

**SHREE KRISHAN INSTITUTE OF ENGINEERING & TECHNOLOGY KURUKSHETRA****Course Plan (4<sup>th</sup> Semester)**

**Course No.** : MATH-201N  
**Course Title** : MATHEMATICS - III  
**Name of Teacher** : Mr. Rampal

L T P/D TOTAL  
 3 1 - 4  
 Theory: 75 Marks  
 Sessional: 25 Marks

**Course Plan**

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Up to First Sessional</b>			
UNIT-I			
1.	<u>Fourier Series</u> : Euler's Formulae, Conditions for Fourier expansions,	<b>02</b>	
2.	Fourier expansion of functions having points of discontinuity, change of interval, Odd & even functions, Half-range series.	<b>02</b>	
3.	<u>Fourier Transforms</u> : Fourier integrals, Fourier transforms, Fourier cosine and sine transforms, Properties of Fourier transforms, Convolution theorem,	<b>03</b>	
4.	Parseval's identity, Relation between Fourier and Laplace transforms, Fourier transforms of the derivatives of a function, Application to boundary value problems	<b>03</b>	
UNIT-II			
5.	<u>Functions of a Complex Variables</u> : Functions of a complex variable, Exponential function, Trigonometric,	<b>02</b>	
6.	Hyperbolic and Logarithmic functions, limit and continuity of a function, Differentiability and analyticity.	<b>03</b>	
<b>Up to Second Sessional</b>			
7.	Cauchy-Riemann equations, Necessary and sufficient conditions for a function to be analytic,	<b>03</b>	
8.	Polar form of the Cauchy-Riemann equations, Harmonic functions,	<b>02</b>	

9.	Application to flow problems, Conformal transformation, Standard transformations (Translation, Magnification & rotation, inversion & reflection, Bilinear).	03	
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<b>UNIT-III</b>			
10.	<u>Probability Distributions</u> : Probability, Baye's theorem, Discrete & Continuous probability_distributions,	02	
11.	Moment generating function, Probability generating function,	02	
<b>Up to Third Sessional</b>			
11.	Properties and applications of Binomial, Poisson and normal distributions.	02	
<b>UNIT-IV</b>			
12.	<u>Linear Programming</u> : Linear programming problems formulation	02	
13.	, Solution of Linear_Programming Problem using Graphical method,	02	
14.	Simplex Method, Dual-Simplex Method.	02	
<b>Total No. of Lectures</b>		<b>35</b>	

### TEXT BOOKS:

1. DR B.S.GREWAL "Higher Engineering Mathematics, KHANNA publications
2. Dr.Kuldeep Kumar "Engineering Mathematics-III", Bharat publications

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**Name & Sign of Teacher**

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**Head's Signature with Date**

**SHREE KRISHAN INSTITUTE OF ENGINEERING & TECHNOLOGY KURUKSHETRA****Course Plan (6<sup>th</sup> Semester)**

<b>Course No.</b>	<b>: ME 302 N</b>	<b>L</b>	<b>T</b>	<b>P/D</b>	<b>TOTAL</b>
<b>Course Title</b>	<b>: Refrigeration and Air-conditioning</b>	3	1	-	4
<b>Name of Teacher</b>	<b>: Mr. Vipin</b>	Theory: 75 Marks			
		Sessional: 25 Marks			

<b>S.No.</b>	<b>Course Plan Topic</b>	<b>No. of Lectures planned</b>	<b>No of Lectures Delivered</b>
<b>Up to First Sessional</b>			
<b>UNIT-I</b>			
1.	Basics of heat pump & refrigerator; Carnot's refrigeration and heat pump; Units of refrigeration; COP of refrigerator and heat pump; Carnot's COP; ICE refrigeration; evaporative refrigeration	<b>02</b>	
2.	Refrigeration by expansion of air; refrigeration by throttling of gas; Vapor refrigeration system; steam jet refrigeration; thermoelectric cooling; adiabatic demagnetization.	<b>02</b>	
3.	Basic principles of operation of air refrigeration system, Bell-Coleman air refrigerator; advantages of using air-refrigeration in aircrafts;	<b>02</b>	
4.	Disadvantages of air refrigeration in comparison to other cold producing methods; simple air refrigeration in air craft; simple evaporative type air refrigeration in aircraft; necessity of cooling the aircraft.	<b>03</b>	
<b>UNIT-II</b>			
5.	Simple Vapor Compression Refrigeration System; different compression processes ( wet compression, dry or dry and saturated compression, superheated compression);	<b>02</b>	
6.	Limitations of vapour compression refrigeration system if used on reverse Carnot cycle; representation of theoretical and actual cycle on T-S and P-H charts; effects of operating conditions on the performance of the system	<b>03</b>	
<b>Up to Second Sessional</b>			
7.	Advantages of vapour compression system over air refrigeration system. Methods of improving COP; flash chamber; flash inter cooler; optimum interstate pressure for two stage refrigeration system; single expansion and multi expansion processes;	<b>03</b>	
8.	Basic introduction of single load and multi load systems; Cascade systems. Basic absorption system; COP and Maximum COP of the absorption system; actual NH <sub>3</sub> absorption system; functions of various components.	<b>03</b>	
9.	Li-Br absorption system selection of refrigerant and absorbent pair in vapour absorption system; Electro refrigerator; Comparison of Compression and Absorption refrigeration systems; nomenclature of refrigerants; desirable properties of refrigerants; cold storage and ice-plants.	<b>04</b>	

	<b>UNIT-III</b>		
10.	Difference in refrigeration and air conditioning; Psychometric properties of moist air (wet bulb, dry bulb, dew point temperature, relative and specific humidity of moist air, temperature of adiabatic saturation); empirical relation to calculate $P_v$ in moist air.	<b>02</b>	
11.	Psychometric chart, construction and use, mixing of two air streams; sensible heating and cooling; latent heating and cooling;	<b>02</b>	
<b>Up to Third Sessional</b>			
11.	humidification and dehumidification; cooling with dehumidification; cooling with adiabatic humidification; heating and humidification; by-pass factor of coil; sensible heat factor; ADP of cooling coil; Air washer	<b>02</b>	
	<b>UNIT-IV</b>		
12.	Classification; factors affecting air conditioning systems; comfort air-conditioning system; winter air conditioning system; summer air-conditioning system; year round air conditioning. unitary air-conditioning system; central air conditioning system; room sensible heat factor; Grand sensible heat factor; effective room sensible heat factor.	<b>02</b>	
13.	Inside design conditions; comfort conditions; components of cooling loads; internal heat gains from (occupancy, lighting, appliances, product and processes); system heat gain (supply air duct, A.C. fan, return air duct)	<b>02</b>	
14.	external heat gain (heat gain through building, solar heat gains through outside walls and roofs); solar air temperature; solar heat gain through glass areas; heat gain due to ventilation and infiltration.  Transport air conditioning; evaporative condensers, cooling towers; heat pumps.	<b>03</b>	
<b>Total No. of Lectures</b>		<b>37</b>	

Recommended Books:

Refrigeration and air-conditioning by C.P arora

Basic Refrigeration and air-conditioning by Annanthana and Rayanan, TMG

Refrigeration and air-conditioning By Arora and Domkundwar, Dhanpat rai

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**SHREE KRISHAN INSTITUTE OF ENGINEERING & TECHNOLOGY KURUKSHETRA****Course Plan (6<sup>th</sup> Semester)**

**Course No. :** ME- 308 N  
**Course Title :** CAD/CAM  
**Instructor :** Mr. Sunil

L T P/D TOTAL  
 4 - - 4  
 Theory: 75 Marks  
 Sessional: 25 Marks

**Course Plan:**

S.No.	Topic	No. of Lectures planned	No of Lectures Engaged
<b>Contents for 1<sup>st</sup> Sessional</b>			
<b>UNIT I</b>			
1.	Introduction to CAD/CAM, Historical Development, Industrial look at CAD/CAM, Introduction to CIM.	<b>03</b>	
2.	Basic of Geometric & Solid modeling, Coordinate systems, Explicit, Implicit, Intrinsic and parametric equation.	<b>03</b>	
3.	Part families, Part classification and coding, product flow analysis,	<b>03</b>	
4.	Machine cell Design, Advantages of GT.	<b>02</b>	
<b>UNIT II</b>			
5.	Introduction, Transformation of points & line, 2-D rotation, Reflection, Scaling and combined transformation, Homogeneous coordinates.	<b>03</b>	
6.	3-D scaling, shearing, rotation, reflection and translation, combined transformations, Orthographic and perspective projections	<b>03</b>	
<b>Contents for 2<sup>nd</sup> Sessional</b>			
7.	Algebraic and geometric forms, tangent & normal blending functions.	<b>03</b>	
8.	Reparametrization of Straight line, conics, cubic splines, Bezier curves and B-spline curves	<b>03</b>	
<b>UNIT IV</b>			
9.	Introduction, FMS component, Types of FMS, FMS layout, Planning for FMS, advantage and applications	<b>03</b>	
10.	Introduction, conventional process planning, Steps in variant process planning, types of CAPP, planning for CAPP	<b>03</b>	

S.No.	Topic	No. of Lectures planned	No of Lectures Engaged
11.	Introduction, fixed programmable and flexible automation, Types of NC systems, MCU & other components, Co-ordinate system, NC manual part programming	03	
<b>Contents for 3<sup>rd</sup> Sessional</b>			
12.	G & M codes, part program for simple parts, Computer assisted part programming	03	
<b>UNIT III</b>			
13.	Algebraic and geometric forms, tangent & twist vectors, normal blending function, reparametrization, Sixteen point form, four Curve form, Plane surface, ruled surface.	04	
14.	Surface of revolution, tabulated cylinder Bi-cubic surface, Bezier surface, B-spline surface	03	
15.	Solid models and representation scheme B-rep & CSG, sweep representation, Cell decomposition, spatial occupancy enumeration	04	
<b>Total No. of Lectures</b>		<b>46</b>	

**Recommended Books:**

1. CAD/CAM theory & practice (Ibrahim Zeid), R. Sivasubramanian.
2. CAD/CAM (Groover & Zimmer).
3. Numerical control and computer aided manufacturing by RAO and Tiwari, TMG.
4. CAD/CAM principal and applications by P.N. RAO.
5. Automation, production systems and computer integrated manufacturing by Mikell P. Groover

**NOTE: In the semester examination, the examiner will set 8 questions, at least Two question from each unit, and students will be required to attempt only 5 questions one from each unit.**

**Name & Sign of Teacher**

**Head's Signature with Date**

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**Course Plan (6<sup>th</sup> Semester)**

Course No.: ME- 304 N

L T P/D TOTAL

Course Title: Tribology &amp; Mechanical Vibration

3 1 - 4

Name of Teacher: Er. S P Kundu

Theory: 75 Marks

Sessional: 25 Marks

**Course Plan:**

S.No.	Topic	No. of Lectures Planned	No. of Lectures Delivered
<b>Contents for First Sessional Test</b>			
<b>UNIT-I</b>			
1.	<b>Fundamentals of Vibration:</b> Elements of a vibratory system, S.H.M., degrees of freedom, Types of vibrations, Work done by a harmonic force, Beats.	<b>03</b>	
2.	<b>Undamped free vibrations:</b> Natural frequency by equilibrium and energy methods, equivalent spring, linear and torsional systems, compound pendulum, Bifilar and Trifilar suspensions.	<b>04</b>	
3.	<b>Damped free vibrations:</b> Different types of damping, differential equations of damped free vibrations, initial conditions, logarithmic decrement, vibrational energy and logarithmic decrement.	<b>03</b>	
<b>Contents for Second Sessional Test</b>			
<b>UNIT-II</b>			
4.	<b>Single Degree of Freedom Systems- Forced Vibrations:</b> Sources of excitation, equations of motion with harmonic force, response of rotating and reciprocating unbalanced system, Support motion.	<b>04</b>	

S.No.	Topic	No. of Lectures planned	No. of Lectures Delivered
5.	Vibration Isolation, Force and Motion transmissibility. Forced vibrations with coulomb damping, structural damping and viscous damping.	04	
<b>UNIT-III</b>			
6.	Influence coefficients, Dunkerleys equation, Matrix iteration, Holzer method, Rayleigh method, and Rayleigh-Ritz method. <b>Multi-degree of freedom systems:</b> Principle modes of vibrations, Influence co-efficient, Matrix method.	04	
<b>Contents for Third Sessional Test</b>			
7.	Orthogonality principle, Dunkerleys equation, Matrix iteration method, Holzer Method, Rayleigh Method and Rayleigh-Ritz methods, Stodola method, Hamilton principle.	04	
8.	<b>Continuous systems:</b> Transverse vibration of strings, Longitudinal vibrations of bars, Lateral vibration of beams, Torsional vibration of circular shafts.	03	
<b>UNIT-IV</b>			
9.	Introduction to Tribology, Tribology in design, Tribology in industry, economic aspects of Tribology, <b>Lubrication:</b> Basic modes of lubrication, lubricants, properties of lubricants - physical and chemical, types of additives, extreme pressure lubricants, recycling of used oils and oil conservation, disposal of scrap oil, oil emulsion.	04	
10.	<b>Friction and Wear:</b> Introduction, laws of friction, kinds of friction, causes of friction, friction measurement, theories of friction, effect of surface preparation. Introduction to Wear, Types of wear, various factors affecting wear, measurement of wear, wear between solids and liquids, theories of wear.	03	
<b>Total No. of Lectures</b>		<b>36</b>	

**Books Recommended:**

1. Theory and Practice of Mechanical Vibrations- By J.S Rao and K.Gupta
2. Mechanical Vibrations- By G.K Grover
3. Mechanical Vibrations- By V.P Singh

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**Course Plan (6<sup>th</sup> Semester)**

Course No. : ME-310 N

L T P/D TOTAL

Course Title : Machine Design - II

2 4 - 6

Name of Teacher : Er. Shivcharan

Theory: 75 Marks

Sessional: 25 Marks

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Contents for First Sessional Test</b>			
<b>UNIT I</b>			
1.	<b>Gear Drives:</b> Classification of gears, selection of type of gears, law of gearing, standard systems of gear tooth, interference and undercutting, backlash, <b>Spur Gears:</b> geometry and nomenclature, force analysis, material selection, beam strength of gear tooth, effective load on gear tooth, module estimation based on beam strength, wear strength of gear tooth, module estimation based on wear strength, Spur gear design procedure.	<b>03</b>	
2.	<b>Helical Gears:</b> geometry and nomenclature, force analysis, beam strength of helical gears, effective load on gear tooth, wear strength of helical gears, design procedure.	<b>02</b>	
3.	<b>Bevel Gears:</b> geometry and nomenclature, force analysis, beam strength of bevel gears, effective load on gear tooth, wear strength of bevel gears, design procedure.	<b>02</b>	
4.	<b>Worm Gears:</b> terminology, force analysis, friction in worm gears, material selection, strength rating and wear rating, thermal considerations and design procedure	<b>02</b>	
<b>UNIT II</b>			
5.	<b>Flat Belt Drives and Pulleys:</b> Introduction, Selection of flat belts from manufacturer's catalogue, Pulleys for flat belts. <b>V-Belts and Pulley:</b> selection of V-Belts and V-grooved pulley.	<b>03</b>	
6.	<b>Chain Drives:</b> roller chains, geometric relationships, polygonal effect, power rating, sprocket wheels, design of chain drives, chain lubrication.	<b>02</b>	
<b>Contents for Second Sessional Test</b>			
7.	<b>Clutches:</b> Various types of clutches in use, design of friction clutches- single disc, multidisc, cone & centrifugal, torque transmitting capacity, friction materials, thermal considerations.	<b>02</b>	
8.	<b>Brakes:</b> Various types of brakes, self-energizing condition of brakes, design of shoe brakes – internal & external expanding, band brakes, thermal considerations in brake designing.	<b>02</b>	

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
	<b>UNIT III</b>		
9.	<b>Springs:</b> Types of springs, design for helical springs against tension and their uses.	<b>02</b>	
10.	Compression and fluctuating loads, design of leaf springs, surging in springs.	<b>01</b>	
11.	<b>Bearings:</b> Classification, selection of bearing type, static and dynamic load carrying capacity, equivalent bearing load,	<b>02</b>	
12.	load-life relationship, selection of bearings from manufacturer's catalogue,	<b>01</b>	
13.	selection of taper roller bearing, design for cyclic loads and speeds, bearing failure-causes and analysis.	<b>01</b>	
<b>Contents for Third Sessional Test</b>			
14.	<b>Sliding Contact Bearings:</b> design of journal bearings using Raimondi and Boyd's Charts.	<b>01</b>	
	<b>UNIT IV</b>		
15.	Design of piston, design of crank shaft, design of connecting rod.	<b>02</b>	
16.	<b>I.C. Engine Components:</b> Design of cylinder, design of studs for cylinder head,	<b>01</b>	
17.	<b>Flywheel:</b> Flywheel materials, torque analysis, coefficient of fluctuation of energy,	<b>02</b>	
18.	Design of solid disc and rimmed flywheel.	<b>01</b>	
<b>TOTAL</b>		<b>32</b>	

**Recommended Books:**

1. Design Of Machine Elements- V.B.Bhandari , TMH Publication
2. Machine Design – R.S.Khurmi , S.Chand Publication
3. PSG Design DATA Book , Design Data Book By Abdullah Shariff
4. Machine Design by Sharma, Aggarwal, Katson publishers
5. Design Data Book by Abdullah Shariff

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**Course Plan (6<sup>th</sup> Semester)**

Course No. : ME-306N

Course Title : Operation Research

Name of Teacher : Er. Vipin

L T P/D TOTAL

3 1 - 4

Theory: 75 Marks

Sessional: 50 Marks

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Contents for First Sessional Test</b>			
<b>UNIT I</b>			
1.	Development of Operations Research, Characteristics and Scope of Operations Research, Operation Research in Management, Models in Operations Research.	02	
2.	Model Formulation, Types of Mathematical Models, Limitations of Operations Research.	01	
3.	L.P. Models, Simplex Method, The Algebra of Simplex Method (Minimization and Maximization problems).	02	
4.	Big M method, Post Optimality Analysis, Essence of Duality Theory, Application of Sensitivity Analysis.	02	
<b>UNIT II</b>			
5.	Introduction to Model, Matrix Terminology, Formulation and Solution of Transportation Model (Least Cost Method, Vogel's Approximation Method).	03	
6.	Least Time Transportation Problem, Assignment Problems.	02	
<b>Contents for Second Sessional Test</b>			
7.	Introduction to Network Logic, Numbering of Events (Fulkerson Rule), PERT Calculations, Forward Path, Backward Path, Slack, Probability, Comparison with PERT, Critical Path, Floats.	02	
8.	Project Cost, Crashing the Network, Updating (PERT and CPM).	02	
<b>UNIT III</b>			
9.	Introduction, Applications of Simulation, Advantages and Limitations of Simulation Technique, Generation of Random Numbers, Time-Flow Mechanism, Simulation Languages.	02	
10.	Steps in Decision Theory Approach, Decision Machinery Environment, Decision Machining under Certainty and Uncertainty, Decision Machining under Condition of Risk.	02	
11.	Decision Trees, Minimum Enchained Criteria, Advantages and Limitations of Decision Tree Solutions, Post Optimality.	02	
12.	Definition of Arguments Models, Comparison with Transport Model.	01	

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
13.	Mathematical Representation of Assignment Model.	02	
<b>Contents for Third Sessional Test</b>			
14.	Formulation and Solution of Argument Models, Variation of the Argument Model, Alternate Optimal Solutions.	02	
15.	<b>UNIT IV</b> Introduction, Applications of Queuing Theory, Waiting Time and Idle Time Costs.	01	
16.	Single Channel Queuing Theory and Multi-Channel Queuing Theory with Poisson, Arrivals and Exponential Services.	02	
17.	Numerical on Single Channel and Multi-Channel Queuing Theory.	02	
18.	Theory of games, Competitive Games, Rules and Terminology in Game Theory.	02	
19.	Rules for Game Theory - Saddle Point, Dominance, Mixed Strategy (2 x2 games).	02	
20.	Mixed Strategy (2 x n games or m x 2 games), Mixed strategy (3 x3 games), Two Person Zero Sum Games, n-Person Zero Sum Games.	03	
<b>TOTAL</b>		<b>39</b>	

**Reference Books:**

1. Introduction to Operation Research by - P.K. Gupta and D.S. Hira, S.Chand Publications.
2. Operations Research by - V. K. Kapoor, S.Chand Publications.
3. Introduction to Operation Research by - Hillier and Lieberman, Tata McGraw-Hill Publications.
4. Linear Programming by - N.P. Loomba, Tata McGraw-Hill Publications.

**Er. Yogesh Gupta**

**Name & Sign of Teacher**

**Head's Signature with Date**

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**SHREE KRISHAN INSTITUTE OF ENGINEERING & TECHNOLOGY KURUKSHETRA****Course Plan (8<sup>th</sup> semester)**

Course No. : ME- 402E  
 Course Title : ENT  
 Name of Teacher : MR. Sohail

L T P/D TOTAL  
 3 1 - 4  
 Theory: 100 Marks  
 Sessional: 50 Marks  
 Duration of Exam: 03 hours

**Course Plan:**

S.No.	Topic	No. of Lectures planned	No of Lectures Engaged
<b>Contents for 1<sup>st</sup> Sessional</b>			
<b>UNIT I</b>			
1	Introduction to syllabus, Definition and concept, Importance of economics for engineers, present value and future value, Wealth, Goods, Wants, Value and price, capital, money, utility of consumer and producer goods.	04	
2	Introduction, Elements of cost, Prime cost, Overhead, Factory cost, Total cost, Selling price, Nature of cost, Types of cost.	03	
3	Definition and concept, Causes of depreciation.	01	
4	Methods of calculating depreciation.	01	
<b>Contents for 2<sup>nd</sup> Sessional</b>			
<b>UNIT II</b>			
5	Introduction, Nature of selection problem, Nature of replacement problem, Replacement of items which deteriorate.	02	
6	Replacement of machines whose operating cost increase with time and the value of money also changes with time, methods used in selection of investment and replacement alternatives.	03	
7	Entrepreneurship, Role of Entrepreneur in Indian economy, Characteristics of an entrepreneur.	02	
8	Types of entrepreneurs, some myths and realities about entrepreneurship.	02	
<b>UNIT III</b>			
9	Introduction, Role and scope of small scale industries,	01	
10	concept of small scale and ancillary industrial	03	

	undertakings, How to start a small scale industry, Steps in launching own venture. Procedure for registration of small scale industries, various developmental agencies-their functions and role in industrial and entrepreneurship development		
<b>Contents for 3<sup>rd</sup> Sessional</b>			
<b>11</b>	Infrastructure facilities available for entrepreneurship development in India.	<b>01</b>	
<b>12</b>	Introduction, Requirement of a good product design, product development approaches, Product development process, Elements of concurrent engineering.	<b>02</b>	
<b>13</b>	Quality function development, Rapid prototyping, Various controlling agencies involved -their role and formalities for getting clearance before starting individual venture	<b>02</b>	
<b>14</b>	<b>UNIT IV</b> Financial concept for small-scale industries, financial, requirements Financial support programmer of banks, Government financial agencies, Hire-purchase facilities alternate source of finance.	<b>03</b>	
<b>15</b>	The modern concept of marketing, Definitions, functions and principle of marketing, Marketing research, Advertising, Market survey, Pre-feasibility and feasibility of project. Identification and evaluation of business opportunity, risk involved and preparation of business plan	<b>03</b>	
<b>16</b>	Tools for evaluation of techno economic feasibility project report, SWOT analysis.	<b>03</b>	
	<b>Total No. of Lectures</b>	<b>36</b>	

**Recommended Books:**

6. Industrial Engineering and Management – By O.P Khanna.
7. Industrial Engineering and Management – By S.K Sharma & Sativa Sharma.
8. Industrial Engineering and Management – By Ravi Shankar.
9. Handbook of Entrepreneurship – By Rao & Pareek.

**NOTE: In the semester examination, the examiner will set 8 questions, at least Two question from each unit, and students will be required to attempt only 5 questions one from each unit.**

**Dr. Viraj Tyagi**  
**Director-Principal**

**Head's Signature with Date**

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**Course Plan (8<sup>th</sup> Semester)**

**Course No.** : ME- 404E  
**Course Title** : Power Plant Engineering  
**Name of Teacher** : Er. Shivcharan

**L T P/D TOTAL**  
 4 1 - 5  
**Theory** : 100 Marks  
**Sessional**: 50 Marks

**Course Plan:**

S. No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Contents for 1<sup>st</sup> Sessional Test</b>			
<b>UNIT - I</b>			
1.	Conventional and non-conventional sources of energy; Importance of electrical energy; Geothermal power plants; Tidal power plants; Windmills; Solar power plants; Direct energy conversion systems; Energy sources in India; Recent developments in power plants.	<b>04</b>	
2.	Hydrology: rainfall, runoff, hydrographs, flow duration curves; Site selection for hydro power plants; Classification of hydro power plants; Storage type hydro power plant and its operation; Estimation of power availability.	<b>03</b>	
3.	Selection of water turbines; Combination of hydro power plants with steam plants; advantages and disadvantages of hydro power plants.	<b>03</b>	
<b>UNIT - II</b>			
4.	Analysis of steam power cycles for power plant application; High pressure boilers- La-Mont boiler, Benson boiler, Loffler boiler; Volex boiler; Super pressure steam power plants; Economizers; Air-preheaters; Super heaters and reheaters; Feed water heaters.	<b>03</b>	
<b>Contents for 2<sup>nd</sup> Sessional Test</b>			
5.	General layout of thermal power plant; Site selection for thermal power plant; Coal as fuel, classification of coals, analysis of coal; Coal handling; Dead and live storage;	<b>03</b>	
6.	Combustion of coal: coal burning methods, overfeed stokers, underfeed stokers, pulverized fuels and burners. Ash handling and disposal; Dust collectors. Heat balance sheet for thermal power plants.	<b>03</b>	
7.	Diesel Power Plant: Introduction; Field of use; Outline of diesel electric power plant; Different systems of diesel power plant; Supercharging of diesel engines; Performance of diesel power plant; Advantages and disadvantages of diesel plants over thermal power plants.	<b>04</b>	

S. No.	Topic	No. of Lectures planned	No of Lectures Delivered
8.	<b>UNIT - III</b> Elements of plant; Thermal refinements; Performance of plants; Gas turbine characteristics; Comparison with other plants; Combined steam and gas turbine power plants.	<b>03</b>	
<b>Contents for 3<sup>rd</sup> Sessional Test</b>			
9.	Basic theory and terminology; Nuclear fission and fusion processes; Fission chain reaction; Moderation; Fertile materials; Nuclear fuels.	<b>03</b>	
10.	Nuclear Reactor: Nuclear fuels; General components of nuclear reactor; Different types of reactors; Breeder reactors.	<b>03</b>	
11.	Nuclear power plants in India; Disposal of nuclear waste.	<b>02</b>	
12.	<b>UNIT - IV</b> Loads on Power Plant: Introduction; Load curves; Different terms and definitions; Effects of variable loads on power plant design and operation	<b>03</b>	
13.	Cost of electrical energy: Introduction; Selection of type of generation; selection of generating equipment; performance and operating characteristics of power plants; Load division among generators; Tariffs methods for electrical energy.	<b>04</b>	
	<b>Total no. of Lectures</b>	<b>41</b>	

**Recommended Books:**

1. Power Plant Engineering by Morse, D. Van Nostrand Company
2. Power Plant Engineering by Domkundwar, Dhanpat Rai Publications.
3. Power Plant Engineering by P.C. Sharma, Kataria & sons publications.
4. Power Plant Engineering by R.K. Rajput, luxmi publications.

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**Name & Sign of Teacher**

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**Course Plan (8<sup>th</sup> Semester)**

Course No. : ME-406 E,

Course Title : Operation Research

Name of Teacher : Er. Vipin

L T P/D TOTAL

3 1 - 4

Theory: 100 Marks

Sessional: 50 Marks

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Contents for First Sessional Test</b>			
<b>UNIT I</b>			
1.	Development of Operations Research, Characteristics and Scope of Operations Research, Operation Research in Management, Models in Operations Research.	<b>02</b>	
2.	Model Formulation, Types of Mathematical Models, Limitations of Operations Research.	<b>01</b>	
3.	L.P. Models, Simplex Method, The Algebra of Simplex Method (Minimization and Maximization problems).	<b>02</b>	
4.	Big M method, Post Optimality Analysis, Essence of Duality Theory, Application of Sensitivity Analysis.	<b>02</b>	
<b>UNIT II</b>			
5.	Introduction to Model, Matrix Terminology, Formulation and Solution of Transportation Model (Least Cost Method, Vogel's Approximation Method).	<b>03</b>	
6.	Least Time Transportation Problem, Assignment Problems.	<b>02</b>	
<b>Contents for Second Sessional Test</b>			
7.	Introduction to Network Logic, Numbering of Events (Fulkerson Rule), PERT Calculations, Forward Path, Backward Path, Slack, Probability, Comparison with PERT, Critical Path, Floats.	<b>02</b>	
8.	Project Cost, Crashing the Network, Updating (PERT and CPM).	<b>02</b>	
<b>UNIT III</b>			
9.	Introduction, Applications of Simulation, Advantages and Limitations of Simulation Technique, Generation of Random Numbers, Time-Flow Mechanism, Simulation Languages.	<b>02</b>	
10.	Steps in Decision Theory Approach, Decision Machinery Environment, Decision Machining under Certainty and Uncertainty, Decision Machining under Condition of Risk.	<b>03</b>	
11.	Decision Trees, Minimum Enchained Criteria, Advantages and Limitations of Decision Tree Solutions, Post Optimality.	<b>01</b>	
12.	Definition of Arguments Models, Comparison with Transport Model.	<b>01</b>	

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
13.	Mathematical Representation of Assignment Model.	02	
<b>Contents for Third Sessional Test</b>			
14.	Formulation and Solution of Argument Models, Variation of the Argument Model, Alternate Optimal Solutions.	02	
15.	<b>UNIT IV</b> Introduction, Applications of Queuing Theory, Waiting Time and Idle Time Costs.	02	
16.	Single Channel Queuing Theory and Multi-Channel Queuing Theory with Poisson, Arrivals and Exponential Services.	02	
17.	Numerical on Single Channel and Multi-Channel Queuing Theory.	02	
18.	Theory of games, Competitive Games, Rules and Terminology in Game Theory.	02	
19.	Rules for Game Theory - Saddle Point, Dominance, Mixed Strategy (2 x 2 games).	02	
20.	Mixed Strategy (2 x n games or m x 2 games), Mixed strategy (3 x 3 games), Two Person Zero Sum Games, n-Person Zero Sum Games.	02	
<b>TOTAL</b>		<b>39</b>	

**Reference Books:**

1. Introduction to Operation Research by - P.K. Gupta and D.S. Hira, S.Chand Publications.
2. Operations Research by - V. K. Kapoor, S.Chand Publications.
3. Introduction to Operation Research by - Hillier and Lieberman, Tata McGraw-Hill Publications.
4. Linear Programming by - N.P. Loomba, Tata McGraw-Hill Publications.

**Er. Yogesh Gupta**

**Name & Sign of Teacher**

**Head's Signature with Date**

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**Course Plan (8<sup>th</sup> Semester)**

**Course No.** : ME-420 E  
**Course Title** : Non-Conventional Manufacturing  
**Name of Teacher** : Er. S P Kundu

**L T P/D TOTAL**  
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**Theory: 100 Marks**  
**Sessional: 50 Marks**

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
<b>Contents for First Sessional Test</b>			
<b>UNIT I</b>			
1.	Unconventional Machining Processes, Rapid Prototyping Processes, Their Classification, Considerations In Process Selection.	<b>03</b>	
2.	<b>Ultrasonic Machining</b> Elements Of Process, Design Of Cutting Tool.	<b>02</b>	
3.	Metal Removal Mechanism, Effect Of Parameters.	<b>02</b>	
4.	Economic Considerations, Limitations And Applications, Surface Finish.	<b>03</b>	
<b>UNIT II</b>			
<b>ELECTROCHEMICAL MACHINING</b>			
5.	Elements Of Process, Process Chemistry, Metal Removal Mechanism, Tool Design, Accuracy, Surface Finish And Work Material Characteristics, Economics Advantages.	<b>03</b>	
6.	Limitations And Applications, Electrochemical Grinding, Debarring And Honing, Chemical Machining.	<b>02</b>	
<b>Contents for Second Sessional Test</b>			
7.	<b>Electric Discharge Machining</b> Principle And Mechanism Of Metal Removal, Generators, Electrode Feed Control.	<b>03</b>	
8.	Electrode Material, Tool Electrode Design, EDM Wire Cutting, Surface Finish, Accuracy And Applications.	<b>02</b>	
<b>UNIT III</b>			
9.	<b>Jet Machining</b> Principal And Metal Removal Mechanism Of Abrasive And Water Jet Machining, Process Variables.	<b>03</b>	
10.	Design Of Nozzle, Advantages, Limitations And Applications.	<b>02</b>	

S.No.	Topic	No. of Lectures planned	No of Lectures Delivered
11.	Plasma Arc Machining, Electron Beam Machining.	02	
12.	Laser Beam Machining, Their Principles And Metal Removal Mechanism.	02	
13.	Process Parameters, Advantages And Limitations, Applications.	02	
<b>Contents for Third Sessional Test</b>			
<b>UNIT IV</b>			
<b>RAPID PROTOTYPING</b>			
14.	Fundamentals, Process Chain, Physics Of Processes, Principles and Process Mechanism of SLA, SGC, LOM, FDM AND SLS Processes, Their Advantages And Limitations.	03	
15.	Applications Of RP Processes, RP Data Formats, STL File Format, STL File Problems, STL File Repair, Other Translators And Formats.	02	
<b>RAPID TOOLING PROCESS</b>			
16.	Introduction, Fundamentals, Classification, Indirect RT Processes.	01	
17.	Principles Of Silicone Rubber Molding, Epoxy Tooling, Spray Metal Tooling.	02	
18.	Pattern For Investment Casting, Vacuum Casting, And Vacuum Forming Processes, Direct RT Process.	02	
<b>TOTAL</b>		<b>41</b>	

**Recommended Books:**

1. Modern machining processes by P.C Pandey and M.S.Shan.
2. Machining science by Ghosh and Malik.
3. Nontraditional Manufacturing Prozesse by G.F. Benedict, Maicel Dekker.

**Er. Yogesh Gupta**

**Name & Sign of Teacher**

**Head's Signature with Date**

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**SHREE KRISHAN INSTITUTE OF ENGINEERING & TECHNOLOGY KURUKSHETRA****Course Plan (8<sup>th</sup> Semester)**

Course No. : ME- 432 E

Course Title : Management Information Systems

Name of Teacher : Er. Sunil

L T P/D TOTAL

3 1 - 4

Theory: 100 Marks

Sessional: 50 Marks

**Course Plan:**

<b>Sr. No.</b>	<b>Topic</b>	<b>No. of Lectures Planned</b>	<b>No of Lectures Delivered</b>
<b>Contents for 1<sup>st</sup> Sessional</b>			
<b>UNIT I</b>			
1.	What is MIS? Decision support systems, systems approach, the systems view of business, MIS, MIS organization within the company management organizational theory and the systems approach. Development of organizational theory, management and organizational behavior, management information and the system approach.	<b>06</b>	
2.	Evolution of an information systems, basic information systems, decision making and MIS, MIS as a technique for making programmed decision assisting information systems ( r ) strategic and project planning for MIS : General business planning, appropriate MIS planning-general, MIS planning -details	<b>05</b>	
<b>Contents for 2<sup>nd</sup> Sessional</b>			
<b>UNIT II</b>			
3.	Define the problems, set system objectives, establish system constraints, determine information needs,	<b>04</b>	
4.	determine information sources, develop alternative conceptual ;designs and select one document the system concept, prepare the conceptual ;design report.	<b>04</b>	
<b>UNIT III</b>			
5.	Inform and involve the organization, aim of detailed design, project management of MIS detailed design, identify dominant and trade off criteria, define the subsystems, Sketch the detailed operating subsystems and information flow.	<b>04</b>	
<b>Contents for 3<sup>rd</sup> Sessional</b>			

Sr. No.	Topic	No. of Lectures Planned	No of Lectures Delivered
6.	Determine the degree of automation of each operation, inform and involve the organization again, inputs, and processing, early system testing, software, hardware and tools, propose an organization to operate the system, document the detailed design, revisit the manager -user	04	
7.	<p style="text-align: center;"><b>UNIT IV</b></p> . Plan the Implementation , acquire floor space and plan space layouts, organize for implementation, develop, procedures for implementation, train (ho operating personnel, computer related acquisitions, develop forms for data collection and information dissemination	05	
8.	Develop the files, test the system, cutover, document the system, evaluate the MIS control and maintain the system ( r). Pitfalls in MIS development: Fundamental weakness, soft spots in planning, design problems, implementation: The TARPIT.	04	
<b>Total No. of Lectures</b>		<b>36</b>	

**Text Books:**

I. Management Information system by W.S. JawadeKar - Tata McGraw Hill.

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