



List of Courses Focus on Employability/ Entrepreneurship/ Skill Development

Department : Industrial and Production Engineering

Programme Name : B.Tech.

Academic Year : 2019-20

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course				
01.	IP3TBS01	STATISTICAL METHODS				
02.	IP3TES11	STRENGTH OF MATERIALS				
03.	IP3TES12	MATERIAL SCIENCE AND METALLURGY				
04.	IP3TPC11	THEORY OF MACHINE				
05.	IP3TPC12	MANUFACTURING PROCESSES - I				
06.	IP3LPC11	THEORY OF MACHINE LAB				
07.	IP3LES12	STRENGTH OF MATERIALS LAB				
08.	IP3THS11	ENGINEERING ECONOMICS				
09.	IP3THS12	WORK STUDY AND ERGONOMICS				
10.	IP4TBS02	NUMERICAL ANALYSIS AND COMPUTER PROGRAMMING				
11.	IP4TPC21	MACHINE DRAWING				
12.	IP4TPC22	INDUSTRIAL ENGINEERING				
13.	IP4TPC23	MANUFACTURING PROCESSES-II				
14.	IP4TPC24	FLUID MECHANICS				
15.	IP4LPC21	NACP				
16.	IP4LPC24	FLUID MECHANICS LAB				
17.	IP4TPE11	BUSINESS COMMUNICATION AND PRESENTATION SKILL				
18.	IP4TPE12	OCCUPATIONAL HELATH AND SAFETY				
19	IP4TPE13	BUSSINESS ETHICS AND CORPORATE GOVERNANCE				

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20	IP5TPC31	METAL CUTTING				
21	IP5TPC32	FLUID MACHINERY				
22	IP5TPC33	MACHINE DESIGN- I				
23	IP5TPE21	TURBO MACHINES				
24	IP5TPE22	INTERNAL COMBUSTION ENGINE				
25	IP5TPE23	MEMS AND NANO TECHNOLOGY				
26	IP5TPE31	TOTAL QUALITY MANAGEMENT				
27	IP5TPE32	INDUSTRIAL AUTOMATION				
28	IP5TPE33	MECHATRONICS				
29	IP5TOE11	FINANCIAL MANAGMENT				
30	IP5TOE12	MANAGERIAL ECONOMICS				
31	IP5TOE13	FINANCIAL ACCOUNTING AND COSTING				
32	IP5LPC31	METAL CUTTING LAB				
33	IP5LPC32	FLUID MACHINERY LAB				
34	IP5LPC33	SEMINAR				
35	IP6TPC41	MACHINE DESIGN- II				
36	IP6TPC42	MEASUREMENT, METROLOGY & CONTROL				
37	IP6TPC43	WELDING ENGINEERING				
38	IP6TPE41	MATERIAL MANAGEMENT				
39	IP6TPE42	PLANT LAYOUT AND MATERIAL HANDLING				
40	IP6TPE43	MAINTANCE AND RELIABILITY ENGINEERING				
41	IP6TPE51	Automobile Engineering				
42	IP6TPE52	POWER PLANT ENGINEERING				
43	IP6TPE53	HEAT & MASS TRANSFER				
44	IP6T0E21	ENTERPRISE RESOURCE PLANNING				

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45	IP6T0E22	MANAGEMENT INFORMATION SYSTEM			
46	IP6T0E23	SIX SIGMA AND DOE			
47	IP6LPC42	MEASUREMENT AND METROLOGY LAB			
48	IP6LPC43	WELDING ENGINEERING LAB			
49	IP7TPC51	PRINCIPLES OF MANAGEMENT			
50	IP7TPC52	PRODUCTION PLANNING AND CONTROL			
51	IP7TPC53	CAD/CAM			
52	IP7T0E31	PRODUCT DESIGN & DEVELOPMENT			
53	IP7T0E32	ENTERPRENUERSHIP DEVELOPMENT			
54	IP7T0E33	STRATEGIC MANAGEMENT			
55	IP7TPE61	MACHINE TOOL DESIGN			
56	IP7TPE62	REFRIGERATION AND AIR CONDITIONING			
57	IP7TPE63	COMPOSITE MATERIALS AND TECHNOLOGY			
58	IP7LPC53	CAD/CAM LAB			
59	IP7LPC54	SEMINAR ON SUMMER TRAINING (ABOUT 30 DAYS)			
60	IP7LPC55	MINOR PROJECT			
61	IP8TPC61	OPERATION RESEARCH			
62	IP8TPC62	MARKETING MANAGEMENT			
63	IP8TOE41	SUPPLY CHAIN MANAGEMENT			
64	IP8TOE42	SAFETY MANAGEMENT AND LABOUR LAW			
65	IP8TOE43	FINITE ELEMENT METHOD			
66	IP8TPE71	FLUID POWER AND CONTROL			
67	IP8TPE72	ROBOTICS AND ROBOT APPLICATION			
68	IP8TPE73	POWDER METALLURGY & CERAMICS			
69	IP8LPS02	MAJOR PROJECT			

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70	IP8LPC01	COMPREHENSIVE VIVA				
71	IP01TBS01	MATHEMATICS-II				
72	IP01TBS02	CHEMISTRY				
73	IP01TES01	PROGRAMMING FOR PROBLEM SOLVING				
74	IP01TES02	ENGINEERING MECHANICS				
75	IP01PBS01	CHEMISTRY LAB				
76	IP01PES01	PROGRAMMING FOR PROBLEM SOLVING LAB				
77	IP01PES02	WORKSHOP AND MANUFACTURING PRACTICES				
78	IP01PES03	ENGINEERING MECHANICS LAB				
79	IP01PMC01	INDUCTION TRAINING PROGRAMME				
80	IP02TBS03	PHYSICS				
81	IP02TES03	BASIC ELECTRICAL ENGINEERING				
82	IP02TBS04	MATHEMATICS-I				
83	IP02THS01	ENGLISH				
84	IP02THS02	ENVIRONMENTAL SCIENCES				
85	IP02PBS02	PHYSICS LAB				
86	IP02PES04	BASIC ELECTRICAL ENGINEERING LAB				
87	IP02PES05	ENGINEERING GRAPHICS AND DESIGN				





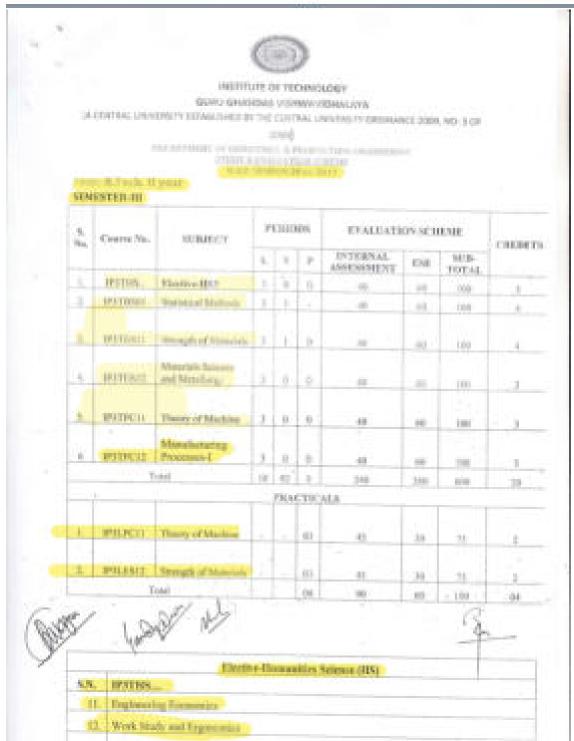
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Scheme and Syllabus

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DEPARTMENT OF PROMITTEN, AND PROSUCTION ENGINEERING STREETS SOMETHIS

DATESTS WORK STUDY AND ERGOSOMES (Chrown

Chair L

introduction to man muritian groups and organization, though factors in design and organization, Needs of exponential and needs of design, Physiological aspects of work,

Holes III

With interconnect through physiological tests. West physiology. Pased and reposed work performance, Data logging, data solfiction, data reduction and analysis techniques, Grass format strategy. Anthropometry, Bio conclusion, records strategth and exertion potential of different limbs.

Calc III

Worksquarity, Environmental affects, energies for evaluation of possess from and work spaces, Devironmental conditions because progression, (Exercisation, noise and vibration,

Cair IV

Perception and Milentation programs, design of diplays, bund marris, typegraphy, and enabled in largest and composition.

Cally

Exercises in evaluation of human response terroduct interface, product safety and product tability. Design consideration for appearance, covers, texture and forms.

Recommended Books:

- 1. D. C. Alexander, Applied Ergonomics, Explor & Francis.
- 2. Jun Dal, Ergemonics for Boginson, Toylor & Francis.
- David Pyo, The Nature & Amshetics of Bosiga, Cambiam Press.

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DEPARTMENT OF INOUTTHING AND PRODUCTION ENGINEERING BYTICH HI SOMSTEE

DYTHAM STATISTICAL METHODS

LOCK OF

Strodactive to nutrities a mathematical entities a variable a temporary distribution and inclusive class temporals type of orders propheted representation histogram frequency polygon give measure of neutral temporary medicine type of overage, Mount medium mode for grouped and an prosped data a greatestic ranse a barrecold ranse a resence of discription Skewness and Kortusia.

CNPF-10

carry fitting and Method of best oping - maids live parallels correlated outlier shapers's Karl Protect's coefficient of coordinate. Until Se correlated coefficient Coefficient of correlation for tovariate frequency distribution, rook correction. Regression linear regression. Espation to the law of Regression. Regression coefficient, Angle Servaria two lines of Regression.

UNIT-III:

Theory of Probability - Madacratical and material defection of probability Suraple space. Softe suraple space comple point, Except Theorem of total probability. Suraple and compressed court. Conditional probability. Theorem of compressed probability. Buy's theorem, the of binarrial theorem.

UNITARY

Theoretically Distribution – Binomial Distribution Mean, Standard deviation and Pearson's § and y coefficient. Poisson distribution, recent, variance normal Distribution.

Unit V Random and simple sampling – mean and standard deviation in simple sampling of attribute test of significance based on Chi square, T. F. and Z Distribution in Degree of frontiers, condition for applying

UNIT- V

Sevelation flusic concept of circulation, applications of simulation, secrits and domests of simulation, Morse Carlo simulation, simulation of lovertary system, simulation of Questing system.

Recommended Boolog

- L. Mathematical Statistics by M. Hay
- 2. S. C. Gopta and Kapoor Fundirecolal of Mathematical Statistic
- 3. A.A. AFFT Statistic Analysis.
- 4. Probability & Statistics by Diswal, FHI

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DEPARTMENT OF INCOPPINAL AND PROJECTION ENCORPERING BETWEEN HE RESISTED.

IPTERSES EMPLOYEE RELATIONS (Electro)

UNITED

Conceptual framework of employmen missions Concept, Sorpe and Approaches to bulterial Relations, Evolution of Industrial Relations and Corpora Developments, Constitutional and Louis Francework of Industrial Relations Conventions, ID Act. Tends Union Act

CNIT-41

Finder anticome: Trade Union Development and Tractions, Trade Cessa Stronger and Recognition, Managing Trade Union, Managinial Colombia, Uniphysical Organizations

COURSE.

Collective bargaiding: Notice and Content of Collective Bargaining Negations (Scille, losses and Denda to Collective Bargaining

MINUTE, TV

Employee fronthemati Distington, Structure and Process Design and Dynamics of Participation Formers, Structures See Supplementally Participation

STORY V

Granatice Handling, And Discriptor: Orientees Freeties in Industrial Relations, Conclusion, Arbitention and Adjustication, Discipling in Industry

Recommended Bucks:

- 1. Entployee Relations Management, Single P. N., Pearson Education India-
- Personnel Management Theory And Practice, 3 Vols. Sct. Arms Kutum, Rachana Sharma, Atlantic Publishers & Diser.
- Industrial Schricks And Personnel Management, Scient A George M V Pylos, Vikas Publishing Hoose Pst Ltd

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INCPAREMENT OF INDICETRIAL AND PRODUCTION ENGINEERING SCHOOL IN SEMSTER

SPITES IN STRENGTH OF MATERIAL.

STREET 4

Neugla stresses and strainst Colough of them and strain principle of attent and strain diagram, Hocke's low, Young's modeless, Poisson cares, stress at a point, stresses and arrows in bors subjected to onial leading. Modulus of charging flattamodes between stame prostom; error produced in compound their subjected to acid beating. Temperature mean and strate exhibitation that to applications of small brain and variation of temperature to ringle and coreposed walls-

Compound stresses and strainer Two diventored system, times at a point on a plane, principal strengs and principal planes. Move's circle of streng and strain, You discussional virels strain system, principal stea

UNIT-III

Bonding increases and show force diagrams: Durcheg recents and chear force diagrams, 5 If seed it M. diagram for different types of leading under different conditions with problems. Theory of bending stresses: Associations in the simple bending theory, distributed of formular inapplication to busen of recturgates, streams and channel sections, asseptode/Desched burns, besiding and those messes in asseptiate beauty.

Nope and Deflection of beams: Deficition, double bargarion, sees occurre maked, Macasley's methods, Conjugate beam, mothod of Superposition. Strain energy: Restlictes stress due to multicity applied leads, l'actiglisme's theorem, Massell's fisoren of recipross deflution.

DOMESTICS.

Torsion: Derivation of torsion equation and its assumptions. Applications of the equation of factsollow and solid circular stuffs, remissed rigidity.

Close-exilted-beliest springs: Analysis and derivation of expansion of closed coil balicalspring and their problems.

Columns and struts: Columns saster soi- sold load, Buckling of Columns, Stendenson ratio and conditions. Derivations of Euler's famous for clustic backing load, equivalent length. Banking Gordon's empirical formula.

This pressure yearst Derivation of firmulae and calculations of been sizes longitudisabstress in a cylinder, and sphere subjected to internal pressume increase in Diameter and volume.

Theories of Failure: Various faunties with problems.

Recommended Bookst

Pysel A H and Singer F L. "Strongth of Muscriols", 4th Edition, Harper Collins, Nano

Beer P.F. and Johnston (3r) E.E., "Mirchanics of Materials", Sl. Vassion, Tata MeUrawa Hill, India.

Propert E.P., "Engineering Michanics of Solish", SI Vention 2nd Edition, Prontee Itali of India, New Delto.

Timeshorks S.P. and Young D.H., "Elements of Strongels of Materials", 5th Edition(Bast West Press, New Diebs.

Redal U.C., "Joynohavian to Stronger of Marecials", 2" Edition, Galgeria Publishing





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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING RETECH III SENSORE Strength of motorials Ryder, L.H., Elements of Strength of material Tracollunks, East West gross. Mechanics of solids, Popury, PHI Poblications

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BYTICH IS SEMISTED.

DESTESSE MATERIAL SCIENCE AND METALLURGY

DOTE:

Introduction: Classification of engineering Misserials, ractals, one ments, plastics, corrects and comparison. Crystalline montees of solids: concepts of soil and space lattice, miller indices, crossal structure determination by X-ray diffraction. Crystal structure of ferrous and non-forene metals, crystal imperfections.

Plactic Deformation: Mechanisms of places: deformation, role of dislocation, stip and mirrolog,

olly exchanges, steps backering.

RESPONDED.

Plane Chaganes, Pieses, plane rules, mescart of equilibrium, Plane diagram, lever rule, mescric, entracted, peristable and perinsolal symmus, tran-carbon diagram, and simplified IC diagram. Heat Treatment isothermal Transformation of sestimiteCTTF diagrams, Transformations of sesterable special perinsons conducte, according, according, business, tempering, business-bardening, tempering, business-bardening transformations, recovery, recrystalligation and grain guarwin, Age burdening.

UNITED IN

Corresion: Principles of corresion funcs of corresion, factors affecting the cate of corresion. Corresion against comosion.

Crosp Introduction to comp medianies, comp curves, crosp resistant materials, introduction to

fittigue, cold working of metals and her working.

UNITED

Engineering Materials

Ferrous Cast irons, carbon and alloy steris and their coding.

Non-famous: Aluminum, copper, nickel, cheemium, 2000, lend, tin, tanguay, etc. and their allegs,

Classification, structure, present properties and applications of polyeurs, committee and composites.

UNITY

Powder Metallargy: Characteristics of metal powder, Particle size, shape and nine distribution, Characteristics of powder mass such as apparent density, tap density, flaw rate, friction conditions. Properties of green acceptant and statesed compacts.

Machining, milling, atomirming, electro-deposition, nulsation from axide, carbenyl process, production of alloy possion, New development.

Penedar solling, powder forging, powder extrusion and explosive forming technique.

Breummended Stocks:

- 1 Ragbarum Material Science and Engineering.
- 2. Swamp. Clamants of Metalburgy
- 3. Verwisck, Elements of Motorial Science and Engineering.
- 4. Augurusi, B.K. Introduction to exginuering Materials

Charles .

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DEPARTMENT OF INTEGERIAL AND PRODUCTION ENGINEERING RETROYAL SOMETER

IPSTPC11 SHEORY OF MACHINE

UNITED I

Hasis Concepts: Kinematics of machine. Kinematic this and their different types, types officensitic pair, kinematic shain, mechanism and investions of finar for claim and silder stack resolution. Degree of freedom, synthesis of linkages—unester synthesis, Drudsel's criterion and introduction to dimensional synthesis. Breal impolantion to reochassen with lower pairs, passageaph, davis & Acknows 's creating mechanism.

TIMES IN

Velocity Analysis: Motion of a link, velocity of a point on a link by relative tellocity method, velocities of elider creek merhanisms, rubbing velocity at a pin joint, velocity of a point on a link by instantaneous center emilion, properties and types of li-Center, Kernselly theorem and methods of locating 3-centers in a resultanism.

Acceleration Analysis: Acceleration of a point on a list, acceleration in sinker exack mechanism, Cartella component of acceleration, Quick-return mechanism.

LOCATION.

General Classification of pract, terminality used in grant, law of general, velocity of sliding, formsof tooth, construction and properties of an attrodute, construction and properties of cycloidal tooth, affect of variation of course distance on the velocity ratio of involute profile tooth general length of path of contact, are of contact, resofter of pairs of with in contact, unterference, missionum member of north, interference between rack and pinion, codespatting, terminology of helical and were general.

UNIT-OIL

Gear Traine: Definition of simple, antapasand, reverted and epicyclic gear trains, velocityratio elipsicyclic gear trains.

Cherch: Single plots and enall plate clutch, cresc check.

Brakers: types and analysis by assuming ordform prenoun and uniform wear theory, simple brake, back brake and internal sloce brake.

UNITY-IV

Cases and Followers: Types of cases and followers, Specified motion of Voltovers, Uniform scorlevation & developation, S.H.M. and antiferra volucity Crapitical construction of case-profile.

Turning Mossess of Flywheelt.

Function of a flywhool, Crack effort diagrams. Humanton of speed and energy. Effort of centridaged tension of flywheal, Inertia torque and its efforts on Crack effort diagrams.

Government Distinction between function of a flywheel and governor, types of governor, Wall, porter proeff, burtsell governor.

Halancing: Static and dynamic balancing, halancing of several masses in different plane.

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DEPARTMENT OF INDISCISSAL AND PRODUCTION ENGINEERING RETICE III SENSTER

- Beron T, "The Theory of Machines". CBS Publishers and Distribution. Shigley 3 E and Victor 3 L. "Discoy of Machines and Machines". McGraw 100. New Debt.

- Wilson C and Sudler I, "Resonance and Dynamics of Muchine". Prentice Hall.
 Batan S S, "Theory of Machines", 1" Edition, Ton. McGraw-Hill, New Delta.
 Biox J S and Dubkippi R V, "Mechanism and Machine Theory". New Age International (P) Limited, Dallai.
- Mechanism & machines by Glock and Mellek, East west Plans Theory of machine by Ramas ld T.M.G.H. Publications

Courses Focus on Employability/Entrepreneurship/Skill Development

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING REPORT IN HUMSTER

EPSTPC 12 MANUFACTURING PROCESSES-I

DOTA.

Lathe: Latin design and terreleving: Specification, types of Lathe; ocnter laths, supplies and turns: laths, various operations performed on laths, operating conditions inhibition of material.

NUMBER OF STREET

thrilling: Fundamental of drilling process, types of drilling machine, types of drills, governey, of tester drill, various operations perfected on drilling machine.

Milling: Introduction, types and processus, Milling outers, up and down stilling, different operations set milling, indexing and types, calculation of Mills.

Burkag Innoduction to horitag, removing, tagging and tape, other hole making operations.

DISTT-BL

Bewartsbag: Introduction, Machines and progression

Grieding: Classify grinding resultines, constructional formers and working of various grinding and super-finishing reachings.

Horing, topping, buffing it seper-flexibling processes with their applications,

Threads Marsefacturing: Introduction, thread production processes and markings.

UNITED

Plannings Introduction, different epiculions and extendation of MRR.

Gear Manufacturing: Introduction to your cutting process, your ferening, your shaping, genr looking and year fielding along with inspection.

Farming: Mechanism of forming pressus, clastic and plante deformation

UNITAR

Bolling: Classification, theories of Hot & Cold rolling, rolling nells & its types, two-bi, four-bi, six-in and twenty-bi selling nell, calculation of rolling parameter-& solling defect.

Forging: Classification of Enging process, forging equipments, calculation of Enging passasetsm, forging defects.

Extractor: Types, extractes equipments & endysis of processes, deswing of ends, who & tabe and their analysis, defects to extractor & durating.

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Work Holding Devices Introduction to jigs and fistores their types, design criteria for jigs and fistores, accounts justification of jigs and fistores.

Plastic Working: Plastic processing, injection, compression at blow moulding, plastic design principles processes, machines and equipments, parameters and force calculations.

Recommended Books:

- I Roghevan, Meterial Science and Engineering.
- 2. Swamp, Element of Metallogy
- 1. Voovlack, Elements of Material Science and Engineering.
- 4. Augureal, B.K Introduction to organization Materials.

and Award

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEEDING RUSER IS SERVED.

DESCRIPTION OF STACHING LABORATORY

- 1. Study of Oyroscopic offert and determination of gyroscopic anaple.
- 2. Determine of jump spel of con-follower system.
- 3. Dynamic believing of the notating mass system,
- 4. To determine radius of Christian "K" of given pendulum
- To study the free vibration and to determine the natural frequency of vibration of Tow-Roser system. 6. To study the torsional vibration and to describe the natural frequency vibration of single concessors.
- ii. Study of longitudinal vibration and to determine the frequency of vibration.
- To study the deeped sensional vitestion and determine the damping coefficient.
- To verify the relation V = 2 ft +V is for a strepte pendulum.
- Determination of retailing speed of stuffu.

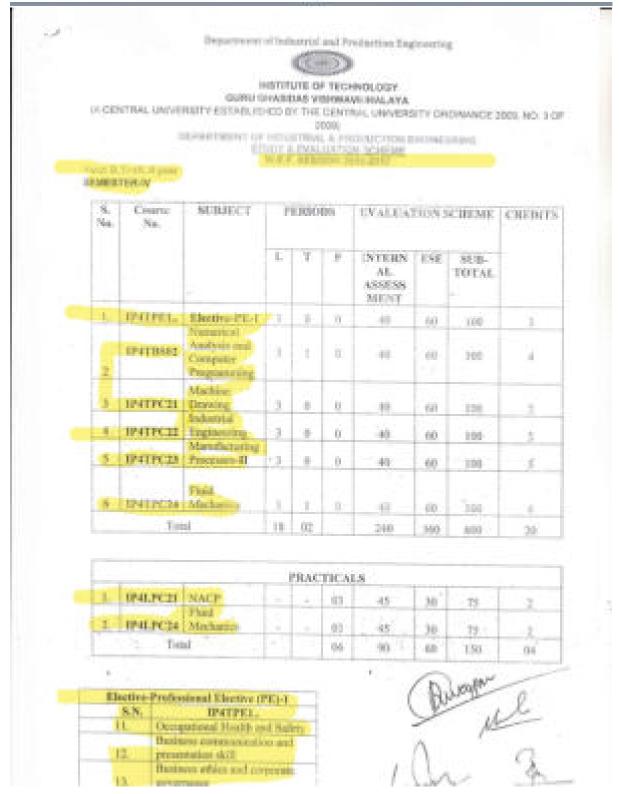
BUDGES STRENGTH OF MATERIALS LABORATORY

- Determination of Young's modulus, turnile, strength and purspassing alongation for street, identificate, brans and cast ione specimen on neiversal testing machine. Also plot the stress strain diagram.
- 2. To perform the compression test for your rest specimen on autyonal testing machine.
- To determine the deflection for mild steel specimen and revily the beam formula for spectrum in breaking.
- 4. To determine the stiffness of the following:
 - (i)Cantilever beam:
- (X) Spring ender compromise and termine loading
- To measure the total energy abunded in fracturing of the ductile specimen on Chirpy and Irod setup.
- To plot and study the S-N curve for stool, aluminum and filter reinforced composite material at 25%, 50%, 60% and 7.5% of utrimite transfe strength of the specimen.
- 7. Proporation of specimen for basilness test.
- 8. Testing of prepared speciences for Beinell hardness and Rookwell hardness.
- 4. To study the behavior of steel and alternious specimes scalar torsion.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION CALIFORNIA RETECTOR IN SERENCE.

IPATRISIO NEMBERICAL ANALYSIS & COMPUTER PROGRAMMING

UNIT-L

Approximation and errors in Computation

Approximation and round of errors, translation errors and Tooke series, Determination of more of polymorphism and transcerolomal equations by Couphical methods and Bisaction, Regula faint secure and New too-Raphan carriends, toleriot; of Linear significancies, linear algebraic equations by games Elimination Gauss-Jordan and Gauss-Siedel, Sentition rapided.

UNITED BY

Empirical Laws, Corre Fixing & Interpolation

Carry figing linear and conditions supression analysis (Matterd of group average and least squares) finite differences, bulkword, floward and central difference relation and their use in Numerical differentiation and integration and their application in interpolation.

UNIT-BIL

Squarried Solution of Ordinary Differential Equations

Superical Integration by Traperoldal sole, Suppose's (1.7° & 3.8° rate and in error printation Application of difference relations in the solution of portal differential equations. Natural of contrast differential equations by Taylor's series, Euler, modified Euler, Surge-Katta and Productor-Consenter method.

UNIT-IVE

Numerical Solutions of partial differential Equations

fetodaction, classification of second order equations, finite difference approximations to partial derivatives, offspio equations, solution of Laplace equation, solution by Poisson's equation, solution of elliptic equations by relevation method, purobolic equations, solution of one-dimensional heat equation, thyperbolic equations, solution of wave separation.

ENIT-V Computer Programming

10 Statement, Mahamatical Balatrond & Conditional statement & Expensions Switch Loops and Costool Statement, Introduction in one discretional array and two disconsional arrays. Basic of 1/O file threation.

Recummended Books:

- Numerical Methods in Engineering & Science-Dr. B.S. Growd-Khanga Publishers.
- 2. Namerical Methods P Kandamany K. Thilagarathy & K. Gussvathy-& Chand & Co.
- 3. Let us C-Vasfesant kasilkar
- Introductory Methods of Numerical Analytis S.S.Sastry, J^{et} Eds. PHII-New Delta.
- Numerical Methods Analysis-James B.Scarbosough, Oxford & IBHI Publishing Car-New Helpi.
- 6. Theory & Problem in Namerical Methods-T Vermrajan, T. Ranahandran-TMH.
- Numerical Methods for Engineers Stoven C. Chapra/Rayesond P. Canale.
- 8. The Spirit of C-Henry Mullish & Horbert L Gooper-Jaico Pars. House.

85

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DISPAR PMENT OF INDIFFERING AND PRODUCTION CHAINDEBING RETAIN IN SEMISTER.

IPITECTI MACHUNE BRAWING

Unit-1

Oraning ours utions, sectional views and noticeing, appreciation of nucleon para such an cornel and in creal fintade, shotted brade, opuse ands, and flat radial ribs, shotted whell, upbried dulls, bearings amongs. Convention of pairs in teach, representation of generatival advances on dissology.

Unit-III

(Continued and rivered jutets: Lep and but poet with single and double stress.) Welding joints and their representation, weather of different train; Markining syst help, Surface anaplesess, grades , material symbols.

Score thread and serve fastining, different types of themal profile and may, belie-

Sectional views, keys, celler where, branche comp-

Shaft roupling, theged coupling, different types of shaft ecoping.

Shaft bearing, wheel tearing phother block, fact top bearing

Policys: fait & year pulleys, support judicy's built pulley, sogs guilley.

Amountely drawing of English mere like piezon, stuffing him, aroun bendy, autoration. Assumptify strawing of step value, that shock valve, safety valve, bloss off cock. Animbly drawing of latternal stock post-

Content of constator saided disflings CADs, employmentation of CAD, attent first projects from the show specified upter using CAD enforce-

youther !

Recommended books:

Shigley J.E. Muchine Design; TMH
 Sharma and P. arakit; Descain of Machine elements; PHI
 Wontzell Tim thy IP; Muchine Design; Congage learning
 Muchine; Man star Design; Kharma Published
 Cannot Babu S, and Settler k; Design; of Machine Elements; TMH
 Sharma & Ag event, Machine Design; Katarra & sons
 Madow; Machine Design;

गुरु घासीदास विश्वविद्यालय क्रिकेट के 20 2 2 6 के कि कि कि कोनी, बितासपुर - 495009 (छ.ग.)



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DEPARTMENT OF INQUESTRIAL AND PRODUCTION ENGINEERING BETWEEN THE SENSTER

IPSTEPCES INDUSTRICAL ENGINEERING

Unit-I buy abortion

History & Development of its turnful engineering. Productivity defection; reads of Furnishing productivity, work study deficition; productivity and work study. Human factor in the folyagation. Work of F.W. Turker, Prock and Lifting Officers; and their country and

Unit-13 Method Study

Deficition & bests procedure, refurtion of joins in conting rachetoper, micro motion, study. Therefore, ordering professor and Chromocycle-graph, procedure of scores according design of work place beyond, multiple in the form of chart, operation chart, then present chart, they diagram; string diagrams, more machine chart, two-hand chart. Sense chart.

Enti-III Work Measurement

Definition, objection, application, market of cycle to be fored, time study expressive, performance turning afterwarder, market of cycle to be studied, decomination of standard trace produmental motion true systems. Combuting work sampling mady A combinating standard trace.

Con-IV Wages & Incentives

Characteristics of a good wage or theretire system, exclude of wage payment. Commy of mage preceding schemes, fluorests and over financial: Taylor differential page rate, blabely premium plane: Merric's modified place care ensure. Group incentive informs.

Ergenandes, work speer directains, design of work place, continuouscutal stresses & impacts on learness week.

CHIEF.Y.

Value engineering Introduction, converge of value, value multure approaches, job plan, value turns. Bed notified safety, analysis of cost of acoldest, burgards in various fields like five, electrical shocks, cheesical, organization for safety, plant safety, green legistion for safety, safety cales.

Recommended Books:

- L. U.L.O., "betroduction to work study", Oxford Press.
- 2. Mundel, "Motion and time study", Prestices Holl India.
- 3. Raigh M. Barnés, "Motion and Time Study", John wiley and sees.
- 4. Industrial Engineering by M.I.Klina, New Age International Publication

3

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BYTEDLOCARROTTER.

IPATPC23 MANUFACULRING PROCESSES III

Children

Frankry I

Micking method and restorately, Sand day writer system, Addresses, pursua making and types, Patrons allowances & Smign considerations, upon of molding used in their properties, testing, come and until construct, come making, malifying machine. Common ill design of gating system.

Miching formers and practices. Miching can bee, start and non-former material, expels, charge calculation, open formers, converter and arisable formers, electric, christ are futures, industries formers.

CHIEF IN

Comings Introduction to outcome and its type—allowances. Contribute and inventours naming, shell, placets and would mericule, conting, of any type, element of going system, types and design of river, solidification of matrix, clearing of casting, strough of the naming, gravity and previous die Carting, the casting exceletation, survive deficies.

DART BU

Welding Classifications, principle and engineers, different type of welling process and their equipments, friends, Are Welding, Resistance welding, 170, 500. Information and solding, O'Atlant metring, solding, bracket and affective business, Westing School.

KNET-IN

Short -month working: Role of their month components, Carring machenism. Description of cutting processes like thinking, pirecking, leaving one. Description of freezing processes like beading cup throwing, coloring, and coming cite. Basic elements of Process for these month working. Part English instance, Description of the Scoreman, Greekenster.

CONT.

Non-resevestical machining Introduction, Classification and comparison of diffused non-translational

machining, theory and analysis, busins, and MRR of EDM, ECM, EBM, ADM, ECG, EBM,

Recommended Books;

- 1. Rao, P.N., Moratheturing Technology vol.1 TMGH
- 2. Obose and Medick. Manufacturing Science, East West Pross
- 3. Ray, A. Lindborg, Material and Process of manufacturing, PHI.

4. Scrope Kalpakitan , Manufacturing Suginossing & Technology, Pearson

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BETWEEN VISIONISTER.

SPATPUR PLUID MECHANICS

Challet

Sevices of Flatd Properties. Engineering units of manuscrasses, town, density, specific weight, solutions

and gravity, curface termion, supplicity, vicensity, built replaces of classicity, present and tagent program. Fleithining's a Presente or a point, presents variables to state fluid, Newbory and gauge program, responsitive. Perspects place and covered coefficies (Problems on gravity does not taken autors, buryant force, Subdity of floring and substrated bodies, flathers again below.

Control 1

Kinematics of Flow: Types of Servided & roll, stools & somewhy, colleges & connections, one

and these diversional those, path from streak-lines, arranylines and stream inter-constrainty equation for one and these disconsissal flow, constraint & investional flow, constation, stagnative point, separation of flow, sources & sinks, velocity potential, speam function, flow sets their utility & method of drawing flow ners.

The Gold Co.

Dynamics of Flore: Index's equation of more stong a sycardian and movement of Beroould's equation, application of Beroould's equation, compy correction factor, bond measurem equation for stoody flow, exemption correction factor. The moment of terrescrips equation, factor on fixed and moving vacous andother applications.

Plor Measurements: Velocity measurement (Past tabe, Possibli tale; current meters etc.). How recomment (orthon, measure, remain please, williss motor, associa easier, venture-energe, we're and metches).

Unit-IV

Discontenal Analysis and Dynamic Statistade Discontinual analysis, dimensional homogeneity, and

of Backingham-pi theorem, colections of dimensionless members, similarly laws, specific model, except purchased adversaged bodies, partially submarged bodies, water, spillways, analysassic machines etc.).

Com-Y

Lessione Flow: belooks tion to house of turbulent flow. Reynolds experience & Raynolds marrier, relation between chair & pressure gradient, tentaur flow through closelyr pipes, lessions flow between parallel places, lessons they through person media, Stoken law, habrication principles.

Turbulent Flow: Basics of natureurs, Reynolds therein, Possill's neeing length beyorkests, Pintion velocity, law of walls.

Recommended Backs:

- 1. Modi de Seth; Fluid Mechanics; Standard Book Boose, Delbi
- 2. Sees and Biower, Fluid Mechnics and machinery, YMM
- 3. Cengal: Fluid Mechanics; TMH
- 4. White; Fluid Mochanics; TMH
- 5. PARK DAJCE; Itsuential of Engg Hyd; Afrikan Network & Sc Inst. (ANSTI).
- 6. Frantus JRD; A Test Book of Haid Moth, for Engg. Student
- 7. R Mohanty; Fluid Mechanics; PHII
- K. Gopta; Fluid Mechanier; Fearson.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ONLYNOBERS ILTECH IN SENGTER.

(PATFELL OCCUPATIONAL HEALTH AND SAFETY (District

STATE OF

Instruduction: Environmental laws: Logal counts of Hazardone substances and processes. Environmental laws and judicial territo. Faulth and safety law, common habilities undwork place injuries. Health and safety at works the principle legal requirements. Health and safety and behavior less than the principle legal requirements.

UNITED

Health and sultry Management. Eathly Management and pides, Interfigures reporting and manufact of accident, Health and talking resistance. Comprehensive exposure assessment, Principles of syndauting workers exposure. Risk assessment in the work place, Majoriscident and providents, Health and sofety tracing and consequentians. He was effectiveness. Principles of accident persention, safe system of work. Surveys and audits.

UNIT-UE

Occupational Health and Hygierer The organization of soming professions, assurance, highling and somilaries, suffice sensors provision, thereing and hygiere. Two orders and health, Occupational disease and conditions: Occupational Andiometry, NIRO, Carillo oscillar Doctor, Physiological and psychological parameters. Occupational health practice. Notes and otherios. Due and Two-mediation and radiological protection, personal protection, Occupational hygieric practice, proventions and cannot engage in a occupational hygieric minimal Landing, first aid, horses factor and safety, minimal antitry technology.

DOUGLAY

Assessment of Exposure: Measurement of none and solventon exposure. None and administrative indepented. Host stress mentioning, dast exposure and respiratory health. Wast. Posture, Musculoskeletal disorders, Seate Index, Libing Equation, Maximum acceptable sacigle faults, Occupational Auditorian and empires say health.

UNITAR

Constructed schemes and some related to health and associationess, Policies of government in special society to Chartingarh state.

Stecomended Booker

- 1. Surgery W. Stronka, "Handbook of Health and safety Practice" Pitoses Publishing.
- 2. Dhannesdes S Sengar, "Environmental lew" Prentice Hall of Iralia, New Delhi-
- 3. Makedon J Crockers, "Noise and Noise Control" CRC Press.
- 4. March Malik, " Clinical Guido to cardiar Autonomie Tests" Kalwer Academic Publishers.
- 5. Marsk Malik,"Hose rate variability." Futura Publishing Co. NV
- 6. Cyril M Hurris, "Handbook of Noise comm?" McGran-Hill Book Company, NY
- Moryamor Multity, "Occupational Audiometry" Hutterworth-Heinamann Immerior of Elsewide

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DISPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING ACTION IN SINSTER.

DECEMBER SUSPESS COMPRESSION AND PRESENTATION SKILL (Electro)

Unit-1

therees commences covering. Sale of accommendated in belleviation age: compet and examing of accommission; (Add), accoming for included incrementation; Commentations in a technical experience; (Amilian to the present of corner minutes and other

Unit 41

Style and organization is induced communication covering. Listening, quartery, reading and covering as shifted Objectivity, classic, precision as deliving frequent of authors is coverencements. Various types of business is citing. Latters, reports, cover, recess. Language and format of various types format and object of business latters. Language and object and object of business latters. Language and object and object of business.

Chair 488

Communication and personality development covering, Psychological aspects of communication, cognition as a part of communication; Continued Intelligence; Publishment and Edgarda in communication, Calment Ectors that telligence communication, Management to be avoided by communication, Language and pursuation, Language and conflict marketing.

Dan-Dr

Language Laboratory emphasizing Linuxiay and computarisate skills; Reading Shills; Sound Streeture of English and insuration paterns.

Unit -V

Dut frestvenion and perfessional speaking covering, fluster of English promuniation, Elements of effective prosentation; Body Language and one of voice during presentation; Connecting with the malience sharing presentation; Projecting a positive image while speaking; Pleaning and preparing a model presentation; Organizing the presentation to suit fluoridiness and context; Basics of public speaking; Preparing for a speech;

Brengemended Bookst

- 3. Taud Luthers, Organizational Schoolser, McGraw Hill
- 2. Lexitize send patie, Report verifying for Environs
- 3. 34, Audient Rizeri, Effective Technical Communication, McGraw Hill
- 8. Wallace and masters, Personal Development for Life and Work, Thomson Learning
- 5. Farhatbullids, T. M. Communication slafe for Technical Students
- 6. Michael Muckien, John Woods, The Stations letters Handhook
- 7. Horto A. Murphy. Effective Business Communication
- B. MLE Hondbook for Britises of Remorch Papers



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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING RETAIN IN SERVICES.

IPITYELD BUSINESS ETHICS AND CORPORATE GOVERNANCE/Electrop

CMIT-

banadaction. Corporation, deflection and attractivities, fatters of corporate fatte and models, corporate objectives, corporations and processors, governous, so-posite processors, deflection, purspectives.

ICNEE-II

Theoretical Foundations of Corporate Covernance: Notion of conflict of innexet, purpose rights those, never of controls, agency theory. Burie and Means theory, accompt of separation of ownerships and control, shareholder, Galacte Mee School.

CHITCHE

Pillars of Government in Organization: Directs, ownering structure, types of owners, recoming two counts, broad of directors, types of electron, beard roles and house attributes, board committees, encounter management, role of CPO, manuscome placeting, management attribute, incolarizational tryes, untergories, features and role.

CHIEFLES

Work Others Volters and others, model of management in the believe protes, political environment, report for values in global change, believe perspective, values for management, to first approach for management to characters waiting

HNIT-Y

Storage Ethics and CSR: Corporates to a social testingue, accountability and contamphility, reference of triple bettern line reporting to CSR, codes of conduct, applications of eshiod theories to decision ranking, ethical inner related to employment, brakkener and advertisations.

Breammended Books:

1 Provines B. Mella, Corporate Governance: Concept, Evolution and Sealta Story. Readedge, 2010.

2.5adri, Business Fébice: Concepts and Cases: Tata McGrass Hill, 1998.

3. Robott Munks, Nell Minow, Cosporate Gottomanno, Wiley Publications, 2000.





ENSTITUTE OF TECHNOLOGY GURU GHASIDAS VISHWAVIDHALAYA

(A CENTRAL UNIVERSITY ESTABLISHED BY THE CENTRAL UNIVERSITY ORDENANCE 2009, NO. 3 OF 2009)
DEPARTMENT OF INDUSTRIAL APRODUCTION ENGINEERING

W.E.F. SENSION 2017-2018
VOICE B.Tock III year

SEMICSTER-Y

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1	DESCRIPTION OF	Metal Cutting	3	16	0	43	60	100	3
	SPSTPC33	Fluid Machinery	3	0		40	60	100	3
	IPSTPC33	Machine Design-1	3	ğ	0	40	60	100	3
	permed.	Elective-PE2	3	'n	0	40	60	100	3
	DESCRIPTION.	Dictive-PD	3	10	9	40	50	100	3
	nestron.	Elective-(76)	13	0	6	40	60	100	3
Tot			18	10		240	360	600	10
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Total	********		+	۲	09	110	40	150	06

Denive-Professional Elective (PE)-2			ny-Professional ny (PE)-3	Elective-Open Elective (OE)-1				
5.N	DESTEE.	8.50	IPSTPE	5.N.	IPSTOR			
21.	Turbo Machines	3L	Total Quality Management	TL.	Financial Management			
22.	I.C. Engine	12	Industrial Automotion	从	Managerial Economics			
23.	MEMS and Nanorodinology	33.	Mechanisms	13,	Financial Accounting an Casting			

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Page 1 of 18

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Basic concepts - Definition and classification of metal nating and tools, gamestry of angle point and emilipoint curring usels, and various angles of coring mots and their functions. factors affecting tool geometry. Cutting tools movemelature system, orthogonal and obtages systems foot gainer, gainer

Types of chips- confession, disconfession and scripted built up-edge and their Screation and Guetalen.

UNIT-II

Principal of metal cutting - Elements of machining, mechanism of chip formation, force on the slieps, merchant theory and other theories of metal carring, stresses and strain in chips, shear and strain rate, power and energy calculation.

Theory of grabipoint machining-reachantem of drilling, reachining time, torque and threat, power calculation in drilling , milling, and broaching

UNIT-UII

Heat prescration and custing temperature in machining- causes and naurous of heat in certing, heat distribution, their measurements, tool dynamometer and their types and working.

Carrieg fields functions characteristics and types of carting fleids and their application, mineria for selection of costing fluids.

Catting tool meterials requirements types and characteristics of various catting tool materials, comparison and selectors of certain tools.

UNITALY

Tasi fatheres and tool life - mechanism of tool failure, types of tool failure, tool wear and types, tall life and its monocrement , replors tool life equations , relationship between tool life custing speed, feed, depth of out, thetees affecting seed life

Commit of chips and chip breakers -methods of chip breaking, design principal of simple step type thip breakers. Weeking principal of thip breakers, offset of thip breaking.

UNITA

Machinobility definations avaluations , factors affecting machinobility, machinobility STATE OF

Economics of machining - cost analysis and optimization of machining, various parameters for uniculation of machining cost,

Trot Backet

Manufactoring Technology Vol. II P.N. Rao PHI

Manufacturing Science, Ghosh Mallick, E.W.P.

Darle Singa plant





NIT-L

Boundary Layer Theory: Boundary Layer Definition and Characteristics, Morn Equation, Laurence and Tachnitus Houndary Layer, Total Deag, Separation and Control

Flase Around Submerged Bodies: Force Excited by Flowing Fluid on a Body. Drug and Lift; Steener Lined and Bluff Body, Dong on Splure and Cylinder, Circulation and Lift on Cincolne Cylinder, Lift of an Air Foll.

UNIT-II

Impact of Free Jets: Impalse Moreowan Principle, Force Exerted by the Jet on Suscenary Flot and Curved Plate, Hinged Plate, Moving Plate and Moving Curve Vienes, Jet Propulsion.

Impulse Turbines Classification of Turbine, Impulse Turbine, Pelton Wheel, Construction Working, Work Done, Head Efficiency and Dosign Aspects, Governing of Impulse Turbine.

UNIT - HE

Reaction Turbine Radial Flow Reaction Turbine, Francis Turbine, Commercion, Working, Workdome, Efficiency, Dunign Aspect, Advantages & Disadvantages over Pelson Wheel,

Axial Flow Reaction Turbine: Propeller and Kaptan Turbine, finib or Tubular Turbine, Draft Tube, Specific Speed, Unit Quantities, Cavitation, Degree of Reaction, Performance Characteristics, Surge Tanks, Governing of Reaction Turbing.

CINIT-IV

Centrifugal Pumps: Classification of Pumps, Centrifugal Pump, Construction, Working, Work Done, Heads, Efficiencies, Multistage Contribusi Porep, Pump in Series and Patallel, Specific Specif, Characteristic, Not Posteror Sperion Hend, Cavitation.

LIMIT - V

Reciprocating Pumps: Classification, Component and Working, Single Acting and Double Acting, Docharge, Work done and Power Required, Coefficient of Discharge, Indicator diagram, Air Vessels.

Fluid system: Hydracise Accuratance, Hydracise Intensifier, Hydracise Press, Hydracise Cross, Hydraulic Lift, Hydraulic Kars, Hydraulis Coupling, Hydraulic Tonque Consuster, Air Lift Pung, Jet Pump.

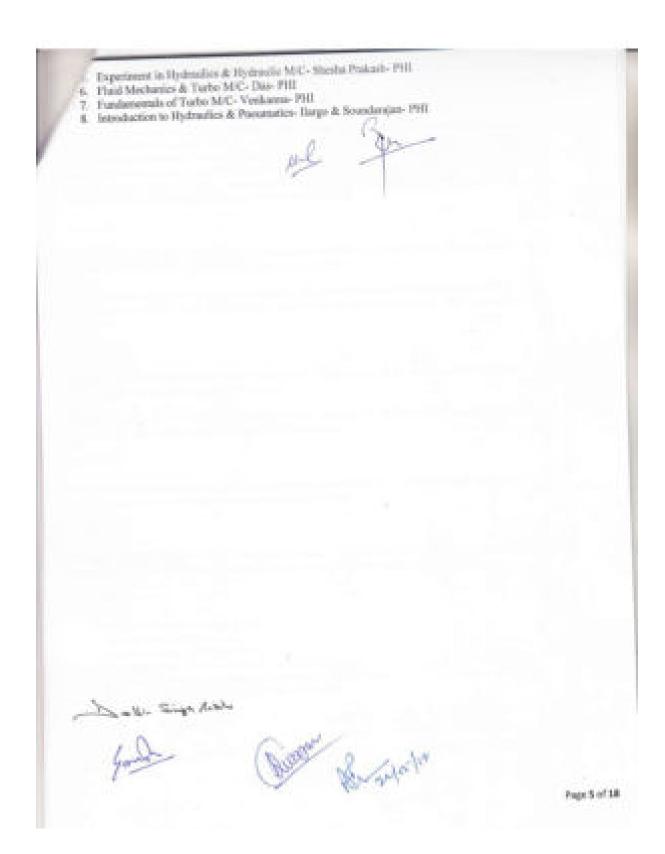
Text Books:

- Muchanics of Fluid Money B.S. English Language Book Society (U.K.).
- 2. Introduction to Fluid Mechanics and Fluid Machines S.K. Som & G. Hiswar -
- 3. "Fluid Mechanics & Machinery"by Agarwal ,TMGH.
- 4. "Flied Mechanics & Machinery" by Kothandraman & Rudra Mourthy New Ago Publication.

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Page 4 of 18





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NIT4

Stundy stresses and variable stresses in trachine member-retroduction in the draign procum factors influencing machine design, solicities of tracerial based on mechanical proportion, direct, heading and tensional stress equation, impact and shock touling, extensions of principle stresses for various load combination, occurrie loading, design of enreed bosons, crare book and 'e' frame factor of safety, thereties of failure, stress concentration, fatigue design for statistic loading. Sociertery, Gondman and Gerber relations.

REPORT AND ADDRESS OF THE PARTY OF

UNIT-II

Riveted Jaints - failure of riveted join, storagts and efficiency of riveted joint. Design of hum and lap joint for a boiler, excessionly baseled riveted joint.

Design of thread joints, builted joint in tension, torque requirement for built tightening, builted joint under fluctuating load. Ecoentrically loaded joint in shear, builted joint with combined streams.

UNIT-III

Design of cotter and kerackle joints, rector and spiger cotter joint, slauve and cotter joint. Oth and cotter joint, design of knackle joints.

Welded joints- stresses in that and filled welds, strength of welded joints, occurringly brailed joint, welding joint subjected to Banding resment.

UNITAR

Durign of Keys and coupling, that and square keys, wondraff keys, splines, realf coupling, compression coupling, thousand coupling.

DINKE N

Besign of shafts: subjected to twisting moment, bending moment, combined twisting moment and besiding moment, fluctuating looks, design of shaft on the basis of rigidity.

Tent Buoka

i Muchine Design-Bhautari, TMH

2. Machine Design Spott, TMBI

3. Machine Design 1 Shigley, TMH

4. Machine Design: Khutmi & Gapta, Khanna Publisher.

3.MC Design-Starms & Agravial, Obsepat Rel Publications.

a Design of MC Firmonts-Shares & Purchit-1981

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Page 6 of 18

IPSTPE21 - Turbo Machinery

2017-0

Notation & Diffusion Notation & Diffusion types, their efficiency, critical pagazant & volucity, relationship between area, velocity & pressure is assorted flow.

Steam Turkins Types: Steam turbine-principal of operation of steam surbine, types, impulse turbine, compounding of steam turbine pressure compounded velocity compounded and pressure-velocity compounded impulse turbine.

Velocity diagram for impulse turbine: Force on the blade and work done, blade or flagram efficiency, gross stage efficiency, influence of tains of blade to mass speed on blade efficiency in a single stage impulse turbies, impulse blade section, showe of blade angle.

CNIT -III.

Impulse-reaction turbines Velocity diagram, degree of reaction, impulse-Reaction turbines with similar blade section and half degree of reaction (purson's turbine) Beight of reaction, blade section.

Energy losses in suom turbine internal and external losses in clear turbine.

UNITS-III

State points Locus & Reheat factors: Factor-stage, efficiency of impulse turbine, stage point locus of an impulse turbine, state point locus for malintage turbine reheat factors between efficiency, overall efficiency, untrive efficiency, Design procedures of impulse & impulse section turbine.

Governing of steam turbins: Throttle governing, needle governing, bypass governing, combination of functio and needle, governing and combination of bypass and throttle governing. Efficie of governing on the performance of steam turbins.

UNIT-IV

Gas tartime: Classification of Gas surbine, simple open cycle gas turbine, ideal and actual (Brayen; cycle) for gas turbine. Optimists pressure ratios for existings specific output in actual gas turbine. Representation, reheat and inter-cooling and effect of these modification on efficiency and output, closed cycle gas turbine.

UNIT-V

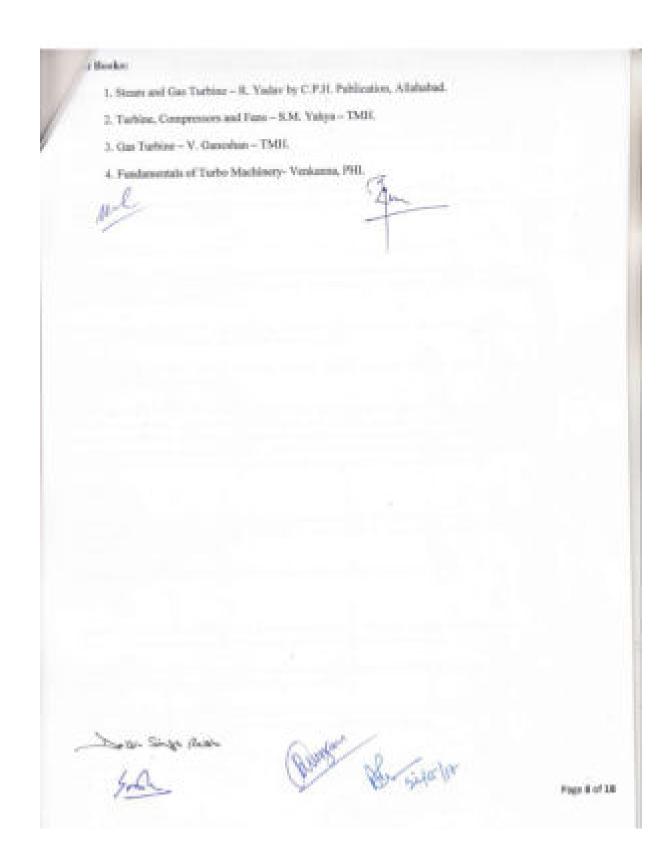
Turbe compressors: Introduction, classification of Constitual Compressor-Component working, velocity diagram, calculations of power and efficiencies. Mip factor, sampling and shoking, power and efficiencies.

Axial Flow Compressor: Construction and working, velocity diagram, calculation of power and efficiencies, Degree of reaction, work does factor, stalling, comparison of contribugal and axial flow compressor.

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Page 7 of 58





1P5TPE22 - Internal Combustion Engine

ONU-L

Invoduction of internal combustion augines, classification of LC orgines, engines, components, basic engine nonescitative, four stroke S.I. and C.I. engine, two stroke engines, comparison of two stroke and four stroke engines, comparison of S.I. and C.I. augines, opplication of IC engines.

Air Standard Cycles Cuto cycle, diesel cycle, dual cycle, comparison between orro, diesel and dual cycles, fuel-air cycles and actual-cycles, effect of variable specific heats and flasociation on indicator diagram.

UNIT-U

Combastion in S.I. Engineer Flame development and its propagation, ignition lag, effect of anging parameters on ignition delay, prognition, knocking in S.I. engines, variables affecting knock, combastion charalters.

Carbareter: Principle of carbaresion, elements of carbarders, parameters offeeting carbareton, six-fael mintages, expression for six-fael cario.

Fact Ignition System: Buttery and coil ignition system, magneto ignition system, firing order, spork advancing.

Combustion in S.E. Engines: Flame development and Propagation, ignition lag, effect of air density, temperature, engine speed, subulence, and ignition timings, physical and chemical aspect of deteration, effect of engine and furi variable on inacking tendency, knock nating of volatile fluib, octave number, H.U.C.E., Action of dopos, pre-ignition, its course and remedy, salient features of various types of combustion chambers, valve fixing and firing order.

HNDT-DL

Combastion in C.J. Enginee: Combastion phenomenon in C.L orgices, p- v diagram and their study for various stage of combastion, delay period, determine in C.I. orgines, paraturers effecting determines.

Fact Injection System: Air and solid injection, fact pump and injectors.

LINE LY

Engine Friction and Labrication: Total engine friction, blow by lasson, pumping losses, factors effecting engine friction, mechanism of labrication, tubrication system.

Cooling System: Fiston and cylinder temperature distribution, parameters affecting majore best transfer, principles and various methods of cooling.

Two Streke Engine: Constructional details, surveying parameters, models and performance of sourceging system, advantages and disadvantages of two stroke original.

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Page 5 of 35



ST-V respondenting; effect of althode on mixture strength and output of 51 engines, low and high proxime reperchanging, exhaust, gas turbe-charging, supersharging of two streke angless. Estates friction and lidereston, Engine cooling system. Test Blooks: Mather M.L. and R.P. Sharma, A Course in IC Engines, Laurei Publication. 2. Guarsan V, Internal Combustion Engines, TMGH Publication. 3. Taylor C.F., Internal Construction Enginee: Theory and Practice. Stone, Richard, Introduction to IC Engine
 Fundamentals of I.C. Engine-Gapta, PHI Page 10 of 28

IPSTPE23 - MEMS and Nanotechnology

CNT-1

Introduction: Definition of micro electro-entelucical systems (MEMS), reicro sensor, microactuators, microelectronic fabrications, mechanical florenal and magnetic MEMS, radiofrequency (EF) MESSS, MOEMS, MEMS design coordination.

Micromachining, photolithography, structural and sacrificial materials, methods of lithography. This files deposition, and its developments process, LPCVD, PECVD, impacity deping, exching groblem with bulk intersecutiving, vapour bending, LIGA.

UNIT- III

System usedeffing and properties of material- System types and back modelling elements in mechanical, thermal, fluid system. Translational and retational pure resolutional system. hybrid system, analogy between mechanical and electrical system.

Passive energenests and systems - System on a chip, passive electronics system, passive mechanical system.

UNIT- HIL

Mechanical sensors and actuators- introduction, principals, micro plates, capacity impacts, picasefectric ententials, and their properties, MEMS gyroscope.

Thermal sensor and actuators - Introduction, themsecougic probe, micro but plate gas sensors, earns themse vessels, those memory alloys.

ENIT-IN

Magnetic sensors and actuators- Different types and principals.

RF MEMS -Introduction, RF based communication system, MEMS inductors, and tener filter, Resembles

CMITAL.

NANOTECHNOLOGY - Introductions, massechnology materials, fullerenes, doping, CNT, SWCNT, MWCNT, development and application of CNT.

Text Buokec

MEMS- Mahalik- McGrawfilli.

2. MEMS & MOEMS Technology & Application-Rai Choudhury, PHI

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Page 11 of 18.

IPSTPEM - Total Quality Management

CMIT-1

Basic concepts of Quality: Impection definition of quality, quality control cost of quality. Value of quality, Statistical Quality Control, Need and advantages of SQC

Frequency Distribution: Variables & attributes, quality characteristics, Theory of control charts, control chart for variable X & E chart, Control chart for attribution p. sp. C, Chart & procuse capability

UNIT+III

Quality Assurances Quality assurance Manual, Quality Circle, characteristics of quality circle and the pracess of operation of quality circle, quality Policy & procedure & objectives.

Acceptances Sampling: Concept of sampling, O-C stave & its construction, Sampling plans, single, doubles & and tiple sampling plans.

UNIT-III

Custribution of Various Quality Management Garus: June Trickopy, Dening's 14.
Paints, P-D-C-A Wheel, Tagachi's philosophy, Design of experiment, old and new Sevan QC.
Treal of Quality, Philip County's zero defeat, seven types of waste, 5's, Quality function
deployment.

UNIT-IV

Introduction to 15O 9000: Various models of ISO 9000, Clauses of 9000, Total Quality Control, Total Quality Management, Total for TQC & TQM, Knices, 6 signs quality, procedure of six sigms, TQM and Six Sigms

ENTE-V

Reliability: Definitions, Buttenb curve, design for reliability, Fadures & causes of fadures, FMECA, Maintanability & Availability, MTBF, Reliability Models, system with components in series & in parallel, saised arrangement, fault -tree-technique

Tient Booke:

- 1. SQC by Grant & Leowowworth Tata Mr. Hill
- 2. Quality Planning & Analysis by Junus & Gryans Tata Mr. Hill
- 3. Total Quality Control By A. Feigenhours Magraw Hill
- 4. SQC by M.Mahijan Dhaquet rai publication
- 3. Total Quality Management Besterfield Teta Me. Hill
- 6. Total Quality Management Purnima charactimeth (LowPearson Education)
- 7. Total Quality Management Krishnoiya PHI
- 8. Total Quality Mussgement Sugarchi & Sannuel-Pittl

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IPSTPE32 - Industrial Automation

COURSE.

Authoration: Definition; Automation in production systems; Automation principles and studgies; Basic clements of an automated system; Advanced automation functions; Levels of automation; Types of automation; Benefits and Impact of Automation in Manufacturing and Process Industries. Architecture of Industrial Automation Systems.

UNIT-II

Paramatic Central Systems: Overview of different types of sulves and Actanton in Paramatics, their applications and their ISO synthols. Design of Paramatic circuits using Casende method and Shift register method (up to 3 cylinders). Design of Electro-Passanutic Circuits using single unlessed and double schemid volves with and without grouping. Design of Passanutic circuits using FLC Casarol (ladder programming only and up to 3 cylinders) with applications of Timers and Country and concept of Flag and latching.

UNIT -III

Hydraulie Control Systems: Overview of deligner types of valvas, Actuators and Accumulators used to Oil hydraulic circuits, their applications and their 15O symbols, Basic hydraulic circuits involving linear and remay actuators (No acquertial circuits).

Fundamental concepts of digital and serve hydraulic controls. Comparison between proportional, digital and serve hydraulic control systems.

Digital logies Number systems; Logic Gues; Boolean Algebra, Simplification of Scotens, equations using Karmaugh Maps.

UNIT-IV

Microprocessors and Microcontrollers (Only basis understanding and applications) a Concept of Microprocessor based control and its application; Parts of a Microprocessor system with block diagram of the general form of a microprocessor system; Data bas, Address but and Control Buc; General internal Architecture of a Microprocessor; Familions of constituent parts such as ALU, Various Registers and the Control and, Difference between a Microprocessor and a Microcontrollist. General Block diagram of Microcontrollist.

UNIT-V

Sensors and Transdauers: Fundamentals of Siglaconeut, position and Proximity Sensors, Velocity and Motion Sensors; Fance and Fluid Promuse Sensors; Liquid level and Flow account, Temperature and light Sensors; Casarol of stopper motors.

Text floolog

- 1. Industrial Production & Automation-Mikel P. Orden, PHI
- 2. Automotion Production System and CIM: Mikel P. Grovet, FHII

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Page 13 of 18

IPSTPE33 - Mechatronics

UNIT-L

Introduction to Mechatronics Scinors and actuators type, refertion and interfacing, Digital electronics and excessores in Mechatronic systems, Mechatronic systems modeling, Analysis and coursel of malog, digital and hybrid systems, Mechatronic systems design principles.

CINITE III

Entroduction to Mechatronics Systems Management systems control systems rescharges approach.

Sensors and Transductors: Introduction performance terrainology displacement, position and proximity, velocity and motion, Fluid pressure, temperature sensors, light sensors selection of sensors signal powersing

UNIT-III

Micropensessor: Introduction nechnocoure, pin configuration, instruction set, programming of Microprocuses using 8085 instructions, interfacing input and output devices, interfacing D/A conventors and A/D conventors, applications, temperature control, stepper motor control, tenffic light controller.

UNIT-IV

Programmable Logic Controller: Introduction, fusic structure, Input/Output processing, programming, Macroonics, Timora, Internal rathers and Countries, Data handling, Analog input/output selection of a PLC.

HNIT-V

Design and Mechatronics: Stages in Designing Machatronic systems, Traditional and Mechatronic design, possible design solutions, case stadies of mechatronic systems, pick and place solut, automatic one park system, engine, management system.

Taxa Books:

- 1. HSET Ltd, "Melastronics", Tata McGraw Hill Publishing Co.Ltd., 1998
- Bradley D.A., Davison D., Burn N.C. and Londer A.J., "Moobutronics", Chapman and Hall, 1993.
- Gereker Ramesh S."Microprocessor Architecture, programming and Applications", Wiley Eastern, 1997
- 4. Mechanismics-Singh & Joshi-PHI

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Page 14 of 18

IPSTOELL - Financial Management

UNIT -I

Introduction: Scope and objective, organisation of finance function. Time value risk and cerum and voluntion of manny, valuation of long term securifies various model of pricing.

COURT - III.

Statement of changes in financial position: Sources and sack of working capital ,costs flow extensest, balance short, positi ions account and its process.

Financial ratio analysis: Maning, types, importance and limitations, extendation of various action.

UNIT -III

Capital budgeting: Principals, techniques, various methods of capital budgeting. Concept and excavarences of cost and capital, and various approaches for measurement of cost of repital and computation.

Analysis of risk and uncertainty: various approaches for risk evaluation.

LINET -IV

Theory of working capital management: Concept and deficition of grees, working capital and not working capital, trade off between profushility and risk.

UNIT -V

Operating foundal and combined feverage: Introduction, definition and concept and national appenaches

Tost Beoker

Financial Management by Khan and Jain, TMGH

3. Financial Management by Kuchital, Vikus Publication

4. Financial Management-Parech Shall-Willey India Pot. Ltd.

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IPSTOE12 - Managerial Economics

COURSE.

Introduction to Managerial Economics, Different Area of Managerial Economics, Misro and Macro Economics, Nature and Scope of Managerial Economics—Demand Analysis, Law of Demand and its Economics. Elasticity of Demand: Definition, Types, Messaccusers and Significance of Elasticity of Demand. Supply Analysis, Law of Supply, Elasticity of Supply-Definition, Types, Measurement and Significance of Elasticity of Supply.

UNIT-III

Late of Return, Revenue Asialysis, Theory of Production and Cost Analysis: Production Function, Cobb-Deuglas Production Function, ACMS Production Function, Investment

Cost Analysis: Cost Concept, Opportunity Cost, Fixed Vs Variable Cost, Explicit Costs Vs. Implicit Costs, Out of Pocket Costs Vs. Impaced Costs. Break-even Analysis (REA) - Determination of Break-even Point (Simple Problem) - Managerial Significance and Limitation of BEA.

UNIT-00

Introduction to Market & Pricing Poisson: Element of Market, Types of Market, Concept of Market, Cleroification of Market based on the nature of competition, Types of Competition, Features of Perfect Competition, Features of Imperfest Competition, Mosopoly and Monopolatic Competition, Price-Ocapus Determination in case of Perfect Competition and Monopoly.

Objectives and Policies of Pricing Introduction, Full Cost or Cost plus Pricing, Differential Pricing, Going Rate Pricing, Margani Cost Pricing, Trade Association Pricing, Loss Leadership Pricing, Administrated Princing

UNIT-IN

Forms of Business Organization: Introduction, Definition, Essential Element of Good Organization, Principles of Organization, Farmal and Informal Organization, Organization Structure, Concept of Ownership Organization, Types of Ownership, Partnership, Joses Stock Company, Types of Joint Stock Company, Co-Operative Organization, Public Sector Organization.

Capital and Capital Budgeting: Capital and Its Classifications, Need of Working Capital and its Assessment, Factors Affecting Working Capital, Fundamental of Accounting, Types of Capital, Mathod and Sources of Raising Finance, Nature and Scape of Capital Budgeting, Fostors of Capital Budgeting Proposals, Method of Capital Budgeting: Psychol. Method. Accounting Rate of Return (ARR) and Net Present Value Method. (Simple Problems).

UNIT-W

Foredamental of Financial Accounting: Nature of Accounting, Important Accounting Terminology, Accounts and Types of Accounts, Roles of Dirbit and Coeffe, System of Buck Keeping, Book of Accounts, Journal, Ledger, Trial Ballerse, Final Account, Technic Account, Profit and Less Accounts and Bulance Sheet.

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Koni, Bilaspur - 495009 (C.G.)

annelal Analysis Through Ratios: Classification of Financial Ratios, Liquidity Ratios, everage Ratios, Activity Ratios, Profitability Ratios, Current Ratio, Acid Test Ratio, Debt Topity Ratio, Assets Coverage Ratio, Debt Service Coverage Ratio, Invertory Turnover Ratio, Debtor Velocity Ratio, Creditor Velocity Ratio, Gross Profit Ratio, Net Profit Ratio, Return on Equity Ratio.

Treat Binokee

- 1. Managorial Economics by Yogosh Mahoshwari, PHI
- 2. Managorial Economies By Joel Dean, PHI
- 3. Managerial Economics By Craig H. Peterses, W. Cris Lewis, Sudbir K Jain
- 4 Financial Accounting For Management By Archrish Gupta, Pearson Eduction
- 5 Managerial Economics By H. Craig Potenson & W. Cris Lewis, PHI
- 6 Managerial Economics By Suna Damodaran, Oxford University Press
- 7 Managerial Economics and Financial Analysis By Aryson, TMH.

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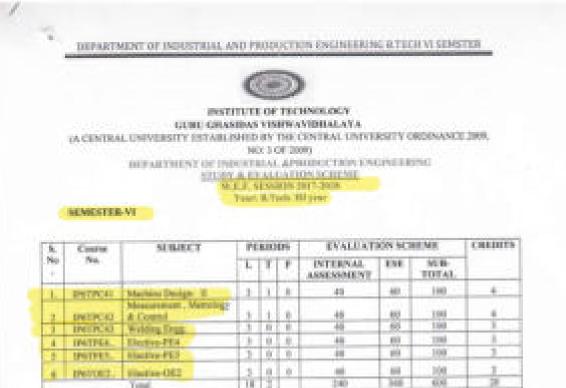
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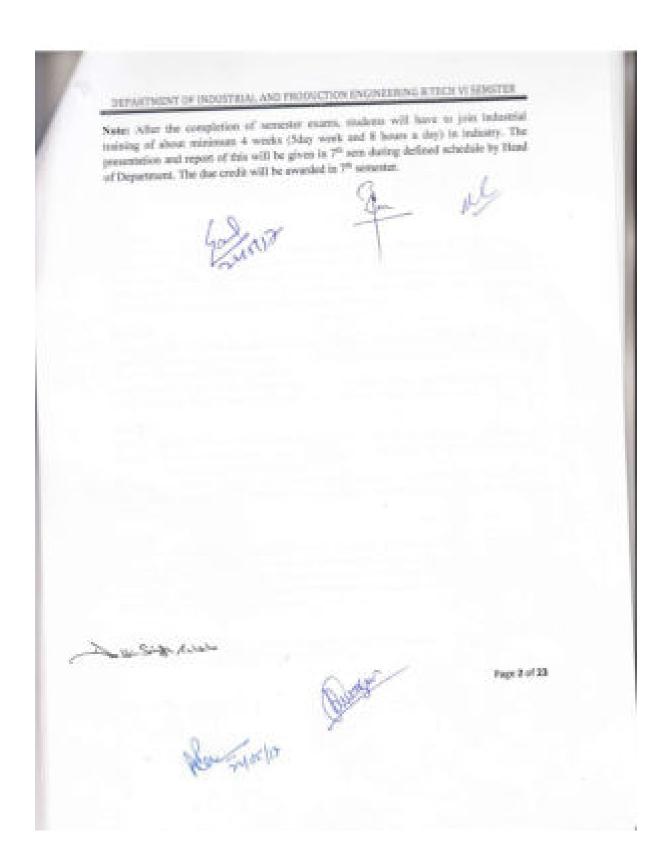
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IP6TPC41- Machine Design-II

UNIT-1

Spring: Spring Materials and Their Mechanical Properties, Equation for Stress and Deflection, Helical Coll Springs of Clevaler Section for Tension, Compression and Torsion, Dynamic Louding, Fedgue Louding, Wald Line, Lauf Spring and Laustrated Spring.

UNIT-II

Gears : Spur Gears Jose Drives, Classification of Gears, Selection of Type of Gears, Law of Georing, Force Analysis, Gear Tooth Faithens, Scientism of Material, Number of Tamb, Face Width, Beam Strength of Gear Tooth, Effective Load on Gear Tooth, Estimation of Module Based on Wear Strength, Lewis equation, Gear Design for Maximum Power Transmitting Copacity, Gear Lubrication.

DESCRIPTION OF THE PARTY OF THE

Biolical Genes: Helical Genes, Termenology of Helical Genes, Virtual Number of Tooth, Tooth Proportions, Force Analysis, Benes Strongth of Helical Genes, Effective Load on Gene Tooth, Woor Strongth of Helical Genes.

Bevel Genry: Bevel Gours, Terminology of Bevel Genry, Force Analysis, Bearn strength of Bevel Genry, Wear Strength of Bevel Genry, Effective Load on Ocar Tooth.

UNIT-IV

Bull & Bulling Contact Searings: Types of Bull and Roller Bearings, Selection of Bearing for Radial and Asial Lead, Bearing Life, Meanting and Labrication, Shaft Scales - Contact Type and Closenson Type.

Journal Boarings: Types of Lubrication, Viscosity, Hydrodynamic Theory of Lubrication, Summerfield Number, Heat Balance, Self-contained Bearings, Bearing Materials.

UNIT-Y

Chetches and Brakes: Friction Chutches, Friction Materials, Torque Transmitting Capacity, Single & Muttiple Plate Clutch, Certiffical Chatches, Band and Block Buskes. Bult Drive: Flat and V-belts, Belt Constructions, Geometrical Relationships for Length of the Belt, Analysis of Belt Termions, Condition for Maximum Power, Selection of Flat & V-Belts, Adjustment of Belt Termions.

Text Books:

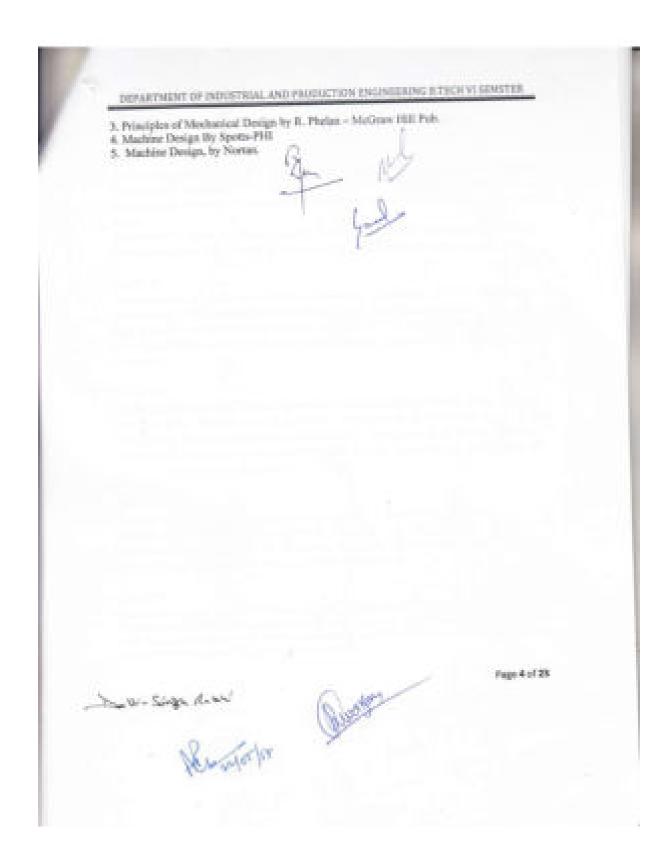
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Muchine Design by Shigley - McGraw Hill Pub.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BITECH VI SENSITER.

IP&TPC42 Metrology, Measurement and Control

UNIT-1

Introduction to Measurement and Measuring Instruments, Generalized Measuring Systems and Functional Userant, Static & Dynamic Performance Characteristic of Measurement Devices, Californian, Concept of Error, Seasons of Error, Analysis of Error.

Transdamen: Types of Transdamen and Their Characteristics, Measurement of Stron, Smain Gauges and Their Working, Gauge Factor, Stron Gauge Circuits, Stron Rosettes.

HNUT-III

Measurement of Proseure: Pressure Measuring Translations, Elastic Displengers, Measurement of Vacuum and Low Pressure, Various Low Pressure Gauges.

Measurement of Fluid Flows Various Metaols of Flow Measurement and Devices Temperature Measurement Bi-Metallic Thermometers, Thermocouples, Thermiston and Proposition.

UNIT-III

Metrology Standards of Linear Measurement Line and Fod Standards System of Linia and Fits, Limit Googes and Their Design, Measurement of Geometric Forms Like Straightness, Flatness, Standards and Circularity Measurement of Surface Textores, Quantitative Evaluation of Surface Roughness and its Measurement, Introduction of CMM, its Working and Application.

UNIT-IV

Interferomatry: Principle and Uses of Interferometry, Types of Interferometers
Comparations: Classification, Working Principle and Magnification Range of
Mechanical, Electrical, Optical, Electronic, Penametric Companions, Measurement of
Score Throads & Gears, Two Wise and Three Wire Method

CNIT-V

Fundamentals of Central System: Council system concepts, classification of council systems, mathematical representation of system equations, hydroxide, possessed, thermal and morbanical system and their easthernatical modelling, response characteristics of components and systems through classical solution.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BITECH VEIEMSTER 1. Beckwift and Bush, Mochanical Measurement 2. Jain RK Instrumentation 3. Raven H Automatic Control Engineering. Donal P Eckman Automatic Process Control Nakra & Choudhary Instrumentation Measurement & Analysis Nukra BC Theory & Application of Automatic Controlls Cooper Albert D Modern Electric Instrumentation PHI Fage 6-of 23



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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING ILTECH VESEMSTER

1P6TPC43 Welding Engineering

UNITE

Classification of welding: gas webling. Are Webling and Equipments, types of welding Fluries. Welding Techniques, Welding Torches and Blowboles. Subsurged Are Welding, TKi, MHG, Planno Are Welding and its Application.

RESERVED AND

Are Welding: Acc Welding Power Season, Selection Factor for Power Sources, DC-Generator, rectifiers, Constant Current & Constant Voltage Machines, welding Transformers.

Welding Electrodes: Types, Electric Conting, Selection of Electrode, Classification, Conting of Mild Street and Allay Street Electrode, Mutal Transfer in Are Welding.

UNIT-III.

Resistance welding Process: Spot Welding, Scient, Projection, Butt Welding, Plack Bott Welding, Processon Welding.

Solid State Welding Process: Cold Welding, Diffusion Welding, Ultrasonic Welding, Englosive Welding, and Friction Welding.

Radiust Energy Welding Process: Electrical Brare Welding, Laser Beam Welding.

UNITER

Brazing, Sakkering and their Application; Weld shilly of Metals: Introduction, Welding of Cast Iron, Stalahous Steel, Aluminium, Copper and its Alloys, Hydrogen Induced Cracking.

Welding Disturbing Distortion and Residual Streams, Types, Control of welding Distortion, Various discontrainies in welch, Trouble shooting.

UNIT-Y

Design of Weldment: Weld Geometry, Economic Londing Designing Torsion and bending Designing welding furtates.

Testing, Inspection and Specification: Destructive and New-destructive methods of unting Weldman, WPS, PQR, and ASME section IX Welding.

Robotics and Automation in Welding Modes of Automation, Positioners, Welding Figures, and Arc Motion Devision, Under Water Welding.

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Description August



DEPARTMENT OF INQUETRIAL AND PRODUCTION ENLINEERING BETTCH VI SEMSTER Text Beeks: I. American Welding Society, Hand Book VII Edition Vol. II. 2. Nadiorni S.V., Modern Arc Welding... Welding Engs., Little, TMGH. Khassa O.F., Welding Technology, Dhasput Rai & Som. Parsur R.S., Welding Processes & Technology, Khassa Publishers. Perrur R.S., Welding Engs. & Technology, Khassa Publishers. P.N.Rao, Masufacturing Technology Vol-L TMH Page 8 of 23.

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BITCO VEHIORYES.

IP6TPE41 - Materials Management

MARKET A

Introduction: Definition and scope, concept of integrated materials management, materials research, materials planning and hadgeting, audithorizes, standardisation.

Purchasing Objective and function of purchasing department, purchasing procedure, sugestation, and source selection.

UNIT-BI

Types of puritasing, buying seasonal commodities, purchasing under insurtainty, purchasing of capital equipment, international purchasing, public buying, legal concept in buying, insurance buying, price forecasting.

UNIT-III

Stores enamperated, stores system and procedure, incoming material control stores accounting and stock verification, obsolete, surplus and strap enamperated.

UNITED

Basic inventory system: consept of inventory, types of inventory, relevant costs of inventory, money-is order quantity, inventory control techniques, basic models of inventory.

Space parts management: definition of spaces and its chamification, MUSIC-ID, view of spaces, maid achoice spaces investory.

UNIT-Y

Value analysis: value importance, normal degree value analysis applied to purchase; organizing for value analysis, cost analysis and value analysis aid purchase research. Material and process edication in VE design, natural, process & supplier decisions.

Text Bindst

 Manerialo Management au integratud approach, Gepulkrishuur.P & Sundaresan.M (2002) Prestice Hall India Limited, NewDelbi.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BITECH VI SEMSTER Materials Management Text and Cases, Chilan, A.K. & Gupta, R.C. (2009) Presting Half India Limited. NewDelhi. 3. Maintenance and Spare parts Management, Pethak () Prentice Hall India Limited. NewDollsi. 4. Production and Operations Management, Chary-S.N. () Tata McGraw Hill. 5. Material reseaggement: An integrated approach, Dotta () Page 50 of 29

DEPARTMENT OF ENDUSTRIAL AND PRODUCTION ENGANGERING RITICH VI SEMSTER.

IP6TPE42 - Plant Layout & Material Handling

MINUTE.

Plant facility location -concept of plant facility, its scope, importance and objectives names of location decision, need for facility location planning, general procedures and factors influencing location descision, facility facution models, economics and cost analysis, sund and urbon location pattern in India.

UNIT-II

Layest Designs -Industrial plant design consideration, types of production types of layout, factors affecting layout tools, techniques and procedure used in workstories and plant layour, quantitative technique in plant layour, developing product and process income, comparing layouts, criteria for computercoad facility layout, concept of computeriors layout programs like CRAFT, CORFLAP, ALDEP and PLANET.

Flow pattern design -Overall system flow cools, mend and advestign of planned material flow, factors for consideration, designing flow pattern, flow patterns for production lines and assembly lines methods.

UNIT-IN

Material Handling- scope and functions of material handling, manual mechanical hardling ratio, principles of restorial hardling, analysis of material hardling publics. classification of ensterial handling system, salient features and application of general purpose essental handling equipment, material fundling in stores and warehouses, automation in part handling handling and industrial nature, optimize affection of naterial banding equipment.

Automated material handling system, concept of AGVs, ARRS and Methods to retaining cost of material handling, safety in material handling , evaluation of material handling process, design procedure of cranes, life.

Tent Books:

- I. Practical plant layout by Muther
- 2 Plant byest and danign by Junes More
- 3 Manufacturing Management- a Quantitative approach by Robert Aolston.
- 4 Productions and Operation Management by Lockyer

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Courses Focus on Employability/Entrepreneurship/Skill Development

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING B TECH VI SENSTER

IP6TPE43 - Maintenance and Reliability Engineering

UNITAL

Cancept of reliability: objectives, applications, orea of use, use of reliability in industry. The reliability functions, mean time between fathers, bassed our function, both tob curve, conditional reliability, probability density function, failure rate, failure density, bassed rate, importainty measures.

DOMEST-III

Constant and time dependent failure models: Exponental, webuil, normal and logacettel Distributions, discress distribution, biomenial distribution, pointion distribution.

Reliability of systems, Series , parallel entend attracted systems, K-oag out -5d system Concept of extendency, objectives, applications, unlendere standby systems, system structure functions, reinfered care and minimal patter, exercison mode failures, three state dereign

UNIT-III

Determination of reliability (state dependent systems): Markov analysis, load sharing system, standby systems, degraded systems,

Failure Analysis: Introduction to failure mode and effect analysis, FMEA and FMECA. emiticality analysis, Finalt tree diagram, overst tree. Availability: concept and definitions, types of availability model, system availability.

LIMIT-EV

Introduction: Objectives and policies of maintenance, essentiability terms and definitions, institutionability imperiories functions and make estimation of maleudance

Types of maintenance: breakdown, predictive, replacement, on-line, off-less, proveness Maintenance, occorditioning and concerion maintenance, Proventive maintenances with sepair, reliability centeré maintainne, condition based maintainnes, principals and level of CBM.

UNITE

Total productive maintainers, goals abjective benefits of TPM, component of TPM. calculation of OEL

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING RETECH VI SEMISTER.

Draining for maintainine personal, objective and level of training, types of training methodology, evaluation of maintainance deportment.

Tout Bleeks

- Cishon R.H, "Principles of Planned Mahammone", McGraw Hill, New York, 2001.
- 2. Ebling CL. "An introduction to Reliability and Maintainability Engineering" Tata
- Srimith L.S. "Reliability Engineering", Affiliated East-West Perrs Limited, New Delhi., 2007.
- Disilien B S, "Engineering Maintainehtity", Prentice Hall of India, New Delhi, 2000.
- 5. Maintainace and spare parts management by P. Gopal krishnan PHI.

Page 13 of 23

Mentolin Market

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BUTCH VI SEMSTER

IP6TPES1 - Automobile Engineering

increduction of an automobile, component and basis structure of automobile. classification, difference between neicesobile and automotive, the chance construction & classification, defect in frames, frameless construction & specifications. Wheal and tyres-Types of wheel, wheel dissension, desimble tyres properties, types of types, tyre material, tyre dimension, factor affecting tyre life.

COURT-III

Torontoine system: Punction of transcrimion types, sliding mesh goar box, constant much geer box synchro exest goar toxx, cylindrical gear box, tonque converter, propeller shaft, serivered joint, books joint, final drive, differential, performance of gase box.

DINGT-HE

Chatches: Requirement, function & type of chatch, dry friction abatch, suct friction chatch, check plate, single plate it unaltiple plate clotch, centrifugal check, and fluid fly wheel. Suspension system function and requirement, leaf spring, tansion but, telescopic shock shoother.

RINIT-IV

Broken: Function and requirement, broke officiency, wheel skidding, types of broke, electrical, mechanical uni hydraulic & presentate busines, master cylinder, wheel cylinder, self-actualizing brakes, brake dram, brake liners, brake shoe, trouble shooting.

LINET-V.

Front axle and suspenden wheel alignment purpose, factor of front wheel alignment, stacring geometry, correct stearing angle, stearing mechanism, under steer and over steer, storring past, power stooring, reversibility of stooring genera, stooring gene ratio, calculation of naming radius.

Engine embotion: Entition standard of whicle to India, flore norms, emission, unting Principle of multipoint fuel injection (MPFI), component of MPFI, Different amount of MENT system, vehicle air conditioning. Catalytic coordination, angine troubles & regains.

Test Bucks

- Automobile Engineering Kripsl Singh Vol. I, II
- Automobile Mechanics Joseph Haitner.
- 3. Automobile Engineering Giri N.K.
- Automobile Engineering by Strinivasan T.M.H.

Mercalle Jacobs

age 14 of 25

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BETSCH VI SEMSTER.

IPoTPES2 - Power Plant Engineering

UNIT-E

Introduction

Sources of energy, present power position in India, non-conventional energy and their application, steam power plant. High-pressure bottom and their classification and working. Botler accumentes and meanings, condensar and their types.

DOMEST-III

Solar Energy: Solar Invalation Calculation, Flat plates and concentrating collectors for liquid and gases, construction.

Collector Area Calculation: host removal Factor, Efficiency.

Solar System: Power plants, low temperature and high temperature plants, solar deyers, solar cookers, solar refrigeration systems, solar powel.

UNIT-III

Nuclear Energy: Introduction to Nuclear Engineering, Release of Energy by Nuclear Reaction, chain reaction, trademion, components of nuclear reactor, types of mactor. Pressured water counter, CANDU mactor, this cooled reactor, Liquid metal cooled reactor, breeder reactor, Nuclear Materials.

DINIT-IV

Geoducreal power plant. Wind energy: Type of Rosers, horizontal axis and vortical axis systems, system design and situ selection blade resterial. Wind power sustants in India. Bio Can Plant: Types, parameters affecting plant performance, plant design.

DESCRIPTION

Direct Energy Conversions: fuel Cells, Thomas-electric, Thomas ionic and MHD Systems (Magneto Hydrodynamic system), Economic analysis of Power plant tariffs.

Text Books:

- L. Fower plant Engineering, Donkon-Iwar & Arera, Dhanpat Rai Publication.
- 2. Sukharme, S.P., Solar energy, TMII Publication.
- 3. Duffie and Bockeson, Solar Energy Therntal Processes, John Wiley.
- 4. P.K.Nag, Power plant Engineering.

5. Power Plant Engineeing by Wakil, TMH

Page 15 of 23

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING STECK VESIONSTER.

IP6TPE53 - Heat and Mass Trussfer

CONTRACT

Introduction

Various modes of host transfer, Fourier's, Newton's and Stefan Beltemann's law, combined trades of host transfer, thermal transfer, thermal difficultity, everall hast transfer coefficient.

Conduction

The thermal conductivity off solids, liquids and gases, factors in tellurating conductivity transcretered. The general differential equation of conduction, one directalized study state conduction, linear heat flow decough a place and composite wall, take and aphere critical fluctures of irreduction, effect of variable thermals conductibility, conduction with heat generation in flat and cylinders.

CMT-III

Fine

Conduction convection system, extended nariance rectangular, triangular orconferential and pin firm general conduction analysis, flux of uniform and ten-uniform cross section area. Heat dissipated by a fire Effectiveness and efficiency of fire Approximate solution. Design a flux for maximum heat transfer. Solution for different boundary condition. Use of firm analysis for maximum transfer event of thermometer.

Transient/ sustandy state heat conduction

Introduction to unsteady state heating and cooling, system with negligible internal resistance, homeof capacity earthod and its validity. Unsteady state conduction through finite and semi-inflant slab without surface resistance, convention boundary conditions. Solution (hough Heislan's chart.

UNIT-III

Forced Convention: Physical reschange of forced convention. Denemical analysis for forced convention, velocity and thermal boundary, layer, flow over plates, flow across cylinders and spheres, flow in tubes, Reynolds's analogy.

Natural Connection Physical mechanism of natural convention, Dimensional analysis of natural convention, empirical relationship for natural convention.

UNITED

Boiling and Condensation: Boiling heat transfer, pool boiling, boiling regimes and boiling curve, not transfer, correlations in pool boiling. Condensation heat transfer, film condensation, derivation for the average heat manufer coefficient. In for the case of landaur film condensation over votical.

Dalli Singa/lips

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BETSCH VI SEMEITER

Heat Exchangers: Different type of heat exchanger. Determination of heat exchanger performance, heat exchanger transfer uset, analysis restricted to parallel and counter flow heat exchanger (LMTD and NTU method).

DOMESTICAL PROPERTY.

Thermal Redistion

Introduction, absorption and reflection of sufface energy, emission, radiosity and implication, black and non-black bedies. Kinchhell's law: intensity of radiation exchange between black surface, geometric configuration flatters. Grey body relation mechange between surface of out configuration flatters.

Introduction to mass Transfer

Mass and mole concentrations, molecular diffusion, edity diffusion, molecular diffusion from an evaporating fluid surface, introduction to mass transfer in luminar and turbuless convection combined hast and mass transfer.

Text Blocks:

- 1. Heat transfer-S.P. Sukhatmo-TMH
- 2. Heat & Mass Transfer-Assns and Dondondwar-Dhanpet Rail
- 3, Heat Transfer-C P Azora, TMH
- 4. Hoat & Mass Transfer-R.C. Suchdeva-New Age
- 5. Heat Transfer-J.P. Hickman-TMH
- 6. Heat Transfer-A Practical Approach-Yurus A. Cengel

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DEPARTMENT OF INDESTRUAL AND PRODUCTION ENGINEERING BITICS VESIMSTER.

IP6TOE21 - Enterprise Resource Planning

UNIT-I

Intenduction to Enterprise resource planning, Evolution of ERP, MRP, MRP-II, u-ERP, Generic business model with reference to ERP, Structure of ERP. Two dar architecture client, server, Three ties architecture, repository, RDHMS, Operating systems, Generic model of ERP system - Design tree rode smoother, Design of, Role/Artisity Diagrams, Berichmarking, Types of Berichmarking, Process of Berichmarking.

UNIT-II

legreduction to Business Process Re-engineering, Procedure of BPR, Process of BPR, Process improvement Process makings

UNIT-III

Introduction: Supply chain Management and ERP, understanding the supply thats, with conexamples, Supply chain performance with measures. Achieving stranger fit and scope. Supply chain drivers. Supply chain obstacles, ERP Vs SCM, Benefits of supply chain improvement, Introduction of Logistics Types of Legistics. Types of Logistics, Benefits of Legistics.

UNITAY

Integrand SAP model, Integrand Data, Moster Data, Transactional Data, Integrand processes, Evolution Electronic Data Interchange (EDI), Use of EDI, and Benefits of EDI, Schemes of ERP Introduction Opportunities and problems in ERP selection, Approach to ERP selection of ERP.

UNITAL

Organi of SAP, SAP's Markets, SAP architecture and integration, SAP Business structure, Contemparation of SAP, SAP R/3 transcrad Management, Salos and Distribution, Production, Plant Maintenance, Quality Management, Methodology for EEP implementation, Implementation phases, Implementation of Life cycle

Page 18 of 28



DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BETWEEN VESTIGATER Text Books: 1. Enterprise Resource Planning: Theory and practice by Rabul V. PHI Publication. 2. Enterprise Resource Planning: Concepts and practice by V.K. Garg, TMH 3 Enterprise Resource Planning by Alexis Loon, McGraw-Hill Publication Page 19-of 23. Die sich wer



DEPARTMENT OF INDESTRUAL AND PRODUCTION ENGINEERING RETECH YES IMPOTER.

IP6TOE22 - Management Information System

UNIT-1

Organization & Typos, Decision Miking, Cost & value of information, introduction to information in business, types of information system, need, importance, scope and characteristics of information system. Component of information system, deschoping information system.

MIS compet evaluation and characteristics attoctors of MIS. MIS via data processing. MIS and DISS

COURSE.

Solving Business Problems with Information System. Concept of Balanced MIS, Effectiveness & Efficiency Coloria. Tool and Techniques of MIS- datafless diagram, flow chart etc.

Dem base inchmology-introduction, data have and enterprise management, data independence data have approaches, data have architecture, data models, DBMS-SQL and working.

4GL, data male introduction.

UNIT-III

Baniness application of information technology electronic community factors, formation, Enterprise Schalosse, Information System for Business Operations, Information system for managemal Decision Support, Information System for Strategic Advantage.

HISTE-DV

Managing Information Technology, Econoption & Global Management, Security & Ethical Challenges, Planning & Implementing Change, Reports: Various types of MIS reports. GUI & Other Presentation tools.

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING RITIGH VESSENSTER

IP6TOE22 - Management Information System

UNIT-I

Organisation & Types, Decision Moking, Cost & value of information, introduction to information in business, types of information system, need, importants, scope and characteristics of information system. Component of information system, developing information system.

MIS concept evaluation and characteristics structure of MIS, MIS was data processing. MIS and DSS

COURT-III

Solving Business Problems with Information System. Concept of Balanced MIS, Effectiveness & Efficiency Criteria. Took and Techniques of MIS- datafless diagram, flow chart etc.

Dess bese technology-introduction, data have ned enterprise reamagement, data independence data have approaches, data base architecture, data models, DBMS SQL and scorking.

401., data selections

UNIT-III

Bininess application of information technology, electronic community factors, farcand, Entrance & Enterprise Solutions, Information System for Business Operations, Information system for managental Decision Support, Information System for Strange, Advantage.

UNIT-IV

Managing Information Technology, Enterprise & Global Management, Security & Ethical Challenges, Planning & Implementing Change, Reports: Various types of MIS reports. GUI & Other Presentation tools.

Page 29 of 25

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BYECH VI SEMETER. UNITA Advanced concepts in information system: Enterprise Resource Planning: introduction, various modeles file Human Resources, Finance, Accounting, Production & Logistics. Supply Clain Management, CRM, Procurement, Management System Object Oriental endeling. Text Booker: 1. O.Brion. "Introduction to Information System", McGraw Hill. 2. O.Brise, "Management Information System", TMIL. 3. MIS by Rabal De Wiley. 4. MIS Leaden and lauden PHI 5. Benul, "Information System Analysis & Design", TMH. 6. Javodegur, "Management Information System", TMIL 7. Murdick, "Information System for Modern Management", PHII. 8. Alexis Loon, "Enterprise Resource Planning", TMFL 9 MIS by Salagopus, PIII Page 21 of 28

DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING RITECH VI SENSTER

IP6TOE23 Six Sigma and DOE

HARTE-I

Quality Perception: Quality in Manufacturing, Quality in Service Secure, Differencesbetween Conventional and Six Signa concept of quality.

Probability Distribution: Normal, Binomial, Poisson distribution,

Basies of Six Sigma: Concept of Six Sigma, Defects, DPMO, DPU, Attackson X'S, Castomer Sous, Six Sigma for manufacturing, Six Sigma for service, Z soore, Understanding Six Sigma organization, Leadership council, Project sponsors and champions, Master Black Redt, Black Belt, Gram Balts.

DESCRIPTION OF

Methodology of Six Signar DMAIC, DFSS, Models of Implementation of Six Signa, Selection of Six Signa Projects.; Introduction to software for Six Signa, Understanding Minitals, and Graphical analysis of Minitals plots.

UNITE-HIL

Nix Sigma Tools: Project Charact, Powers emprong, Measurement system analysis, Hypothesis Testing, Quality Function deployment, Failure mode effect analysis.

UNIT-IN

Design of Experiments: Applications of experimental Design, basic principles, design guidelines, earthrical design and problems. Experimental design; metatical analysis of data Loss function and its colerations.

UNIT-V

Comparative Experiments: Statistical concepts, sampling and sampling Distributions, Inferences about the differences in means, randomized design, and inference about differences in means paired comparison design, beforences about the variances of namual distributions, problems. Experiment with single factor: the analysis of variance (ANOVA), analysis of fixed effects models, model adequacy checking, practical interpretation of results, sample computer ranges, determining the sample size, discovering the dispersion effect, the superscien approach to the ANOVA, and non-parameters method in the ANOVA.

Text Book:

I. Issa Basa, Barbara Lawton, Loan Six Sigma Using Nigma XI, and Minitab,

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DEPARTMENT OF INDUSTRIAL AND PRODUCTION ENGINEERING BUTICH VEHERSTER

De, Tata McGsaw-Hill, 2000.

- 2. DOE by Phillip Rose PHI.
- 3. P. Pande and L. Holpp, What is Six Sigma, Lie, Tata McGraw-Hill, 2002.
- 4. P. Pande, The Six Sigma Way, I.v., Tata McCleaw-Hill, 2003.
- E. Cavanagh, R. Neuman, P. Pande, What is Design for Six Signat, Ltc., Tata McGrave-Hill, 2005.
- 6. SIX SIOMA by KK BHOTE Marguss hill.
- 7. D.C. Moregomery, Design and Analysis of Experiments, 8th Edition, John Wiley.

Page 23 of 23

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(A CENTRAL UNIVERSITY ESTABLISHED BY THE CENTRAL UNIVERSITY ORDINANCE 2009, NO. 3 OF 2009)

DEPARTMENT OF ENDOSTREAL & PRODUCTION ENGINEERING

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गुरु घासीदास विश्वविद्यालय कोनी, बितासपुर - 495009 (छ.ग.)



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Category of Course	Course Code	Course Title	Per	indi	(NA)	Theory Paper	
			T.	T	r	c	
sharinë & Vedution Fegs L DECH, VII Seni	пелен	Principal of Management				+	Max Marks-60 Min Marks- Duration-39hs

Deflection of management, science or set, manager to autopromise. Types of managers managerial relies and skills: Evolution of management-scientific, human relations, system and contingency approaches. Types of Business Organizations, usin proprietar-dip, participality, company, public and private enterprises. Organization outcomes on convenient Carrors trends and treams in management.

UNIT-U

Nature and purpose of Planning, types of Planning, objectives, setting abjectives, policies, Santegue Management, Planning Tooks and Techniques, Decision making steps & processes.

UNIT-BIL

Names and purpose of Organizing, formal and informal organization, organization structure, types, fine and staff authority, departmentalization, delegation of authority, occanilization and decentralization, job design, format management, till planning, Recruitment actions, Training & Development, Partments Management, Countryloring and Management

ENTERN

Directing, individual and group factories, continuous, musication theories, musication and techniques, job numbers on, job entichment, leaders by, types & Tacotus of teaders by, effective communications.

ENTE-V

Controlling, system and procure of controlling, budgetery and non-budgetery control techniques, not of computers and 11 in management control, products by problems and management, control and performance, direct and preventive control, reporting.

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unic of Subsected to Production Empressing

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Text Sooks

- 1. Robins S.P. and Course M., Wanagement, Prestice Hall India, 10s ed., 2009.
- Sonar JAF, Freezian RE and Giffeet DR, Management, Good., Planton Education, 2004.
- 3. Tripally PC & Reddy PN, Principles of Management, Tata McGraw Hill, 1999.
- 4. Exercise of management, Kountz & O'Donnel, McGrow-Hill.
- 5. Organizational Behavior, Stephen P. Robbins, Phill.
- Organization and Management, Agricult R.D. TSULFrinciples of Management, Terry & Francklin, Richard - Frenin

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Department of Industrial & Production Engineering

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Category of	Course Code	Course Title	Per	ried.	wW.	Theory Paper	
Course			L	T	P	c	
Industrial & Frobation Enga B. TECH-VII See:	HPT-TIPC53	Production Planning And Control	3		*	+	Max Marks-68 Min Marks- Duration-3Hrs

PRODUCTION PLANNING AND CONTROL

UNIT of

Introduction: Introduction to various Types of Production System viz. Main Production, Job Stop, Batch Production System, Continuum Production System, Concept of Production and Operation Management, Objective & functions of PPC.

Executing: Time Sense method, moving average, weighted everage. Trend, Sensonally, Regression Technique, Delphi Method.

UNIT - II

Aggregate Planning Defermin, Systemics, Pure and strong strangies, methods.

Master Production Schoolsde: objective and functions, Design of MPS, Bill of Materials,

Material Repairment Planning objectives, functions, MRP, MRP-E, limitations

Capacity Bearing Planning: Oxforton, Objectives, Process of CRP, Process Sheet, Knigh Cut. Capacity Planning, Londing, and Preparation of CRP chart.

UNIT-III

Scheduling: Types, Single Machine Scheduling, Job step Scheduling, Flow Scheduling

Sequencing: various pricerty rates; Line of Balancing: Rank and positional weight method, Kilbridge season; restood

Facility location and facility location problems: Factors affecting plant locations, single facility locations problems and its recriscia.

Department of Industrial & Production Displacing

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Courses Focus on Employability/Entrepreneurship/Skill Development

Criteria - I (1.1.3)



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WART-1V

Types of layout- layouts design procedure such as CORELAP, CRAFT etc., Material handling system & their classification, principles: ITT & KANRAN. Depressation & resthods of depreciation.

ENERGY

Maintenance Management: Types of maintenance strongers, flocal-drawn and Preventive Maintenance, Predictive and Total Productive Maintenance, Condition numbering, Individual and group replacement getteins. Make or Day Deceases, concept of original equipment affectiveness.

Tirut Bisolo

- Production and operation management, O.Procerucivers, TMH.
- 2. Production and operation management, Adem Ehrst.
- 3. Production and operation runnagement, Charry S.N. TMH
- 4. Production and operations management Theory and practice Mahadocus II
- 5. Production and operation management, Joseph G. Monko, TMH
- 6. Hardbook of Material Hardling, Ellis Norwood Ented
- Operations Management: Design Planning and cotenil for the essentiatoring and services Lawrence P. Africe, James B. Dilworth Tata Mc Graw Hill
- 8. Production and Operations energyment, R.B Khattas, PHL

N. Production operations management S.N.Staffa, PHI.

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Department of Industrial of Productive Engineering

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Category of Cuerse	Course	Course Title	Pa	ried	w/10	eek.	Theory Paper
q.	Code		T	T	P	C	
Industrial &: Production Ungg: B. TI CH-VII Sern.	(P)-TPCS)	Computer Aidolf Design And Manufacturing (CAD/CAM)	3	1	ľ	4	Min Marko-60 Min Marko- Duntien-3Hrs

COMPLETER AIDED DESIGN AND MANUFACTURING (CADICAM)

UNITA

Basics of CAD: flusius fundamental of Computer Gospines, Presciple of computer graphics, Product life cycle, Censept of Computer Aided Design (CAD) and authitecture. Hardware and software, Color management, Roster graphics, Gosphic priorities, Jeses, and Cocle Drowing algorithms, Software documentations, CAD standards GKS, OpenGL, Data exchange standards (GES, STEP, CALS etc. Communication standards Standards for veneturing images

CNIT-III

Geometric Modeling of Curves, Surface and Solid: Basics representation of curves, Parametric and non-parametric curves, Mathematical representation of curves, Hampite curves, Bester curves, B-spline curves and rational curves.

Basic of Surface, Techniques of surface modeling, Plans melion, Rule surface, Surface of treolation and sweep, Cooks and bi-cubic parches, or surpt of Barier and B-spline surfaces; Basic concept of solid modelling suchnique, CSG and B-rep reprint for solid generation.

UNIT-III

Geometrie Transformation: Computer Aided Design (CAD) methodology, Coordinate systems. Theory and applications, 2D and 3D geometric transformation. Homogeneous transformation. Concatenation, Assumbly modelling, interferences of positions and orientation, tolerance analysis, mass property calculations, Visual realism butten tra-surface-acid removal algorithms, dualing, orienting, computer animation, Concarrent Engineering.

Andrew State State

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UNIT-IV

Basics of CAM: Basic corcupt of numerical control (NC) System, NC coordinate system, NC motion accord, Application of NC, concepts of computer massive control(CNC) system, problems with operantional, NC, CNC.

Part Programming: Introduction to NC part programming, custoal part programming, Computer account part programming, Automatically Programming Tool (APT) language, suspenses and code of APT, programming methods, advantages of CAD/CAM programming.

DOMEST-V

Advance Manufacturing System Comput of dusthated numeric control (DNC) system, and its advantages of over NC and CNC, Concept of computer imagined matted (CIM), Finallia manufacturing system(FMS), benefits and applications of CIM and FMS, Group Technology(UT), parts classification and coding systems, benefits and applications of GI, naturated attempt and coding systems, benefits and applications of GI, naturated attempts and cordinal system (ASSRS), Automated guided vehicle(AGIV).

Text Blooks

- 1. Principles of Computer Grighios, W. M. Novenann and JCF, Sproof, McGraw Hill
- 2. Computer Graphics, D. Haars and M.P. Haker, Prestice Hall Inc.
- 3. Production System & Automotion, Grocow, Prentice Hall, India.
- 4. CADICAD Theory & Practice-Lized & R. Sivaruhramanium, TMIT
- 5. CADICAM, Grosser & Zimmer, Premius Hell, India
- 6. Computer Graphics & CAD, Renomenby, T.M.H.
- 7. Industrial Robesius & CIM, Surendra Kontar LB.H.
- 8. CAD/CAM, FN/Rao, Premier Hall, India.
- 9. CAMT.C. Chang & Wong, Peatron.
- 10. Mantering CAD CAM, Brokers Zeid, Tata McGrave Hill Publishing Co.
- 11. CAD/CAM Principles, C. McMalass and J. Browne, Featron Education

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Category of Course	Course Code	Course Title	Per	-	·W	eck.	Theory Paper
			U	Ŧ	P	C	
Industrial & Production Engg. B. TECHI-VII Sen.	(P7-TOL.3)	Product Design & Gevelopment				4	Max Marks-68 Min Marks- Dunation-3ffrs

PRODUCT DESIGN & DEVELOPMENT

LINET-I

Product Design: Definition, Design by evolution, henceation, counted factors of product draigs, production-consumption cycle, flow and value addition in the production – consumption cycle, the excepturegy of design, primary design phases and flow charting, role of allowance, concurrent engineering

UNIT-II

Product Design practice and Industry a lauvalaction, penduct strategies, thru to market, analysis of the product, three S's, standardization, report scene, simplification.

Besigner: Role. Myth and reality. Indicated design organization, basic design considerations.

Industrial Designat; Problems, procedure for adoption, types of models. Role of seatheries in product dusign, functional design position.

UNIT-III

New products false generatives modelication Product variance adding dropping Formal testing new products, coroupt product testing, market tests, evaluation, adoption, expansion and finecasting.

Economic factors influencing design: Product value, scownsic analysis, profit and computativaries.

Product design for corresponds: Introduction, importance of DIE, confromunical factors, scope of any incommand impact, design guidelines for DE.

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HNIT-IV

Developing product strategy: Baraclis of strategy, elements of a product strategy, setting objectives, solution of strategic afternatives, increasing sales/market share, increasing profitability. Design for manufacturing and Design for assembly, Engineenies in design, Modular surses integral design.

Human Engineering Considerations in product designs introduction, Authopomotry, Design of species, The Design of displays, Man Machine Information suchange.

UNIT-V

Intellectual property systems: Defection, Concept of Intellectual Property, Kinds of Intellectual Property, Economic importance of Intellectual Property, Economic importance of Intellectual Property, Economic importance of IPE, TRIPS and its implications.

Trademark: Introduction, Interchal development of the emorpt, Need for Protection, Kirals of Indomarks, and Well known Trademarks. Parente Historical development, Concepts, Novelty, Unity, Investigates Newscholments. Copyrights, Industrial design.

Text Bissis.

- 1. Chitale A. E. and Gupta R. C.; Product Design and Manufacturing, PHL
- 2. Gupta V., Lal G.K. and Reddy: Feudamentals of Design and rearufacturing. Natura Publishing.
- 3. James Garratt, Design and turbrology (1996). Published by Cambridge University Press.
- 4. Donald R. Lahrnart, Rusell S. Winns J. Edition, Product Management TMH.
- 3. Product Life Cycle Engineering and Management, CEP Lecture point, Frof B Ravi, IIT Borshay
- 6. Karl. T. Ultich and Steven D. Egyinger "Product Design & Development" TMH 3rd addition.

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Department of Solute tel 4. Production Engineering

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Guru Ghasidas Vishwavidyalaya #Ismilwen/Indiadya-Ismilwenich 30 k. 54 (10) Koni, Bilaspur – 495009 (C.G.)

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Guru Ghasidas Vishwavidyalaya #Ismilwen/Indiddyds Ismilweisch 30 k.Sd/00/ Koni, Bilaspur - 495009 (C.G.)

SUNRE-IV:

Fluoring of Enterprise Source of Source: Interest and external courses, capitalization, term forms short term feature, terminal features communical banks, other francial includes, institutional region?

Support feetitations: National small industries, corporation Ed, small industries development organization, small scale industry board, state small industry development organization, small industries survice matterns, direct industry course, survival consultancy organizations

Government policy and moution therefor to small scale industry, has benefits, business and assertation for small scale industrial. Government policies for small scale comprises and industrial policy mentations.

ENIT-Y

Start-up Business: Why start a business, key consideration, must up a process, presentation to inventure, company considerations, squiry considerations, key factors for success.

Government strategies: Growth of exception, Objectives of growth, stages and types of growth-Expansive diversification, joint venture, recepts and as a solutions, sub-contracting and financing.

Sickness in small industries: Meaning of industrial sickness, eigents and symptoms of industrial sickness, states and consequences, corrective measures to carb submoss, government policies on recival of sick units.

E-esmmercei Baric concepts, néverisges aut disadvantages.

Test Books

- 1. Enveronmentskip, Ray, Staliv, Univ. Press.
- 2. Entoprovenantiqu' Hisrich, McGraw Hill
- 3. Entrepresentable Development, Kumur, New-Age.
- 4. Testropromumbly Development, Kaulgad, Thomson Learning.
- 5. Entreprenounisip: Theory & Practices, Saire, Wheelm
- 6. Entrepreneurskip Development, Dr. 5.5. Khanka S. Chand.

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Department of Industrial At Productive Digitimetring

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गुरु घासीदास विश्वविद्यालय कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #imilioniyinitideliyis intellionizati 30 k. 5 d 100 Koni, Bilaspur ~ 495009 (C.G.)

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STRATEGIC MANAGEMENT

UNIT-1

Strategy and Process - Concepted Surveyant for strategic management, the Concept of Strategy and the Strategy Formation Process - Stationalders in Instrum -- Vision, Mission and Purpose Beniness defection, Objection and Goals -- Corporate Geographics and Social responsibility uses tricky.

DNIT-H

Competitive Advantage - Entered Environment - Porter's Five Forces Model-Montegie Groups Competitive Changes during Industry Environm- Globalization and Industry Systems - National Contest and Competitive advantage Resources Capabilities and competencies-core competencies-Lowuset and differentiation Generic Building Blocks of Competitive Advantages Distinctive Competitivisms Resources and Capabilities durability of competitive Advantages Avoiding failures and sustaining competitive advantage-Core endy

UNIT-III

Strategies - The green's strategic abstractives, Stability, Expansion, Ratescalatum and Combination Business level strategy, Strategy in the Global Environment, Corporate Strategy, Vertical Integration-Discretification and Strategic Allianom, Building and Restractoring the corporation-Seeingic analysis and choice - Frickenmental Threat and Opportunity Profile (ETOP), Organizamonal Capability Profile Strategic Advantage Profile, Corporate Portfolio Analysis, SWOT Analysis, GAP Analysis, Mc Excepts 7s Francesork, GE 8 Cell Model, Discinctive competitiveness, Scientism of matrix, Alanua Score Card-case study.

Department of Industrial & Production Engineering

E block on

Courses Focus on Employability/Entrepreneurship/Skill Development



UNIT-IV

Strategy Implementation & Evaluation - The Implementation process. Research affocation, designing separated control of the American Strategy-Implementing Strategy change Politics Power and Conflict, Techniques of strategy evaluation. & control case study.

HNET-V

Other Strategic Beates - Managing Technology and Instruction, Strategic Issues for New Profit organizations. New Business Models and strangles for Instruct Economy-case study

Tent Bleeks

- Thomas L. Whoeler, J.David Hunger and Krish Rangarajan, Strategic Management and Business policy, Pearson Education., 19th edition, 2007.
- Charles W.L.HEE & Gareh R.Jones, Strongic Management Theory, An Integrated approach, Birmanya, Wiley India,6th edition, 2007.
- 3. Auhar Karrot, Strategic Management & Business Policy. Tata McGraw Hill, Third Edition,

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गुरु घासीदास विश्वविद्यालय कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya plentinen katteriyte katelinensek 30 k. 5 d 100 Koni, Bilaspur – 495009 (C.G.)

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UNIT-IV

Design of spindles and spindle supports: function of spindle unit and requirements, resternit of spindles, effects of machine test completes on machining accuracy, design calculation of opinites, design of jigs and fictures polyciple of jigs and flatone design, locating and clamping, jig bushes, drilling jigs.

UNITAR

Press work die design: Classification of pressus and data, outling action in data, clearances and outling limits, those, owner of pressure, method of crossning purches. design of blanking data, drawing die design.

Tirst Books

- 1. Macione Tool Design by NK Mohta Tata Magraw Publication.
- 2. Bass, S.K., Design of Machine tool, Allied Publishers, New Delhi.
- Kaunigsberger, F., Design Principles of Mutal cutting machine Tools, purgasum Press, Oxford, 1964.
- 4. Push, V.E., Design of Muchine Tools, Markinsonunia Publishers, Moscow, 1977.
- 5. Machine Tool Dasign, vols. 1-IV, Mr Publishers, Missonw, 1968.

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Department of Sudannial & Production Engineering



Guru Ghasidas Vishwavidyalaya plentinen katteriyte katelinensek 30 k. 5 d 100 Koni, Bilaspur – 495009 (C.G.)

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COURT-IV

Psychometrics: Psychometry and psychometric properties, psychometric relations, psychometric chart and me use, psychometrics procures, human confest, factors affecting psychological chart.

Requirements of constart air conditioning thermodynamics of human body, confirst that, factors governing optimum effective temperature.

Cooling load colculations & design of a.e. system-different heat scannin, design of air conditioning system, bypass factors, effective sensible heat factor, cooling colls.

UNIT-V

Fluid Bow, duct design A air distribution system, various income in fluid Bow, different methods of duct design A arrangement system, air distribution system it. resettation system.

Automotive air conditioning system location and layour, components, system entiretransus.

Car. Railway air conditioning & marine air conditioning.

Test Books

- 1. Battigeration and Air Conditioning C. P. Arara TMH.
- 2. Religionation and Air Conditioning Manufast Presail New-Age International Poli-
- Refrigeration and Air Conditioning Annu & Durskundwar Diamet Rai & Sons
- 6. Refrigeration and Air Conditioning P.L. Hallaney Khama Poli-

Du Sign Relati

Department of Indicated & Predicator Engineering

गुरु घासीदास विश्वविद्यालय कोनी, बितालपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismilwen/latid-tiple-landhiness-is 30% S.d. [80] Koni, Bilaspur - 495009 (C.G.)

Category of Course	of Course Course Code Course Title		Per	**	w/70	reek.	Theory Paper
			L	T	r	C	
Industrial & Production Engg. B. TECH-VII Sem.	DHPEE.AS	Composite Materials and Technology	3	-1		4	Max Marks-68 Min Marks- Darwins-Silve

COMPOSITE MATERIALS AND TECHNOLOGY

UNIX -II

Introduction to Composites Deficitions. Typical relefectments and matrices. Typical properties of films composites; nucleated, weight, obstaical resistance, etc., compared with "standard" nucleated. Particular composites. Quality assumes, cutting of manufacturing methods. Economic aspects. Dependence of properties on manufacturing costs; typical manufacturing defects. Applications. Filtra strengthering, filtra flows, critical length, critical reduces function beautiful composition (wood, hore, etc.)

UNIT-II

Fibres Manufacturing methods: Physical and characteristics. Mechanical and office properties of community used fibres - curbon, plans, arrestd and office organics, cutarrics. Pibre coming to achieve compatibility with matrix. Use of exactical methods to characterize fibre behaviors. Noterally-occurring (collaboral fibres. Whinker, typical properties, Manufacturing methods.

CNET-III

Manufacture of Polymer Matrix Composites Procepts of manufacturing processes (open and about moulding, injection moulding, injection moulding, suite injection, HRIM, Glamest winding, pultration, contributed conting, actualists, proposition of composition, contributed other "Starting" materials, etc. Machine methods for manufacture of composition Contributed and other floriding operations.

Tall B Market

Experiment of Industrial & Freehalton Engineering

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गुरू घासीदास विश्वविद्यालय क्रिकेट क्रिक्ट 20 2 2 6 के क्रिक्ट क्रिक्ट कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #imilioniyinidadiyib intellimeticib 38 k.54389 Koni, Bilaspur - 495009 (C.G.)

UNIT - IV Engineering properties Stiffness and Strength: Geometrical aspects, volume and weight fraction. Underectural continuous (fore systems, millions and strength, Decontinuous Obest. Start fibre systems; length and orientation distributions. Wover minforcements. Hybrids. Failure theories for insidentificial landou. Micro muchanics theories. SINDY-Y Machanical Torting Departmentals of stiffiest and strengths of avidinational compositor, tenier, compression, flewer and these Typical danded methods. Due of photo elastic, graphic and other markeds of strain resourcement. Metal Mateu System Matei and alloys, smidrication processes, diffusion bending emberical properties. Burns fibre minforced stampsons and bisubon alloys. Abusina fibre sunforced absention allers. School survivie filter mixtureed absentions alloy. Particulate eviters. Test Books Introduction to Commonity Materials Design: Ever I Burbon Taylor and Prenatu. 2. Mechanics of Composite Materials: Robert Joses Second Edition 1999 Teylor and Francis. 3. Composites and Processing Methods. Ed. Verdatesan Names Publications. **Head of Dagartment** Duller Sings Rutch Indicated it Production from Assessor. parties a federalogi HALVY, KAN, BUILDINGS, GL. G.J. Department of Substitute & Production Engineering

गुरु घासीदास विश्वविद्यालय क्लेक्क क्षेत्र २० २ १ क्लेक्क क्षेत्र क्रिक्ट कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya Handbeen katatata badalaenak 2014 Ediller Koni, Bilaspur - 495009 (C.G.)



INSTITUTE OF TECHNOLOGY (SCHOOL OF ENGINEERING & TECHNOLOGY) GURU GHASIDAS VISHWAVIDHALAYA

(A CENTRAL UNIVERSITY ESTABLISHED BY THE CENTRAL UNIVERSITY ORDINANCE 2009, NO. 3 OF 2009)

REPARTMENT OF INDESTRIAL APRODUCTION ENGINEERING NYLDY & EVALUATION SCHEME W.P. F. SEASION 2018-2919 Year: B. Tock, IV year

SEMESTER-VIII

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Department of Stalestial & Productive Engineers

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गुरु घासीदास विश्वविद्यालय व्यक्तिका स्टब्स्ट अर्थ के क्षेत्र क्रिक्ट कोनी, बिलासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismilwen India-Iya-Ismilwenish 30 k. 54 (10) Koni, Bilaspur - 495009 (C.G.)

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41	Sopply Chair, Management	TI.	Fluid Power Con	ted -	
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गुरु घासीदास विश्वविद्यालय क्रिकेक क्षेत्र २०१ २१ वर्ष क्षेत्र क्षेत्र कोनी, बिलासपुर - ४९५००७ (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Isorland India () to Isorland () Br. Ed () [8] Koni, Bilaspur - 495009 (C.G.)

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NIT-II							
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DNIT-V

Network analysis, Introduction of PERT & CPM, computation of PERT, Tone estimation a manner of deviation & variation , probability of completing project. Acrow diagram & critical path weeked , Schuldeling , unstantique & crushing of network.

Test Books

- 1. Sharen & S D Kedarouth Operation Research, Romeuth & Co Meeter.
- 2. Counstine Research, Saviers Viscous
- 3. Operation Research N. D. Voltes TMH Publication
- 4. Operation Research Hitta & Gupta S. Chard & Co.
- Operation Research H. Gillisto TMH, New Delhi
- n. Operations Research M. Tuba TMH, New Dulbi-
- Operations Research Phillip Revisebres-Wiley Publications

نعبه بهتعملے

Department of Endormal & Production Engineering:

गुरु घासीदास विश्वविद्यालय कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismiluten/Indiation/India

Category of	Corne	Course Title	Pe	riodi	/10	erk.	Theory Paper	
Course	Code		L	T	P	C		
Industrial & Production Enga. B. EECH- VIII Som	HILTECS2	Marketing Management	4	i		4	Max Marks-60 Min Marko- Duration-Why	
	N	LARKETING MANAGES	BEN	Г				
UNIT-1								
Introduction 1 demands, pouls		managements what is to functions	****	-the		lbe -		
		obation concept, product a	orioin.	ACW.				
Contract Con	The second second	Son, marketing philosophia						
UNIT-II								
The nature of l		user Sealment, component an						un sele
The nature of l		user besteene, corporate an Unallyzing consumer market						NA INTE
The nature of l								94, 967
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The nature of I planning, reachi UNIT-103 The product to New Product	ting process. / Se cycle: cond Decisions: De	Coalyzing common market closs and strategies is differ Existing and factors cons	est y	deple france	u b	dusi	OF.	cegh.
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Guru Ghasidas Vishwavidyalaya plenifuent latitety to lend hisesselt 30% L.S.d.1001 Koni, Bilaspur – 495009 (C.G.)

UNIT-V

Managing retailing whole selling and logistic-types of retailies and levels of services, treats in setaling, types of whole selling, moder logistics.

The role of marketing communications communication process model and developing effective of communication; characteristics of marketing communication role, factors in setting the communication role.

Tiest Books

- 1. Product Design and Manufacturing, Chitaly & Gagus, PHI.
- 2. Marketing Management, Philip Kother PHI Publication

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Dispersions of Nuberiol & Production Engineering

गुरू घासीदास विश्वविद्यालय श्रीकाल क्षेत्र २०१ २ १ वर्ग को वर्ग विद्यालय कोनी, बिलासपुर - ४९५००७ (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Gentlemen India-Oyde Gentlemente 300 k. Ed [30] Koni, Bilaspur – 495009 (C.G.)

Category of	Course Code	Course Title	Per	riodi	Theory Faper		
Course			I.	T	P	0	
Industrial & Production Engg. B. TRCH: VIII Som	PROST_II	Supply Chara Management	4	-	5	4	Max Marks-60 Min Marks- Duration-Hirs

SUPPLY CHAIN MANAGEMENT

GNEE-I

Building a Strategic Framework to Analyse Supply Chains: What is a Supply Chain? The Objective of a Supply Chain, The Empericance of Supply Chain Decisions, Dannies Phases is a Supply Chain. Process View of a Supply Chain. Exemples of Supply Chains. Supply Chain Performance: Achieving Strategic Fit and Suspe, Competitive and Supply Chain Strategies. Achieving Strategic Fit Expanding. Strategic Supply Chain Drivers and Matrice, Drivers of Supply Chain Performance, framework for Streetung Drivers. Facilities Javentory, Transportation Automation Sourcing Printing.

BUNDET-BE

Designing the Supply Chain Network: Designing Distribution Network; and Applications to e-Business the Relic of Distribution in the Supply Chain, Factors Inflatining Distribution Network Design, Design Options for a Distribution Network, a Business and the Distribution Network, Distribution Networks in Practice

Network Design in the Supply Chain: The Role of Network Design in the Supply Chain, Factors Inflaencing Network Design Decisions Frances of IT in Network Design Decisions, Middle for Facility Location and Capacity Allocation, The role of IT in Network Design, Making Network Design Decisions in Practice.

Network Besign to an Uncertain Environment: The Impact of Uncertainty on National Design.

Discounted Cash Flow Analysis Approximations of Discountry Sentanting National Design Decisions

Using Decision Trees AM Time Evaluation of Supply, Chain Design Decisions Under Uncertainty

Sint Management and National Design 175 Making Supply Chain Decisions Under Uncertainty in

Practice

Department of Industrial A. Production Engineers

गुरु घासीदास विश्वविद्यालय कोनी, बितालपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismilwen/Indiatich ismilwenich 30% E. E. (1981) Koni, Bilaspur - 495009 (C.G.)

UNCE-TH

Planning Denumb and Supply in a Supply Chain: Domand Forecasting in a Supply Chain, The Role of Forecasting in a Supply Chain. Characteristics of Forecasting Methods after Approach to Domand Forecasting Alexandry Forecasting Methods. Minimum of Forecasting Denumb at Tabox Sult. The Role of 17 in Forecasting. Risk Management in Forecasting. Forecasting in Position.

Approprie Planning in a Supply Chain; The Role of Approprie Planning in a Supply Chain, the Approprie Planning Problem, Approprie Planning Strategies, Approprie Planning Using Linear Programming, Approprie Planning in Excel. The Role of IT in Approprie Planning, Implementing Approprie Planning in Practice.

Planning Supply and Demond in a Supply Chair: Managing Producable Variability, Responding to Producable Variability in a Supply Chair, Managing Supply, Managing Distant, Implementing Solutions to Producable Variability in Practice.

UNIT-IV

Planning and Managing Inventories in a Supply Chaire Managing Economics of Scale in a Supply Chair, Cycle Inventory, The Bale of Cycle Inventory in a Supply Chair, Secretaries of Scale to Exploit Freed Costs, Economics of Scale to Exploit Quantity Discourses, Short-Toron Discoursing: Trade Promotions, Managing Malancholou Cycle Inventory Estimating Cycle Inventory-Related Costs in Practice.

Managing Univertainty in a Supply Chains Safety Inventory, The Role of Safety Inventory in a Supply Chain, Determining Appropriate Level of Safety Inventory, Impact of Supply Uniortainty on Safety Inventory, Impact of Supply Uniortainty on Safety Inventory, Impact of Suppleministrate Policies on Safety Inventory, Impact of Suppleministrate Policies on Safety Inventory, Managing Safety, Inventory in a Multischalan Supply Chain, The Sole of IT in Inventory Managing Safety, Inventory Inventory in Practice.

Descripting the Optimal Level of Product Availability: The Exportance of the Level of Poulant Availability, Factors Affecting Optimal Level of Product Availability. Managerial Leven to Improve Supply Chain Profinitelys, Setting Product Availability for Multiple Products under Capacity Constraints, Setting Optimal Levels of Product Availability in Practice.

Department of Industrial & Production Engineering

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ONTE-V

Designing and Planning Transportation Networks: Transportation is a Supply Chain, The Role of Transportation in a Supply Chain, Modes of Transportation and Their Performance Characteristics. Transportation Infrastructure and Policies. Design Options for a Transportation Setwork Tende-Offs to Transportation Design, Tailored Transportation, The Role of IT in Transportation Role Management in Transportation, Making Transportation Decisions in Practice.

Managing Cross-Functional Drivers in a Supply Chain: Sourcing Decisions in a Supply Chain, The Role of Sourcing in a Supply Chain, Indicate or Outsearce, Direct and Functi-Party Lagratics Providers, Supplier Scienting and Assessment, Supplier Scientists and Supplier Scientists and Supply Chain Performance, Design Collaboration, The Processment Process, Sourcing Planning and Analysis, The Role of IT to Sourcing, Risk Management on Sourcing, Making Sourcing Decisions in Practice.

Tred Book

- Supply Chain Management: Janet Shah, Pearson Publications 2010.
- 2. Supply Chain Management: Swell Chopes and Mein del, Fourth Edition, PHI 2010.
- Supply Chain Management: A.S.Altakar PHI Second Ed:2006.
- 4. Logistics Management: Junes Stock and Douglas Lambert. McGraw Hill International Ed: 2006.
- Supply Chain Management for Global Competitiveness. Ed.B.S.Sahay McMillan Publication. 2000.
- Energing Trends in Supply Chain Management: Ed.B.S.Sahoy McMillan Publication 2006.
- 7. Legistics Management: Bowerson TMH 2004.

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गुरु घासीदास विश्वविद्यालय क्रिकेट के 2012 में के के के कि कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Gentlemen India-Oyde Gentlemente 300 k. Ed [30] Koni, Bilaspur – 495009 (C.G.)

Category of Course	Centre Code	Course Title	Per	rind	W	web.	Threey Paper
			L	T	P	£	
Industrial & Production Engage B. TECH, VIII Som	HF-CHT42	Salata Managoment And Labour Law				4	Max Marks+60 Min Marks+ Duration-3Hrs

SAFETY MANAGEMENT AND LABOUR LAW

ENTI-L

Sufety Management: Concepts Deviction of modern safety concepts Safety policy v Safety Organization v line and staff functions for safety- Sufety Committee- badgeting for earlity. Techniques facilities Social Technique (IRT), discover scotted, Job Sufety Analysis (ISA), safety mavey, safety importion, safety sampling, Safety Analy.

Sufety in Material Handling: Ergenomic consideration in staterial handling, design, installation, approximant maintenance of Conveying equipment, hosting, traveling and slowing recolumns

UNIT-III

Design of Air Pollation Control Systems Industrial narrows of Air Pollation, Emission factors, Regulations Control Strategies, Policies, Gaussia Pollatant control: Gas absorption in tray and packed towars, Amorphou with / without thermal reaction — Removal of SG2 — Absorption in fixed Maless Breaktheragh, Removal of HCa+ VOCs — NOs missoral — Wet sandburn.

Integrated Air pollution control systems: Pollution Control in Process Industries, Pollution control in process industries like unmed, paper, perceivus, petrolium products- testile-testerios-thorout power plants 25 mg and pigment industries - occu-brands energy

CONTRACTO

Sulety in Metal Working Machinery and Wood Working Machiner: General safety rains, principles, examplesses, feepections of norsing machines, beeing machines, milling machines, planning reachines and grading machines. CNC machines, Wood working reachinery, types, safety principles, electrical grands, work area, material handling, inspection, standards and codes, solve, types, hazards.

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Salar Salar

Dignerment of Subserved & Prinduction Engine

- Care

- Signer

And other



Guru Ghasidas Vishwavidyalaya #Ismilwen/latidelyte-landhisessatz38% S4389 Koni, Bilaspur - 495009 (C.G.)

ONET-IVE

Fire Presention and Protection: Sources of ignation, the triangle, principles of the entergolding, active and passive fire protection systems – narrow classes of firm, A. B. C. D. E. types of fire entergoldiness, fire supports hydrast pipes, hours, counters, fire watchers beyond of stand pipes – fire station-fire alarest and weren, maintenance of fire tracks, four generators, escape from fire traces operations, the drills, united fire aid for basis.

DNIT-V

Explosion Protecting Systems Proxigion of applyance-decoration and blast super-explosion, parameters—Explosion Protection, Commission, Flams Accuracy, indiction, suppression, vesting, explosion order of large analysis explosion tenting-ment gases, plant for generation of least gas turtion doe in process vestels and limit explosion, suggestation system based or carbon discide (CCC) and halous because in LPG, prevents (NHI), Sulphur discide (SCI), (Norma (LLZ) on.

Test Book

- 1. Accident Provention Manual for Industrial Operations", N.S.C. Chicago, 1982.
- 2. Heierick H.W. "Industrial Acultint Prevention" McGraw-Hill Company, New York, 1980.
- 3. Gopta, R.S., "Hand Book of Fire Technology" Orient Longman, Bembay 1977.
- 4. "Accident Prevention researd for industrial operations" N.S.C., Chicago, 1982.
- 1. Disko Tuletat, "Fire and explosion protection

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Department of Indiantal & Physics on Enghancing ...

गुरु घासीदास विश्वविद्यालय क्रिकेट के 2012 में के के के कि कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismilwen/Indiadya-Ismilwenida 30% S.d. [80] Koni, Bilaspur - 495009 (C.G.)

Category of Course	Course Code	Course Title	Per	tod	-70	Theory Paper	
			L	T	P	C	
Industrial & Production Engage B. TECH-VIII Sens	IF\$-01741	Firm Clarent Method	3	T		*	Min Marks-60 Min Marks- Duration-Him

PENITE ELEMENT METROD (FEM)

UNIT-I

Basic Concept of FEM: Historical background, Basic comment and steps in FEM, Mathematical modeling of field problems in regimeering, Governing equations, Discrete and commons models, Basinlary and initial value problems, Our discretization become order equation, discretization, Linear and higher order elements, letterduction of FEM software and steps.

Matrix displacement formulation: Matrix displacement equations, solution of matrix displacement experience, techniques of saving computer memory constrainests. Finite element formulation.

DATE:

Natural Coordinate systems and Shape functions: Store concept of natural coordinate, 1-D and 2-D natural coordinate, Consuger of along functions, Consurgeror requirements, Pascal bringle, Shape functions for linear and plain elements, Shape functions using Lagrange polynomials. Shape functions for secondarity family elements, Deprading technique for rodes.

CNIT-III

Strate displacement nutritic Strain-displacement status for linear and plain element, Straindisplacement matrix for beam, Linear and plain elements.

Stiffness Statest: Corcept of element stiffness matrix for facur and plain elements. Stiffness matrix for bur & trusses. Stiffness matrix for facur and plain elements, Force suctors, Body factors and thermal loads. Plate and shell elements. Finite representation of infinite bodies. Element supert ratio. Quadrilaterst and higher order element vs much refractures.

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UNITS BY

Assembling of stiffness Matrix: Assembly of elemental matrices, boundary conditions and solution, Direct appearab, Strain crurgy, Castiglians's first theorem, Minimum potential courge, Galerkin's method, Galerkin's method applied to electric problems. Weighted Residual Methods, Variational formulation of boundary value problems, Retricted, to operate the formulations.

UNIT- V

Finite element Substitute Numerical integration and application to plane these problems. Solid mechanics and fact itemsful, Longitudinal vibration and mode stopes, Fourth order house equation, Transverse disflictions and natural frequencies, that, Transverse & Beans, Plane stress and plane strain problems. Use of higher under elements, Solidion of dynamic problems application to thermal problems, torsion of non-circular shafts.

Text Banks

- K.H. Huchner, and E.A., Thorton, "The Finite Element Methods for Engineers" John Wiley & Sons.
- R.D. Cook, Malkon, D.S. and Pleshn, M.E., "Concepts and Applications of Finite Element Analysis", 3 ed Ed., John Wiley & Sons.
- 3. S.S. Bao, Finite Element Method in Engineering, Butterworth Heinemann.
- 6. Hathe, K.J., "Finite Element Procedures", Prentice Hall of India, New Delhi.
- 5. Zienewiccz, O.C. and Taylor, R.L., "The Finite Element Methods", Vol.1 and Vol.2, McGraw Hill.
- 6. S.S.Bhavikatti, Finite element analysis, New Age Pul:
- 7. J.N., Reddy, An Introduction to Finite Useness Method, Tata McGraw Hill.
- 8. F. Seshu, Text Book of Finite Element Analysis, Prentice Hall, Nov Delhi.

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Department of Industrial & Presidential Engineering



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Category of Course	Course Code	Course Title	Pe	riad	6/3A	Theory Paper	
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Industrial & Production Engg R. TECH-VIII Sens	IPS-PET71	Fluid Power Control	3	1	5	+	Max Marks-60 Min Marks- Danation-Jilles

FLUID FOW EX CONTROL

CNIT 4

Introduction —what is fluid power, application of fluid power, component of fluid power system. Force pressure and head Specific weight, density specific gravity, bulk rendicts, viscosity, viscosity index.

Energy and Power in Hydranic System: Pount's law, continuity equation, commention of energy, hydronic power, Bernoull's equation, Torricell's theorem, the righest Energy power and flow rate in the SI onto.

CHIT -D

Hydrandic panage- introduction pumping theory, pumps classification, goar pump, vaso pump, pieces pump, pump Performance, pump Noise, pump solvetion, pump performance uning in SI can.

Hydraulic Cylinders and embloology introduction. Hydraulic Cylinders operating fastures, Cylinders operating and muchanism. Holough: Cylinder leads: that to moving meights, special cylinder designs, cylinder leading throught mechanical intege, hydraulic cylinder costsions, and hydraulic shock absorber.

CIVILIT-001

Hydraulic materia Introduction, limited roution Hydraulic materi, goar motors, name motors, Hydraulic motors framentical tempor, power and flow rate, Hydraulic motors performance, Hydraulic transmission, Hydraulic motors performance in monta unit.

Hydrantic rates: Hydrantic components spendure flow direction councils rates—proportional, serve, cartridge (logic) subvey. Hydrantic flows

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END -IV

Hydroutic Confuctor and Fittings: Introduction, conductor string for flow our requirement, pressure rating of conductors, steel pipes, steel taking, plastic taking, flexible bases, golds disconnect couplings, matric steel taking.

Hydraudic Circuit Design and Analysis: Introduction, control of single and double acting hydraulic cylinder, pemp hydraudic system, circuit, salve application, speed control of ractor and sylhaim; motor traking system, analysis of hydraulic system

STATE OF

Procusation: All proparation & components: bitricharities, compressor, fluid conditioner, analysis of mentions messwal from six, air control valves, Procusatic actuators

Presentific circuits and applications: dough consideration, pressure lower in pipe Sees, circuits, suspensystem, analysis.

Text books

- 1. Fluid power with application by Anthony Exposite by PHI publication.
- 2. Oil hydroxic system by Majordar by TMC publication

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Department of Industrial & Production Engineering:

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Category of Course	Course Code	Course Title	Pv	ried	e/Wi	ent.	Theory Paper	
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Industrial & Production Enga. B. TECH-VIII Seen	DS-PET_32	Robotics and Babot Application	3	T.		1	Max Marks-60 Min Marks- Duration-Wes	

BOROTICS AND ROBOT APPLICATIONS

UNIT-1

Introduction to Robotics: Evolution of robots and robotics, programive advancement in robots, definitions and classifications, have of robotics, robot assesses and robots stributes, repostability, accoracy and precious, burner are characteristics, robot specification and notations, concept of robots programming, the future prospects.

UNIT - II

Coordinate Frames, Mapping and Transforms: Coordinate Status, Spaint descriptions and transformations, Fundamental of translation, rotations and transformations, inverting a homogeneous transform, fundamental rotation matrices, year pitch and roll, year pitch and roll transformation, equivalent angle.

CNIT-III

Symbolic Modeling of Robots, Direct Kinematic Model: Mechanical structure and notations, description of links and joints, kinematic modeling of the manipulator, Denavit, Haranburg (D-H) representation, kinematic relationship between adjacent links, manipulator, transformation matrix, Asse, agastism.

CNIT-IV

Robotic Scenary and Vision: The recentry of serving, sensors in robotics, kinds of sensors used in robotics, robotic strains, industrial applications of vision-controlled robotic systems, process of imaging, architecture of robotic vision systems, image acquisition, description of other components of vision system, image processing. Artificial littlifigures (All) in robotics.

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Department of Indiamal & Production Engineering

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UNIT-V

Robot Controller & Applicational must central of orbot manipulation, Feedback and close loop central, Social-order linear systems. Trajectory following control. Modelling and control of single joint, Architectum of industrial robotic controllers. Architect must industrial applications, robotic application for centralities development & social more.

Text Books

- 1. Robotics & Control R.K. Mittel & LJ. Nagrath TMH Publications
- 2. Robotics for engineers Yoram Korean-McGops Hill Co.
- 3. Industrial Robotics Tachnology programming and Applications M.P.Grooner, M.Waine,
- Robotics Central Sensing, Vision and Intelligence K.S.Pu, R.C.Gonzalea, C.S.G.Lee-Mi-Graw Hill Book 40.
- 5. Kinematics and Synthesis of linkages Hartenberg and Denovit McGrpw HIII Book Co.
- 6. Kirematics and Linkage Design A.S. Hall Provice Hall
- 7. Kinengtics and Dynamics of Martinary J.Hinchhorn McGrew Hill Book Company

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UNIT-Pr

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CNIT-V

Advance powder metallargical process. Inchaique occarientes and its types process parameters and characteristics, mechanical alloying , process types and pursuasar , metal lejection mobiles , steps. impairment, design application and defent.

Microwave statering of metals - Applications is electrical and electronics including high temperature reperconductors. Stational arranson, reflectory, Publication methods of coranges.

Trut Books:

- 1. Foreign metallargy by F.C. angelo, R. subnemerion by PHI publication
- 2. Furdamentals of Proder Metallargy G.S.Upultaya Caratridge International Science Publishing:
- 3. Fundamentals Principles of Powder Metallurgy: W.R.Jones Edward Arrest Publishing.
- 4. First Course in Pewder Menallurgy: Honry Hauser Chemicals Publishing Company
- 5. Handbook Of Powder Matallargy : Hauser H.H and Mal M.K. Second Edition , Chemicals Publishing Company
- 6. Metals Handbook Vol.7 Powder Metallurgy : ASM 1998.

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Department of Industrial & Production Engineering.



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Koni, Bilaspur - 495009 (C.G.)

Subject code/SUBJECT	L.T.	125	Credit	
DOLTHSOUMATHEMATICS-0	3.1	1.0	4	

Module Sa: First order ordinary differential equations is been

Exact, linear and Bernoell's equations, Euler's equations, Equations not of first degree equations solvable for p, equations solvable for y, equations solvable for x and Chairma's type.

Module 5le Ordinary differential equations of higher orders (Proteguiote 2c, 4a) (8 hours) Second order linear differential equations with veriable coefficients, method of variation of parameters, Cauchy-Euler equation, Power saties solutions; Legendre polynomials, Bessel functions of the first kind and their proporties.

Madale Sc; Partial Differential Equations-First order(Preroquisite So-b) (8 hours).

First order partial differential equations, solutions of first order linear and non-linear PDEs. Module 5d: Partial Differential Equations Higher under(Prerequisite 5b-c) (18 hours). Solution to homogeness and non-homogeness linear partial differential equations second and higher order by complimentary function and perticular integral method. Flows, vibrations and diffusions, second-order linear equations and their classification, Initial and boundary conditions (with an informal description of well-persed problems), D'Alendoré's solution of the wave equation; Dubarnel's principle for one dimensional wave equation. Separation of variables method to simple problems in Cartesian coordinates. The Laplacian is plane, cylindrical and spherical polar coordinates, solutions with Bessel functions and Legendre functions. One dimensional diffusion equation and its solution by separation of variables. Boundary-value publishes: Solution of boundary-value problems for various linear PDEs in various geometries.

Taubooks/References:

- Erwin Kreyszig, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.
- W. E. Boyce and R. C. DiPrima, Elementary Differential Equations and Boundary Value Problems, 9th Edition, Wiley India, 2009.
- 3. S. L. Ross, Differential Equations, 3rd fid., Wiley India, 1984.
- E. A. Coddington, An Introduction to Ordinary Differential Equations, Prantice Hull India, 1995.
- 5. E. L. Ince, Onlinary Differential Equations, Dover Publications, 1958.
- G.F. Sizzewan and S.G. Krentz, Differential Equations, Tata McGraw Hill, 2007.
- S. J. Farlow, Parrial Differential Equations for Scientists and Engineers, Dever-Publications, 1993.
- R. R. Haberman, Elementary Applied Partial Differential equations with Fourier Series and Boundary Value Problem, 4th Ed., Prentice Hull, 1998.
- Ian Souddon, Elements of Partial Differential Equations, McGraw Hill, 1964.
- Manish Goyal and N.P. Ball, Transforms and Partial Differential Equations, University Science Press, Second Edition, 2010
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SERUSCE CODE/NAME	TL	T	114	Credit
РЕСТИКОЛСИВЛИЯТИ У	3		1.0	4

Cust-1 Cuscopt of Quantum Energy and Spectroscopy: Quantitation of Energy, Regions of quantum. Electronic Spectroscopy: Electronic Transition, Woodward Flesher roles for calculating & one of corpugated dicross & a Branchested carbonyl compound, various shifts in k..... and introsition lette Red Spectroscopy: Conditions for Infra Red Spectroscopy, Midocalar vibrations & factors affecting lefts Red Frequencies. [8 L.]

Unit-II Chemical Bending in Molecules: Introduction of chemical bonding, VSEPER Theory, V.B. Theory and Molecular Orbital Theory. Energy level diagrams of distornic molecules and ions. J. 16 L.I.

Exit-III Concept of Chirality, Ensettomers, Distributors, Meso-composeds and Review restaures. Conformation of Acyclic hydrocarbors (Ethane, Propose & o-Datane) and Cyclic hydrocarbon (Cyclobesane), Plane of symmetry, Center of symmetry, Absolute and Relative Configuration (E.A.S., D.&.L. and E.A.S.) [S.L.]

Unit-IV Reactivity of Organic Moloculus, Factors influencing acidity, basicity and nucleophilicity of molecules, kinetic vs thannoxlymatric control of reactions. [12 L.]

Dails-V Strategy Lie Synthesis of Organic Compounds: Reaction intermediates: Stability of Fran Radicle, Carbocation and Carbanion; Introduction to reaction involving Addition, Elimination, Substitution and Ring opening and Cyclication. | 16 L.]

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Koni, Bilaspur - 495009 (C.G.)

Subject code/NUME:	11.	T	TP	Credit
PERTESSE PROGRAMMENG FOR PROBLEM SOLVENS	73	14		11

Charles .

Introduction to Programming (3 lectures)

Introduction to components of a composer system (disks, memory, procusor, where a pengrum is stored and executed, operating system, compilers etc.) -

lides of Algorithm (3 hortaris): steps to unive logical and numerical problems. Representation of Algorithm: Howethert/Pseudo-code with examples.

From algorithms to programs; source code, variables (with data types) variables and memorylocations, System and Legical Errors in compilation, object and executable code.

Design 2

Arithmetic expressions and procedures (12 lectures)

Conditional Branching and Loops

Writing and evaluation of conditionals and consequent branching

Beratica and loops.

Arrays (6 lectures) Arrays (1-D, 2-D), Character arrays and orings.

Could B

Basic Algorithms (& Sectures)

Searching correcpt of Neary search atc., Basic Sorting Algorithms Buildle not sur. Finding mots of equations, introduction of Algorithm complexity

Child

Function (5 lectures)

Functions (including using built in libraries), Parameter passing in functions, call by value, Passing arrays to functions: idea of call by reference binary search etc.

Recursion functions (5 lectures) Recursion, as a different way of solving problems. Example programs, such as Finding Factorial, Fibranco arries, etc.

Cedt 3

Structure (4 Incharge)

Structures, Defining structures and Array of Structures

Pointers (3 Sections) bles of pointers. Defining pointers. Use of Pointers in self-referential errectator, cotion of Solical Set (no implementation)

Suggested Test Books

- (i) Byton Gottfried, Schwart's Outline of Programming with C, McGraw-HEL
- (ii) E. Bulagarcowarry, Programming in ANSI C, Tata McGraw-Hill

1 多斤利的

Suggested Reference Books

 Brian W, Kernighan and Dennis M. Ritchie. The C Programming Language. Prentice Hall of India

गुरु घासीदास विश्वविद्यालय कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Esmilwenyleatidelyth-Good hissenisch: 309 fc. Sel 300)

Koni, Bilaspur - 495009 (C.G.)

SURRECT CODE/SURRECT	IL IY	I P	Credit
IPOTTESCOENGINEERING MECHANICS	3.18	11	13

ENGINEERING MECHANICS

CONTINUE.

Introduction to Engineering Mechanics unsering, Force Systemiflusic concepts, Particle equilibrium in 2-D & 2-D; Rigid Rody equilibrium; System of Forces, Coplana: Concurrent Forces, Components in Space—Resolute! Moment of Forces and its Application Couples and Resultant of Force System, Equilibrium of System of Forces, Four hodydagrams, Equations of Equilibrium of Coplanar Systems and Systems.

RESIDED D

Priction covering, Types of Bricken, Limiting Bricken, Laws of Friction, Maticard Dynamic Friction, Mation of Budies.

Basic Structural Analysis covering, Equilibrium in three dimensions; Method ofSections; Method of Joseph Simple Trasses; Zero Bros murchers.

UNIT-DID

Centroid and Centre of Gravity sovering, Centroid of simple figures from firstprinciple, sourced of composite nactions; Centre of Gravity and its implications, Assumement of trarts. Definition, Monaret of inertia of plane maximum from first principles, Theorems of maximum of inertia, Maximum of inertia of standard sections and compositesections.

UNITED BY

Virtual Work and Evergy Method-Virtual displacements, principle of virtualwork for particle and ideal system of rigid bodies, degrees of freedom. Active force diagram, mechanical officiency.

Bardow of particle dynamics. Rectifineer motion, Newton's 2nd law (rectangular and path), Wards kinetic energy power, potential energy laugular-momentum; Impact (Direct and obligan).

UNIT-V

herodulitant to Kinglies of Rigid Bodies unversing. Build turner, general principleste dynamics: Types of restion, festamaneous contra of rotation in plane motion and simpleprolitores; DiAleraher's principle and its applications in plane motion and connected bodies; Work energy principle and its application in plane motion of connected bodies; Kinetics of rigid body retation;

Text/Reference Books:

- I. Irving H. Sharnes (2006), Engineering Mechanics, 4th Edition, Provice Hall
- F. P. Beer and E. R. Johnston (2011), Vector Mechanics for Engineers, Vol 1 Statios, Vol 11, -Dynamics, 9th Ed., Tata McGraw Hill
- Analy Raina and Rodra Pratap (2011), Introduction to Storics and Dynamics, Oxford. University Press
- 4. Shares and Ray (2006), Engineering Mechanics, Promon Education,
- 5. Baroad R.K. (2010), A Text Book of Engineering Mechanics, Lasent Publications
- 6. Kharei R.S. (2010), Engineering Mechanics, S. Chard & Co.
- 7. Tayal A.K. (2010), Engineering Mechanics. Umesh Publication

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गुरु घासीदास विश्वविद्यालय क्रिकेट के 2012 1 के कि के कि कि कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya #Ismilwen/Indiatotyte-Indianensis 30% Ed (III) Koni, Bilaspur – 495009 (C.G.)

SUBJECT CODE/SUBJECT	L	T	12	Credit
WITHHOLD HEMITER LAR	0	6	3	1.5

List of Experiments:

Group - At

- Standardization of solium thiosulphus solution by standard potentium dicherunts solution.
- To determine the Normality and Strength (g/L) of given Farross Ammonium Sulphate solution 'A' using standard Ferross Ammonium Sulphate (NORO solution 'B' taking KNthO6 solution as an intermediate.
- To descendes the concentration of hype solution OlacksDs,380sD) independently with given ladite (N°50) natures.
- Find out the Temporary hardness of given water sample using 8.01M SDTA, solution, buffer solution (pH-10) and EBT at an indicator.
- To determine obtained into it a given water tample by Argentometric method (Mohr's method)

George - Il:

- Preparation of Unia Formulability de resis.
- 7. Acetylation of Primary Amine: Preparation of Acetantiide.
- 8. Base Catalyard Aidel Confensation: Synthesis of Dibenzalpropunced
- 8. [4/2] Cyclouddition Reaction: Dich-Alder reaction.
- 18. Preparation of Asprin and calculate its yield.

Group - Ct.

- To calculate the lim of a given composed using UV-visible spectrophotometer.
- 12. To separate the metallic time by paper choosing nights.
- 13. To determine the surface termion of a figuid by stalagrameter.
- To determine the percentage composition of the given relature consisting of two liquids A and 5 (non-interacting system) by viscosity method.
- 15. To determine the relative viscosity of given liquids by Outwald's viscoouter.

Note: At least two Experiments from each group must be performed.

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Koni, Bilaspur - 495009 (C.G.)

SUBJECT CODE/NAME	11.17.19	Code
IPH/PESOL/PROCRAMMING FOR PROBLEM	0 6 3	1.5
SOLVING LAB		

The laboratory should be preceded or followed by a totorial to explain the approach

algorithm to be implemented for the problem given.)

Tutortal 1: Problem solving using computers Labil: Fundiarisation with programming environment

Tutorial 2: Variable types and type conversions

Lab 2: Simple computational problems using arthresis expressions

Tutorial Jr Branching and logical expressions: Lab 3: Problems involving if-then-che structures

Tutorial 4: Luops, while and für loops: Lab 4: Iterative problems e.g., nam of niries

Tatartal 5: 1D Arrays: searching, sorting: Lab 5: 1D Array munipulation

Tutorial & 2D armys and Strings Lab-& Matrix problems, String operation

Tutorial Tr Functions, call by value: Lab 7: Simple functions

Tutorial N.A.P: Numerical methods (Root finding, remerical differentiation, numerical integration)

CX THIS

Lab 8 and 9; Programming for school Numerical methods problems

Tatorial 10: Recursion, directors of meaning calls Lab-10: Recursive functions

Tetertal IE: Pointers, structures and dynamic memory allocation Lab III: Pointers and structures



ERRECT CODE/NAME	-11	T	10	Credit.
COPESSO WORKSHOP & MANUFACTURING PRACTICES	- 1	0	3	2.5

Lectures & videos 10 hours)

- Manufacturing Methods-castray, forming, machining, juriday, advanced manufacturing methods (1)
- 2. CNC suchings, Addition manufacturing (1 locuse).
- 3. Fitting operations & power tools (1 feeture)
- 4. Electrical & Electronics (Literate)
- 5. Carporary (1 Inches)
- 6. Plantic moulding, glass cotting (1 locture).
- 7. Metal conting (1 incture)
- 8. Welding law welding & gas welding), bearing (1 lecture)

Suggested Test/Reference Books:

- (i) High Choudbury S.K., Hojta Choudbory A.K. and Nielbar Roy S.K., "Bennests of Workshop Technology, Vol. 1 2008 and Vol. II 2010, Media promoters and publishers private limited, Mumbui.
- (ii) Kolpoldian S. And Steven S. School, "Manufacturing Engineering and Technology", 4Th edition, Pearson Education India Edition, 2002.
- (H) Gowel P, Haribanan and A. Sureth Baba," Manufacturing Technology-F Pourson Education, 2008.
- (iv) Roy A. Limberg, Processes and Materials of Manufacture, 4th edition, Prentice Hall India, 1998.
- (v) Ran P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGrawitiii House, 2017.





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SCHIECT CODE-SUBJECT	LT	P	Coult
DO PESSE ENGINEERING MECHANICS LAB	0.0	12	

Engineering Mechanics - Lab

List of Experiments

- Verification of law of paraflelogram of forces:
- 2. Verification of law of triangle of forces.
- Verification of law of polygon of forces by universal force table.
- 4. Verification of law of moment by parallel forces apparatus.
- 5. Practical sertification of forces in the member of jib crane.
- 6. Practical serification of forces in the number of the tress.
- Determination of coefficient of friction between two given nurfaces by inclined plane method.
- 8. Determination of efficiency of simple serve (ack.
- 9. Determination of efficiency of single purchase which crab.
- 10. Determination of afficiency of double purchase winch craft.
- 1). Detarrelisation of afficiency of simple wheel and aste-

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bencharton, Young's experiment, fluent of interference, Calment and non-colorest manner, freezels thepriors and

Difference of Egit; Fromit and Franchole's diffraction, difference due to place difference graing.

Hote-2: Electromagnetic Theory.

Conductive law, etectoresistics field and possessed, electric flow, Gauss' laws, Federative and Laplace's equation. Equation of continuity for charge conservation. Amproc's and Falsaky's lane, Viacontil's Electromogratic square

introduction, chementary time of spontaneous and simulated existing, solver medical, population recessors. Emergen emerification, Types of linears and importure applications of linears.

introduction to updoor fibers, fasts principles of optical fiber, critical angle, exercical spectrum, maximum acceptance single, statisfication of system fiber,

Cult 4: Session during Physics and Devices.

Formation of energy for solids, theory, been pay of restats, bushness and mentioned decisale and Extremit necessariators, Formit ignals in internal and analysis incommunitation, Electrical conductivity in continues and services between twoking at P.P. Taveton divides and Ripolar Javaton Hamilton

Com: 9: Introduction to Quantum Mechanics

Introduction to Quantum Variation. Photoglocals: effect. Company effect, representable duality, uncertainty principle, more fauntion, On-thropic variat, Photoglocal and George valuely. Daylosses and George experiences, Submitted and George valuely. reposition, pointicle in a loss (1-Directional).

Tent Books and References

- 1) Applied Physics Land II by Navenet Gopta, Obsope Rai-B. Co.
- 2) Engg. Physics by S. K. Selvanters and R. A. Vadav, New Age Pals, New Dallis
- 5) Tripp, Physics by Urox Muldarjie, Narosa Publication.
- 4) Frag. Physics by M. St. Aveilhandu, S. Chand Pub.
- Electricity and Magnetion by Rangersts and Mahajan, Tata McGraw HEL, 1998.
- Consepts of Physics Part -II by III. C. Neresi, Bharel Blazes (PMIX, 1998)
 Molleys Physics by Bellets, McCreen HIS Inc., New York, Publication 1985
- Modern Physics by Most and States, East West Press Pvs. Ltd. 1968
- Interoduction to Electrindynamics, David Gelfids
 Interoduction to Electrindynamics, David Gelfids
 I. S. Singh, flamiconductor Optoelectronics Physics and Technology, McGran-HEE Inc. (1909).
 I. C. A. Saloh and M. C. Stick, Fundamentals of Photoetics, John Wiley & Sons, Soc., 2001; 12) S. M. San, Semiconductor Disvious. Physics and Technology, Wiley (2008).

- 13) Yarly and P. Nils, Photonice Optical Electronics in Modern Corne entications, Oxford University Press, New York (2007)
- P. Bhattacharya, Sentendoctor Optodistrunic Devices, Prentor Hall of India (1997).
- (1) Deline course: "Semicorductor Optockeronies" by M 8, Shoroy on NPTEE.
- Hir Deline coores: "Optorheemotic Materials and Devisor" by Monton Kaliyar and Desput Gapta on NPTES.





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Koni, Bilaspur - 495009 (C.G.)

SUBJECT CODE/NAME	E T P Code
IPOTTENED BASIC ELECTRICAL ENGINEERING	3 1 6 4

Module L.: DC Circuits (8 hours)

Electrical circuit elements (R, L and C), voltage and current sources, Kirchoff current and voltage lines, analysis of simple circuits with the excitation, Superposition, Theorems and Norton Theorems. Time-domain analysis of first-order RL and RC circuits.

Module 2: AC Circuits (2 hours)

Representation of strusoridal waveforms, peak and mis values, phases representation, real power, treative power, apparent power, power factor. Analysis of single-phase ac circuits constrains of R. L. C. BL., BC, RLC conditantions juries and paralleli, resonance. Three-phase Balanced circuits, values and current relations in star and debts connections.

Module 3: Transfermers (6 hours)

Magnetic materials, IIH characteristics, ideal and practical transformer, equivalent circuit, lumin in manifements, regulation and efficiency: Auto-transformer and those-phase transformer connections.

Module 4: Electrical Muchines (8 hours)

Generation of rotating magnetic fields. Construction and working of a floor-plane induction motors, frignificance of torque-elip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-place induction motor. Construction, working, tempor-speed characteristic and speed control of separately excited de motor. Construction and working of synchronius generators.

Modele S: Pover Converters (5 hours)

DC-DC backs and hoost converters, thely ratio control. Single-phase and three-phase voltage source inverters, sinusoidal modulation.

Module 6: Electrical Installations (6 hours)

Components of LT Switchgean Switch Fase Unit (SPU), MCB, ELCB, MCCB, Types of Wires and Cables, Earthfung. Types of Baturies, Important Characteristics for Baturies. Elementary unlocalations for many consumption, power factor improvement and battery factors.

Suggested Text / Reference Books

(QD, P. Kotheri and L.J. Nagrath, "Basic Disortical Engineering", Tata McGraw Hill, 2010.

(ii)D. C. Kulshrodstu, "Basic Electrical Engineering", McGraw Hill, 2009.

(Figl., S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.

(iv)E. Hughes, "Electrical and Electronics Technology", Pearum, 2000.

(v)V. D. Toro, "Electrical Engineering Fundamentals", Premice Half India, 1880.

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गुरु घासीदास विश्वविद्यालय क्रिकेट के उप 21 के के के कि कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya

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Koni, Bilaspur - 495009 (C.G.)

Nahipet code	L	T	19	Credit
IPOLTBS91/ MATHEMATICS+	3.	3.1	- 0	4

Colculus (Slogde Variable)

Module 2a: Colescut; (6 hours)

Evoluties and involutes; Evaluation of definite and improper integrals; Hele and Camma functions and their properties; Applications of definite integrals to evaluate surface areas and volumes of evolutions. Ascerptore: definition, properties and problems.

Mindale Dr. Calvaher (5 lunns)

Rolle's theorem, Mean value theorems, Taylor's and Machazin fluorems with remainders; Indeterminant fluore and I. Ticopital's rate; Maxima and minima.

Module DesSeparators and series: (Prerequisite 200) 18 hours)

Convergence of sequence and series, tests for convergence, power series, Taylor's testus-Series for exponential, trigonometric and legarithmic functions. Fourier series 1848 range sine and cosine series. Parsocul's theorem.

Textbooks/References:

LCLB. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

- Vennegan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delbi, 2008.
- 3. Ramana B.V., Higher Engineering Mathematics, Tata McCinpo VEB New Delhi, 11 Reprint, 2010.
- N.P. Bali and Manish Goyal, A tent book of Engineering Mathematics, Laurai Poblications, Reprint, 2003.
- 5. H.S. Grewal, Higher Engineering Mediuristics, Khonna Publishers, 35th Edition, 2001.

Multivaciable Calculus

Ministra Ja: Multivariable Calculus (Differentiation) (Prerequinity 2b) (16 feors) Lieut, continuity and partial derivatives, direct issued derivatives, continuity and partial derivatives, direct issued derivatives; Tangent plans and narranal line: Maxima, ministra and saddle points; Nethod of Lagrange multiplants; Gradient, carl and divergence.

Madule 31c Multivariable Calculus (Integration) (Prorequisite 34) (10 hours)

Middiple Integration: double and triple integrals (Carlessan and polar), change of order of integration in double integrals, Change of variables (Carlessan to polar). Applications: areas and volumes by (double integration) Center of mass and Cravity (constant and variable densities). Theorems of Green, Gasso and Stokes, orthogonal convictions coordinates, Simple

applications involving unbes, sphere and rectangular parallelapipods.

Textbooks/References:

1.G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.

Vennumina T., Engineering Mathematics for first year, Tata McGraw-Hill, New Debi. 2008.

3-Ramana B.V., Higher Engineering Muthernatics, Tata McGraw Hill New Delhi, 11 Reprint, 2010.

 P. Buli and Manish Goyal, A test book of Engineering Mathematics, Lanni Publications, Reprint, 2010.

\$1510 V 310/10

5.B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.

Matrices and Linear Algebra

Mudule 4a: Matrices the case vector quaces is not to be taught) (14 licross)

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Koni, Bilaspur - 495009 (C.G.)

Algebra of matrices, lawers and tank of a matrix, mak-nullity theorem. System of linear equations, Systemetric, skew-systematric and orthogonal matrices; Determinants, Eigenvalues and eigenvectors; Disposalization of matrices; Cayley-Hamilton Theorem. Orthogonal transformation and quadratic to escential forms.

Module 4bcMatrices (in case vector spaces is to be taught) (K hours)

Matrices, vectors: addition and scalar multiplication, matrix multiplication; Linear systems of equations, linear independence, suck of a matrix, determinants, Cramer's Rule, inverse of a matrix, Grans elimination and Gauss-Jordan elimination.

Module 4c: Fester spaces (Prerequisite 4b) (50 hours)

Vector Space, linear dependence of vectors, basis, distantions, Linear transformations (maps), range and formed of a linear map, rank and callity, Inverse of a linear transformation, rankend by theorem, composition of linear maps, Marris associated with a linear map.

Medule 4d:Frotor spaces (Promprints 4h-c) (10 hours)

Eigenvalues, eigenvectors, symmetric, skew-symmetric, and orthogonal Matrices, eigenfuses. Diagonalization, laser product spaces, Grans-Schwidt orthogonalization.

Textbooks/References:

D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Colo, 2005.

 V. Krishnumurthy, V.P. Mainra and J.L. Arers, An introduction to Linear Algebra, Affillated Euro-West press, Reprint 2005.

3. Erwin Kreysolg, Advanced Engineering Mathematics, 9th Edition, John Wiley & Sons, 2006.

4. Vecrarajon T., Engineering Mathematics for first year, Tate McGraw-Hill, New Delhi, 2008.

S.N.P. Ball and Musick Goyal, A text book of Engineering Mathematics, Laurai Publications,

6.H.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 35th Edition, 2000.

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(A Compiliationary Emphasis by the Good National Society (APP No. 25 of 1987)

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Subject code	16	TY	P	Coult	-
IPETTHS01/ ENGLISH	1	- 0		13	-

Vocabulary Building

The concept of Word Formation, Root words from foreign languages and their use to English, Acquaintance with prefixes and suffixes from foreign languages in English to form derivatives. Symmetry, uncourse, and standard abbreviations.

2. Basic Writing Skills

Sentence Structures, the of physics and classes in semences, Importance of proper porchastion. Creating soborosco, Organizing principles of passgraphs in documents. Techniques for writing pressingly.

3. Identifying Common Errors in Writing

 I. Subject-verb agreement, Neur-process agreement, Misplaced modifiers, Articles, Propositions, Redworkercies, Clickin

4. Nature and Style of sensible Writing

Describing, Defining, Classifying, Providing examples of mideson, Writing introduction and conclusion.

5. Writing Practices:

Comprehension, Procis Writing, Ensay Witting.

6. Oral Communication (This unit involves interactive practice sessions in Language Laby

- Littering Comprehension
- Promunciation, Intonation, Stress and Rhydres
- Common Everythy Vincations: Conversations and Dialogues
- Communication at Workplace
- > Interviews
- > Formal Presentations

Suggested Readings:

- (i) Practical English Usage, Michael Swan, OUP, 1993.
- (ii) Remedial English Grammar, F.T. Wood, Macmillan 2007
- (iii)On Writing Wall, William Zironer, Harper Resource Book, 2001
- (iv) Study Writing, Liz Hamp-Lyons and Bun Hoady, Cambridge University Press, 2006.
- (v) Communication Skills. Sanjay Komar and PashpLata. Oxford University Press. 2011.
- (vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hydershad. Oxford University Press



गुरु घासीदास विश्वविद्यालय क्रिक्टिक क्षेत्र २०० २१ क्रिक्टिकेटिक कोनी, बिलासपुर - 495009 (छ.ग.)



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Koni, Bilaspur - 495009 (C.G.)

CODE/SUBJECT	L	1.7	7	CREDIT
POZTMCOS/EMVIRONMENTAL SCIENCES	1	ū		0

ENVIRONMENTAL STUDIES

Importance; Concept of continuouslidity and mentional development. Ecosystems: Structure and function of continuousliding for a continuousliding and mentional development. Ecosystems: Structure and function of continuous Easeign flow in an ecosystem food that the first and ecological necessation at Forest ecosystem b) Detectand ecosystems () Detect ecosystems () Aquatic ecosystems (possio, errores, fates, fivers, occurs, estimated). Natural Hermanian Removable and Score-etomorphic Removable Land recommend had use change; Land dependence, and ecosion and descriptionally. Defendation: Comme and land use change; Land Registration, and ecosion and descriptional or and trivial populations. Water, Use and propositional descriptions of earlies and ground water, floods, droughts, conflicts over water (intermalical & hours—energy removes. Honorously and monterpressible energy sources, use of alternate energy sources, growing energy reads, case studies. Blockversity and Conservation: Lavets of

Disdissently pursues and global tradissently has spire, belle as a magnification continue Endangered and confusion species of Jodin, Thouse as hindressay; Hebbut too, practing of wildlife, man whillife conflicts, histogical impairms Communities of Modificacity: brains and Excellenconsumed to a blood regulary. Recognition and blood reports survivant ficological, resonants, social, entitless, arethetic and informational value. Environmental Pollution: Environmental pollution: types, essents, effects and controls; Air, water, soil and noise pullettes. Nuclear houseds and former health risks. Solid wante management. Control measures of solun and industrial wants. Polistics case studies. Environmental Policies & Practices, Climate charge, global warrateg, occurs layer depletion, acid rain and Impacts on Summy consequities and agriculture, Environment Laws: Environment Prosession: Act, Air (Percention & Control of Pollution) Act; Water (Prevention and control of Pollution) Act; Wildlife Proposition Act, Force Conservation Act, International agreements Statement and Kyota promotels and Conceptation on Biological Diversity (CBD). Nature retorses, withit populations and rights, turnes withfule conflicts in feeline contest. However Communities and the Environment, Munan population generally (respects on vaniscourses, human health and walface, Hauptsbowent and rehabilitation of project affected persons; case studies. Dissente rearragement: floods, narthquake, systems and landelides. Environmental aurenteest Chipko, olimit valley, Bishnois of Rajastium foreironmental setting, note of fredien and other religious and cultures in environmental consuments. Environmental sessoriestics and juddic awareness, was studies (e.g., CNO vehicles in Delki). Field mark: View to on area to document environmental nauto: river' forme' floor/feans, etc. Visit to a local pullisted atte-Critical Residential Agricultural. Study of continue plants, insents, birds and basic principles of identification. Study of simple exceptores-poul, river siz-

biological diversity: greatly, specify and employee diversity. Eppergraphic scene of indis-

Suggested Randings:

- Gleick, P. M. 1903. Water in Cetals. Pacific Institute for Studies in Dev., Environment & Steckrity, Stockholm Evo. Institute, Outland Univ. Press.
- Grumbine, R. Edward, and Panils, M.K. 2013. Threats from India's Himsleys dams. Science, 339: 36--57.
- 3. Sengages, R. 2003. Ecology and summersize An approach to metabable development. OUP.
- Sodbi, N.S., Gifmon, L. & Ravon, P.H. (eds). 2013. Conservation Biology: Voices from the Tropics. John Wiley & Sons.



Carrie Book State of		
STRUCT CODE SUSDICT	11. 17. 17.	Coult
INCRESOVECE LAS	9 11 1	13

Littlef Experiments.

- To determine the wavelength of soften light with fulp of Freman's Neprism
- To determine the refractive index and dispersive power of the material of priors with the below of operators when. To determine the endions light by Newsen's stag method.
- To determine the wondungs of audium light by place diffraction grating using spe-
- To detromatistic the diffraction pattern and determine the wavelength of different patters of messary (notion) light using plane diffraction grating and spectromator.
- To determine the recordingth and recorder of lines pet are on a diffraction grating using semiconductor bear disely.
- To determine the specific rotation of sugar solution with the help of polarimeter.
- 8. Concretine the width of the single oft and distrator of circular system using Emothetic difficulties pattern produced by amboorductor boar dieds.
- To determine the Energy hand gap (E_a) of a semiconductor material using FN (section disab.
- 19. To determine the plot ratio by Thomson's method
- 11. In study the P-N junetise stude characteristics, in forwarded and revenue him conditions.
- To study the Zener clocks characteristics.
 To study the characteristics and gate of Transitor in U-Iz and C-E made.
- 13. Determine the Planck's commun.



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ALBERT CODENIAME		T	Cledit
PEPESSE BASIC ELECTRICAL EXCINEEDING LAB	0.		1

List of experiments/dommestrations:

- Itasic safety precautions, betraduction and use of measuring instruments—voltracter, american, multi-meter, oscilloscope. Real-life resistant, capacitors and industrie.
- Measuring the steady-state and transient time-response of R-L, R-C, and R-L-C circuits to a sten change in voltage (number once be observed on a storage medioscope).
- Sinusoidal steady state supposes of R-L, and R-C circuits—impedence coloulation and verification. Observation of plane differences between current and voltage. Resonanceln R-L-C circuits.
- Transformers: Observation of the no-load current waveform on an encillancepe (non-sinusoidalwave-shapeductoff-Housemonlinearityshouldbedownalorgwides discourse about barmonics). Loading of a transformer: recumerance of primary and secondary voltages and currents, and power.
- Three-phose transformers: Star and Delta connections. Voltage and Current relationships (Sinc-Ene softage, phose-to-exceed writage, line and phose currents).
- Phase-shifts between the primary and secondary side. Cumulative three-phase power in balanced three-phase circuits.
- Demonstration of our-out vertices of machine: do machine (commutator-brush arrangement), induction machine (squired cago rotor), synchronous machine (field winging slip ring arrangement) and single-phase induction machine.
- Torque Speed Characteristic of separately excited de motor.
- Synchronious speed of two and fear-pole, three-phase induction motors. Direction reversal by change of phase-sequence of connections. Torque-Slip Characteristic of an induction motor. Generator operation of an induction machine drivers at super synchronious speed.
- Synchronous Machine operating as a generator: stand-alone operation with a load. Control of voltage through field excitation.
- Demonstration of (a) dc-dc conveners (b) dc-ac conveners-PWM waveform (c) the use of dc-ac converter for speed control of as induction motor and (d) Components of LT switchgray.



गुरु घासीदास विश्वविद्यालय क्रिकेट के उप 21 के के के कि कोनी, बितासपुर - 495009 (छ.ग.)



Guru Ghasidas Vishwavidyalaya

A Committee way Smallest by the Cost of Navierties At 1989 Nr. 25 of 1989.

Koni, Bilaspur - 495009 (C.G.)

SUBJECT CODE SUBJECT	L.	IT:	12	Credit
IPEPESOSENCINEERING GRAPHICS & DESIGN	T	10		2.5
LAB - I - Commission of the Co				

ENGINEERING GRAPHICS & DESIGN

COURT 4

Introduction to Engineering Drawing

Principles of Engineering Graphics and their significance, usage of Drawing instruments, lettering, Conic sections including the Rectangular Hyperbola (General method only); Cycloid, Egicycloid, Hyperycloid and Involute; Scales - Plain, Diagnost and Vermon Scales.

UNIT-II-

Orthographic Projections

Principles of Orthographic Projections Conventions - Projections of Points and lines inclined to both planes; Projections of planes inclined Planes - Auxiliary Planes.

Protections of Regular Solals

feedined to both the Planes- Auxiliary Views, Deaw simple association, dimensioning and scale.

UNIT-III

Sections and Sectional Views of Eight Augular Solids

Prism, Cylinder, Pyramid, Cone-Aradiary Views; Development of surfaces of RightRegular Solids: Prism, Pyramid, Cylinder and Cone; Draw the sectional atthographic viewsoff geometrical solids, objects from industry and dwellings (Installation to slab only)

UNITED

Isometric Projections savering.

Principles of frommic projection. Immeric Scale, Inonetic Views, Conventionschorastric Views of Ines, Planes, Simple and compound Solids; Convention of Inonetric Views to Orthographic Views and Vice-versa, Conventions.

UNIT-Y

Overview of Computer Graphics

Esting the computer technologies that impact on graphical communication, Demonstratingknowledge of the theory of CAD uniforant justs as: The Mene System, Toolbars (Standard Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crassburn, Coordinate System), Dialog boxes and windows, Shortest eternas (Buston Barck, The Command Line Outers applicable). The Status Bar, Different methods of more as used in CAD, Spirat and muse objects; Institute Views of Ruce, Plance, Simple and compound Solids [.

Suggested Text/Reference Books:

- Bhott N.D., Panchol V.M. & Ingle P.R., (2014). Engineering Drawing, Charatar Publishing House
- (ii) Shah, M.B. & Rana B.C. (2008), Engineering Drawing and Computer Graphics, Pearson Education
- (iii) Agraval B. & Agraval C. M. (2012), Engineering Graphics, TMH Publication
- (iv) Nanayana, K.L. & P. Kannaiah (2008), Text-book on Engineering Drawing, Science Bublishees
- (v) (Corresponding set of) CAD Software Theory and User Manuals.