduction- planning and scheduling, Objectives of aggregate plan, Aggregate planning methods. (Problems on Aggregate plan)	06
5	MASTER PRODUCTION SCHEDULING: Master scheduling objectives, Master scheduling methods. Developing a master production schedule, Reconciling the MPS with sales operation.	06

	RESOURCE PLANNING FOR SERVICE PROVIDERS: Dependent demand for services, Bill of resources. Case study- ERP implementation by SAP.	
Unit- 4		
6	**MATERIAL AND CAPACITY REQUIREMENTS PLANNING:** Overview: MRP and CRP, MRP: Underlying concepts, System parameters, MRP logic, System refinements, Capacity management, and CRP activities.	04
Unit-5		
7	**SCHEDULING AND CONTROLLING PRODUCTION ACTIVITIES:** Introduction, PAC, Objectives and Data requirements, Scheduling strategy and guide lines, Scheduling methodology, priority control, capacity control. **SINGLE MACHINE SCHEDULING**: Concept, measures of performance, SPT rule, Weighted SPT rule, EDD rule, minimizing the number of tardy jobs. **FLOW -SHOP SCHEDULING**: Introduction, Johnson's rule for V jobs on 2 and 3 machines, CDS heuristic. **JOB-SHOP SHEDULING**: Types of schedules, Heuristic procedure, scheduling 2 jobs on 'm' machines. (Problems on different scheduling mathods)	07

Note 1:

Internal choice is there in all units. Students has to attend any one question from each unit out of 10 questions.

Note 2: Two assignments are evaluated for 5 marks: Assignment – 1 from units 1 and 2. Assignment - 2 from units 1, 3, and 5.

6. References

TEXT BOOKS:

1. Operations Management- Monks, J.G., McGraw-Hill International Editions, 1987.
2. Production and Operations Management- Pannerselvam. R, 2nd edition PHI.

OTHER BOOKS:

1. Modern Production/ Operations Management- Buffa, Wiely Eastern Ltd., 4th edition
2. Production and Operations Management- Chary, S.N, Tata- McGraw Hill., 3rd edition
3. Operations Management for Competitive Advantage by Chase and Jacobs

7. Evaluation

Evaluation of the course would be based on internal assessments, assignments semester end examination.

Remember….

"Knowledge without follow-through is worse than no knowledge."

- Henry Charles Bukowski

Professor & HOD
Dept. of Industrial Engineering & Management
Dr. Ambedkar Institute of Technology,
Near Jnanabharathi Campus
BDA Outer Ring Road
Mallathahalli, Bangalore-560 056

Name of Staff Member: SUPRABHA.R		Designation: Asst. Prof.
Sub: Engineering Thermodynamics	Code: 18IM33	Credits: (3:1:0)

Chapter No.	Portion to be Covered	No. of Hrs
1	***Fundamental Concepts & Definitions:. [6 + 4T]***	
	Thermodynamics; definition and scope.	1/2
	Microscopic and Macroscopic approaches.	1/2
	Engineering Thermodynamics Definition,	1/2
	Some practical applications Engg. thermodynamics	1/2
	System (closed system); Control Volume (open system);	1
	Characteristics of system boundary and control surface, examples	1
	Thermodynamic properties; definition and units	1
	Intensive and extensive properties	1/2
	Thermodynamic state, state point, state diagram, path and process, quasi-static process, cyclic and non-cyclic processes	1
	Thermodynamic equilibrium; definition, mechanical equilibrium; diathermic wall, thermal equilibrium, chemical equilibrium	1/2
	Zeroth law of thermodynamics, Internal fixed points	1
	Temperature; concepts, scales, measurement.	2
2	***Work & Heat: [7 + 3T]***	
	Thermodynamic definition of work; examples, sign convention	2
	Displacement work; at part of a system boundary, at whole of a system boundary,	2
	Expressions for displacement work in various processes through p-v diagrams, Problems	4
	Heat; definition, units and sign convention, what heat is not.	2
3	***First Law of Thermodynamics: [12 + 5T]***	
	Joule's experiments, equivalence of heat and work.	1
	Statement of the First law of thermodynamics,	1
	Extension of the First law to non –cyclic processes,	2
	Energy, energy as a property, modes of energy,	2
	Pure substance; definition, two-property rule,	1
	Specific heat at constant volume, enthalpy, specific heat at constant pressure	2
	Extension of the First law to control volume;	2

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Name of Staff Member: SUPRABHA.R		Designation: Asst. Prof.	
Sub: Engineering Thermodynamics	Code: 18IM33	Credits: (3:1:0)	

Chapter No.	Portion to be Covered	No. of Hrs
	Steady state-steady flow energy equation,	3
	Important applications,	3
4	**Second Law of Thermodynamics: [8 + 3T]**	
	Thermal reservoir. Direct heat engine; schematic representation and efficiency.	1/2
	Devices converting work to heat in a thermodynamic cycle;	1/2
	Reversed heat engine, schematic representation, coefficients of performance	2
	Kelvin –Planck statement of the Second law of TD	2
	PMM I and PMMII.	1
	Clausius statement of Second law of TD	1
	Equivalence of the two statements; Reversible and irreversible processes	1
	Factors that make a process irreversible, reversible heat engines,	1
	Carnot cycle, Carnot principles.	1
	Corollaries of Carnot cycle	1
5	**Gas Power Cycles:[12 +5 T]**	
	Air standard cycles;	1/2
	P-v and T-s diagrams, description, efficiencies and mean effective pressures of	
	Carnot Cycle	1
	Otto Cycle	2
	Diesel Cycle	2
	Dual Cycle	2
	Stirling cycle	1
	Comparison of Otto and Diesel cycles.	1/2
	I.C. Engines	
	Testing of two-stroke and four-stroke SI and CI engines for performance,	2
	Related numerical problems	2
	Heat balance	2
	Morse test.	2

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Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY
Lesson Planning of the EVEN Semester Feb 2022
Department of IEM

Name of Staff Member: SUPRABHA.R		Designation: Asst. Prof.
Sub: Simulation Modelling & Analysis	**Code:** 18IM64	Credits: (4:0:0)

Chapter No.	Portion to be Covered	No. of Hrs
1	***Introduction to Simulation [6 hrs]***	
	Simulation- Advantages, Disadvantages, Applications	1
	System Environment, Components of a system	2
	Model of a system, Types of models,	2
	Steps in a simulation study	1
2	***Simulation Examples [14 hrs]***	
	Simulation of Queuing Systems	5
	Simulation of Inventory Systems	5
	General Principles	
	Concepts in discrete-Event simulation	2
	Event scheduling, Time advance algorithm	2
3	***Random Numbers [8 hrs]***	
	Properties, Generation methods	1
	Tests for Random Numbers: Frequency test.	2
	Runs test	2
	Autocorrelation test	1
	Gap test	1
	Poker test	1
4	**Introduction to Probability distributions: *[10 hrs]***	
	Weibull and Triangular distributions	2
	Random variate Generation	
	Inverse Transformation Techniques:	
	Exponential distribution.	**1**
	Uniform and Weibull distributions	**2**
	Triangular distributions	**1**
	Direct transformation for Normal & Lognormal dist^{n}s	**1**
	Convolution Techniques for Erlang distributions	**1**
	Acceptance – Rejection Techniques for	
	a. Poisson distribution	**1**
	b. Gamma distribution	**1**

Signature of Staff :

Name of Staff Member: SUPRABHA.R			Designation: Asst. Prof.
Sub: Simulation Modelling & Analysis	Code:	18IM64	Credits: (4:0:0)

Chapter No.	Portion to be Covered	No. of Hrs
5.	***Analysis of Simulation Data: [14hrs]***	
	Input Modelling [7 hrs]	
	Input modeling & Data collection	2
	Identification and distribution with data	1
	Parameter estimation	2
	Goodness of fit	1
	Selection of input models without data	1
	Verification & Validation of Model [4 hrs]	
	Model building	1
	Verification	1
	Calibration	1
	Validation	1
	Output analysis [3 hrs]	
	Stochastic nature of output data	1
	Measures of Performance [MOP] and their estimation	2

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Near Jnanabharathi Campus
BDA Outer Ring Road
Mallathahalli, Bangalore-560 056

DR AMBEDKAR INSTITUTE OF TECHNOLOGY , BANGALORE
Department of Industrial Engineering & Management

LESSON PLANNING

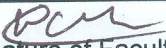**SUBJECT TITLE:Work Study & Ergonomics**
SUBJECT CODE:18 IM41
HOINO OF CREDITS : 04

PLANNED

Sl No.	Planned Lesson	No of Hrs	Unit No
1	PRODUCTIVITY: Definition of productivity, individual enterprises,	1	1
2	Task ofmanagement, Productivity of materials, land, building, machine and power.	2	1
3	Measurement of productivity, factors affecting the productivity, productivity	2	1
4	Improvement programmes, wages and incentives (simple numerical problems)	2	1
5	WORK STUDY: Definition, objective and scope of work study. Human	1	2
6	Human factor in work study.	1	2
7	Work study and management, work study and supervision, work study and worker.	2	2
8	INTRODUCTION TO METHOD STUDY: Definition, objective	1	2
9	scopeof method study, activity recording and exam aids.	2	2
10	Charts to recordmovements in shop operation – process charts, flow diagram, flow process	2	2
11	Flow process charts, travel chart and multiple activity charts.(With simple problems)	2	2
12	MICRO AND MEMO MOTION STUDY: Charts to record movements at	2	3
13	Work place – principles of motion economy, Therbligs, and classification of	1	3
14	Two Handed process chart, SIMO chart, and micro motion study.	2	3
15	Development, definition and installation of the improved method,	1	3
16	Brief concept about synthetic motion studies	1	3
17	INTRODUCTION TO WORK MEASUREMENT: Definition, objective	1	4
18	Benefit of work measurement.	1	4
19	Work measurement techniques: WORK SAMPLING, need, confidence	2	4
20	Levels, sample size determinations, random observation, and conducting study	1	4
21	Work measurement techniques: WORK SAMPLING, need,	1	4
22	Confidence levels, sample size determinations, random observation, and conducting study	2	4
23	Charts to recordmovements in shop operation – process charts, flow diagram, flow process	2	4
24	Selection of job, steps in time study. Breaking jobs into elements,	1	4
25	Recording information. Rating & standard Rating, standard performance,	1	4
26	Scale of rating, factors affecting rate of working, allowances and standard time	2	4
27	Determination. Predetermined Motion Time Study (PMTS) .	1	4
28	Method TimeMeasurement (MTM)	1	4
29	ERGONOMICS: Introduction, Areas of study under Ergonomics, System	2	
30	Approach to Ergonomics model, Man-Machine System. Components of Man-	1	5
31	Machine System and Their functions – Work capabilities of Industrial	2	5
32	Worker, Study and Development of Stress in Human body and their consequences	2	5
33	Computer based ergonomics.	1	5

34	DESIGN OF MAN-MACHINE SYSTEM: Fatigue in industrial workers.	2	5
35	Quantitative, qualitative representation and alphanumeric displays. Controls	2	5

Signature of Faculty

Signature of HoD

Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY

Lesson Planning of the ODD – 2020 and 2021

Department of IEM

Name of Staff Member: Sarvamanala S P	Designation: Assistant Professor	Sub: Quality Assurance & Reliability	Code: 18IM54

Unit No.	Portion to be Covered	No. of Hrs
1	**INTRODUCTION: [08]**	
	Definition of Quality, Quality function, Dimensions of Quality, Quality Engineering terminology	2
	Brief history of quality methodology, Statistical methods for quality improvement, Introduction to Seven QC tools.	1
	Quality costs – four categories costs and hidden costs, Brief discussion on sporadic and chronic quality problems.	2
	QUALITY ASSURANCE: [6]	
	Definition and concept of quality assurance, departmental assurance activities	2
	Quality audit concept, audit approach etc. structuring the audit program, planning	2
	performing audit activities, audit reporting, ingredients of a quality program ISO Series.	1 1
2	**STATISTICAL PROCESS CONTROL: [ ]**	
	Introduction to statistical process control – chance and assignable causes variation.	1
	Basic principles of control charts, choice of control limits, sample size and sampling frequency, rational subgroups.	1
	Analysis of patterns of control charts. Case Studies on application of SPC. Process capability – Basic definition, standardized formula, relation to product tolerance and six sigma concept of process capability	1
	CONTROL CHARTS FOR VARIABLES: [10+(6T)] Control charts for X bar and Range, Statistical basis of the charts, Development and use of X bar R charts,	4
	Interpretation of charts for X bar and Standard Deviation (S), Development and use of X bar S control charts with Variable sample size,	3
	Control charts for individual measurements, cumulative-sum chart, Moving-range charts.	3

3	CONTROL CHARTS FOR ATTRIBUTES: Controls chart for fraction non- conforming (defectives) development and operation of control chart, brief discussion on variable sample size.	3
	Control chart for non-conformities (defects) – development and operation of control chart for constant sample size and variable sample size. Choice between variables and attributes control charts. Guidelines for implementing control charts.	3
4	SAMPLING INSPECTION, USE OF PUBLISHED SAMPLING PLANS [10+(6T)]	
	SAMPLING INSPECTION: Concept of accepting sampling, economics of inspection, Acceptance plans – single, double and multiple sampling.	3
	Acceptance plans –double and multiple sampling.	5
	Operating characteristic curves – construction and use. Determinations of average outgoing quality, average outgoing quality level, average total inspection, producer risk and consumer risk.	4
	USE OF PUBLISHED SAMPLING PLANS: Gauge Repeatability & Reproducibility & Measurement system analysis.	4
5	RELIABILITY AND LIFE TESTING: [6]	
	Failure models of components, definition of reliability, MTBF, Failure rate, common failure rate curve,	2
	types of failure, reliability evaluation in simple cases of exponential failures in series, paralleled and series-parallel device configurations,	3
	Redundancy and improvement factors evaluations.	1

Signature of Faculty:

Professor & HOD
Dept. of Industrial Engineering & Management
Dr. Ambedkar Institute of Technology
Near Jnanabharathi Campus
BDA Outer Ring Road
Mallathahalli, Bangalore-560 05₆

Name of Staff Member: Sarvamanala S P	Designation: Assistant Professor	Sub: Supply Chain Management	Code: 18IM72

Unit No.	Portion to be Covered	No. of Hrs
1	BUILDING A STRATEGIC FRAMEWORK TO ANALYSE SUPPLY CHAINS: Supply chain stages and decision phases....	2
	process view of a supply chain. Supply chain flows	1
	Examples of supply chains	1
	Competitive and supply chain strategies.	1
	Achieving strategic fit	1
	Expanding strategic scope	1
	Drivers of supply chain performance	1
2	Facility Location and Network Design: Models for facility location and capacity allocation.	2
	Impact of uncertainty on SCN	1
	Framework for structuring drivers – Inventory, Transportation, Facilities, Information	2
	Obstacles to achieving fit. Case discussions.	1
	Distribution Networking – Role, Supply Chain Network (SCN) – Role, Factors, Framework for Design Decisions	2
3	Planning and Managing Inventories in A Supply Chain: Review of inventory concepts.	2
	Trade promotions, Managing multi-echelon cycle inventory	1
	safety inventory determination	1
	Impact of supply uncertainty aggregation	1
	Optimum level of product availability importance factors	1
	Managerial levers to improve supply chain profitability.	2
4	Sourcing, Transportation and Pricing Products: Role of sourcing, supplier – scoring & assessment, selection and contracts.	2
	Design collaboration	1
	Role of transportation, Factors affecting transportation decisions.	2
	Modes of transportation and their performance characteristics.	2

	Tailored transportation, international transportation.	1
5	Coordination and Technology in the Supply Chain: Co-ordination in a supply chain: Bullwhip effect.	2
	Obstacles to coordination	1
	Managerial levers to achieve co-ordination	1
	Building strategic partnerships	1
	The role of IT supply Chain, The role of E-business in a supply chain.	2

Signature of Faculty: