



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 401

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: FLUID

R01

MECHANICS &

PAPER CODE:

HYDRAULIC MACHINES

RATIONALE

This course is intended to introduce basic principles of fluid mechanics. It is further extended to cover the application of fluid mechanics by the inclusion of fluid machinery especially water turbine and water pumps. Now a days the principles of fluid mechanics find wide applications in many situations directly or indirectly.

The use of fluid machinery, turbines pumps in general and in power stations in getting as accelerated fill up. Thus there is a great relevance for this course for mechanical technicians.

The Mechanical technicians have to deal with large variety of fluids like water, air, steam, ammonia and even plastics. The major emphasis is given for the study of water. However the principle dealt with in this course will be applicable to all incompressible fluids.



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COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: FLUID

R01

**MECHANICS &
HYDRAULIC MACHINES**

PAPER CODE:6254

SCHEME OF STUDIES

Lectures: 05 Hrs. per Week

Practical: 03 Hrs. per Week

S.No.	Topics	Theory Hrs	Practical Hrs	Total Hrs
1	Fundamentals of fluid flow	06	-	06
2	Pressure and its measurement	08	07	15
3	Basic equation of fluid flow	06	08	14
4	Flow through orifice and mouth pieces and the flow measurement.	06	07	13
5	Flow through notches and weirs	06	06	12
6	Flow through pipes.	07	03	10
7	Impact of jets	08	02	10
8	Water turbines.	08	04	12
9	Water pumps.	08	08	16
10	Model analysis	06	-	06
11	Hydel Power stations.	06	-	06
Total		75	45	120



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COURSE CODE: **401**

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: **FLUID**

R01

MECHANICS &

PAPER CODE:6254

HYDRAULIC MACHINES

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
1	Fundamentals of Fluid Flow : Definition of fluid, ideal and practical, compressible and incompressible fluids, fluid properties-density, specific weight, specific gravity, dynamic and kinetic viscosity, types of flow- laminar and turbulent, steady and unsteady, uniform and non-uniform. Continuity equation, Simple numerical problems on continuity equation.	06
2	Pressure and Its Measurement: Concept of pressure, intensity of pressure, Pascal's law, pressure head, gauge pressure, vacuum pressure, absolute pressure, manometers- Piezometer, U-tube manometer inclined manometer, differential manometer ,inverted U-tube manometer Pressure gauges, Bourdon tube pressure gauge. Simple numerical problems on differential manometers.	08
3	Basic Equation of Fluid Flow: Various form of energies applicable to fluid flow, potential energy, kinetic energy, pressure energy, total energy of fluid flow, Concept of datum pressure, velocity and total head of a fluid particle in motion. General steady flow energy equation, Bernaulli's theorem, assumptions made in deriving Bernaulli's theorem and derivation of Bernaulli's theorem, practical applications of Bernaulli's equation: venturimeter, orifice- meter, pitot tube, flow nozzle- Their construction, working and limitation. Simple problems on venturimeter, orifice meter, pitot tube.	06
4	Flow Through Orifices and Mouth Pieces and flow measurement: Definition and types of orifices, Vena contracta, coefficient of contraction., velocity, discharge and resistance . Torricell's theorem experimental determination of Cc, Cv and Cd. Head loss due to sudden enlargement, contraction and obstruction in pipe. Mouth pieces, Time of emptying vessel by orifice (cylindrical, conical) Flow from one vessel to another large orifices. Flow measurement by Rota meter, Volume flow meter	06



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Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
5	Flow Through Notches and Weirs : Weirs and notches definition, Classification, flow over rectangular weir with and without velocity of approach, calibration of rectangular weir, different formula for large rectangular weir. Time required to empty a reservoir with rectangular weir, V-notch. Advantages of triangular notch over rectangular notch. Trapezoidal notch. Broad crested and submerged weirs. Practical application of weirs. Spillway and Siphon spillway, guage weir.	06
6	Flow Through Pipes : Laminar and turbulent flow, Reynold's number, differentiation of laminar and turbulent flow on the basis of Reynold's number, loss of head due to friction in pipes, Darcy's formula and Chezy's equation. Hydraulic gradient and total energy line. Flow through long pipes, pipes in series and parallel simple problems based on above formulae water hammer and its effect surge tank.	07
7	Impact of Jets : Impact of Jet on flat and curved plates stationary and moving, work done by Pelton wheel, velocity triangle, simple numerical problems on axial, radial flow.	08
8	Water Turbines : Meaning Classification Impulse and reaction turbine, Comparison description and working of Pelton, Francis and Kaplan turbines, Fanlaws specific speed & Selection of turbines.	08
9	Water Pumps : Centrifugal and reciprocating- principle construction, working classification and layout. Comparison of centrifugal and reciprocating pumps. Specific speed, selection of pumps. Use of air vessels in reciprocating pump, indicator diagram, horse power calculation in case of reciprocating pump. Horse power calculation in case of centrifugal pump. Operating characteristics.	08



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Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
10	Model Analysis : Geometric, Kinetic and dynamic similarity. Simple Problems.	06
11	Hydel Power Station : Schematic diagram, function of various elements, advantage over other power stations.	06



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LIST OF EXPERIMENTS

Practical: 03 Hrs. per Week

S.No.	EXPERIMENT	PRACT. Hrs.
1	To measure the pressure of water in pipe by (a) Piezometer (b) different types of monometers	07
2	To verify Bernaulli's equation.	02
3	To determine discharge through a given venturimeter.	02
4	To determine discharge through a given orifice meter.	02
5	To determine discharge through a Pitot tube.	02
6	To determine Cc, Cv and Cd for different types of orifices and mouth pieces.	07
7	To determine loss of head due to : (a) Sudden enlargement. (b) Friction in pipes.	03
8	To determine discharge through different types of notches.	06
9	Study of Pelton wheel, Francis turbine, and Kaplan turbines.	04
10	To determine performance characteristics.	02
11	Study of reciprocating pump.	02
12	To determine h.p. of reciprocating pump.	02
13	Study of centrifugal pump.	02
14	To determine operating characteristics of centrifugal pump.	02



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REFERENCE BOOKS

- 1** A text Book of Hydraulics, Fluid Mechanics and Hydraulic Machines. by Khurmi (S. Chand & Co.)
- 2** Fluid Machines by M. Manohar
- 3** Hydraulics & Hydraulic Machines by Dr. Jagdish lal (Metropolitan)
- 4** Hydraulics & Hydraulic Machines by Priyani.
- 5** Fluid Machines With Engineering Applications by R.L. Draught lery & A.C. Jugersoll. (McGraw Hills)
- 6** Journal of experiments in Hydraulic Laboratory by V. N. Rao & Husan New Heights.
- 7** Fluid Mechanics by Dr. M.L. Mathur (Std. Publications).
- 8** Taral Yantriki Avum Machinery (Hindi) by G.B. Bamanker. (Deepak Prakashan, Gwalior).



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COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: THERMAL

ENGINEERING

PAPER CODE:

RATIONALE

Mechanical engineers have to work with various power producing & power absorbing devices like boilers, turbines, compressors, pumps etc. In order to understand the principles, construction & working of these devices, it is essential to understand the concept of energy, work, heat & conversion between them. Hence it is important to study the subject of Thermal Engineering which is a core subject. It includes the study of various sources of energy, basic laws & concept of thermodynamics, gas laws, properties of steam & generation. Heat transfer forms the basis for different power engineering application. Boilers find application in different process industries. Steam turbines and condensers are the major component of any steam power plant. Mechanical engineer should understand working and application of these devices.

Objectives: The Students should be able to:

1. Know various sources of energy & their applications.
2. Apply fundamental concepts of thermodynamics to thermodynamic systems.
3. Understand various laws of thermodynamics.
4. Apply various gas laws & ideal gas processes to various thermodynamic systems.
5. Calculate properties of two phase system by using steam tables/ Mollier charts.
6. Explain construction & working of boilers, mountings & accessories.
7. Understand the working of I. C. Engines and its components.
8. Understand the working of steam turbine and use of nozzles and condensers



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SCHEME: JUL. 2008

COURSE CODE: 402

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: THERMAL

ENGINEERING

PAPER CODE:6255

SCHEME OF STUDIES

Lectures: 05 Hrs. per Week

Practical: 03 Hrs. per Week

S.No	Topic	Theory Hrs	Practical Hrs	Total Hrs.
1	Dimensions and systems of units.	02	-	02
2	Sources of Energy	08	06	14
3	Basic concept of thermodynamics	08	-	08
4	First law of thermodynamics	06	-	06
5	Second law of thermodynamics.	06	03	09
6	Ideal gases and gas processes	06	03	09
7	Thermodynamics cycles.	06	03	09
8	Two phase system	08	03	11
9	Steam generators	05	09	14
10	Steam Nozzle, Condensers and Turbines	06	03	09
11	I.C. engines.	08	09	17
12	Heat transfer	06	06	12
Total		75	45	120



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SEMESTER: **FOURTH SEMESTER**

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COURSE CODE: **402**

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: **THERMAL**

ENGINEERING

PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
1	Dimensions and systems of units: Basic and Derived units for common engineering variables and properties like mass, length, time, temperature, area, volume, velocity, acceleration, force, pressure, work, heat, energy, power etc.	02
2	Sources of energy: Brief description of energy sources Classification of energy sources, Renewable, Non-Renewable, Fossil fuels, including CNG, LPG; Solar Energy- Its nature, merits and demerits, potential; Flat plate and concentrating collectors & their application. Solar Water Heater, Solar Air Heater, Photovoltaic Cell, Solar Distillation; Wind, Tidal, Geothermal, Biogas, Biomass, Bio-diesel, Hydraulic, Nuclear, Fuel cell – list of fuel cells	08
3	Basic Concepts of thermodynamics: Definition and importance of thermodynamics, thermodynamic system open, closed and Isolated system, boundary and surrounding forms of energy. Point and path functions, properties of system intensive and extensive properties thermodynamic state, thermodynamic process, cycles thermodynamic definition of work, heat and thermodynamic equilibrium, Zeroth law of thermodynamics, Quasi-static process, work done during Quasi Static process.	08
4	First Law of Thermodynamics: Concept of heat reservoir, heat source and heat sink, Statement of first law, Mathematical representation, applications of first law to open and closed system. Concept of internal energy and its calculation, relationship between heat transfer, work transfer and change in internal energy. Differentiation between shaft work, flow work and displacement work; Steady flow energy equation and its application to various units such as boiler, nozzle, turbine compressor enthalpy.	06



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NAME OF THE COURSE: **THERMAL**

ENGINEERING

PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
5	Second Law of Thermodynamics: Limitation of first law. Statements of second law Kelvin, Planck and Clausius statements, Concept of heat pump, refrigerator and heat engine thermal efficiency. Parameters affecting thermal efficiency, means of increasing efficiency, COP. Equivalence and irreversible processes. Factors which make a process irreversible. Reversible cycle. Carnot cycle its efficiency and limitation ; Carnot theorem Clausius Inequality, concept of entropy, Principle of increase of entropy, determination of increase of entropy, principle of increase of entropy, determination of increase of entropy, Statement of third law of thermodynamics.	06
6	Ideal Gases and Gas Processes: Definition of an ideal gas, gas law, characteristics gas equation, specific and universal gas constants specific heat constant pressure and specific heat, constant volume. Ideal gas processes- isobaric isothermal, isentropic, polytropic and throttling process as applied to open and closed systems. Representation of these processes on P-V, T-S and H-S diagrams. Computation of change in enthalpy, entropy and internal energy. Net heat transfer and work done.	06
7	Thermodynamic Cycles: Air Standard cycles- definition and purpose standard efficiency, Carnot, Otto Diesel dual and Brayton cycles, their representation on P.V. & T.S. Diagrams. Derivation of air Standard efficiency and their comparison and limitation of each cycle. Vapour power cycle - Carnot cycle its limitation, Rankine cycle modified Rankine cycle- their representation on P.V.T.S. and H.S. Planes, derivation of expression for thermal efficiency.	06



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Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
8	Two Phase System: Pure substance phase, phase changes steam as a two phase system steam formation and its representation on temp-enthalpy plane. Properties changes, representation of wet dry and saturated and superheated steam on P.V., T.S. and H.S. planes. Dryness fraction of steam, methods of determination of dryness fraction separation and throttling calorimeter. Use of steam tables and Mollier's diagram . Determination of change in properties such as entropy enthalpy internal energy and work and heat transfer in the following processes- isobaric, isochoric, isothermal, isentropic, polytropic, throttling, and representation of various processes on P.V. and H.S. planes.	08
9	Steam Generators: Definition, classification, working of Babcock and Wilcox Boiler and Lancashire, Boiler Mountings and accessories.	05
10	Steam Nozzle, Condensers and Turbines: Steam nozzle and its use, Condenser-Classification, construction and working of surface condenser, Classification, working principle of steam turbines, difference between impulse and reaction turbine, compounding of steam turbine, velocity diagram (introductory and its use) Governing of steam turbine.	06
11	Internal Combustion Engines: Introduction, classification I.C. Engine Components and their function, working of two stroke and four- stroke cycle engines and their comparison. Indicator diagram, Calculation of IHP, BHP thermal efficiency, Mechanical efficiency and relative efficiency, Governing, Cooling and lubrication of I.C. Engines.	08



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ENGINEERING

PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
12	Heat Transfer: Modes of heat transfer; Conduction convection and Radiation. Fourier's law of heat conduction, temperature gradient, expression for determination of heat transfer across a flat plate, thermal conductivity and thermal resistance. Newton's law for heat transfer by convection, free and forced convection. Heat transfer by radiation Stefan-Boltzmann Law of thermal radiation. Define the terms- absorptivity, reflectivity and transmissivity; black body, emissive power, grey body. Heat exchanger; Shell and tube, Plate type and their applications.	06



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ENGINEERING

PAPER CODE:

LIST OF EXPERIMENTS

Practical: 03 Hrs. per Week

S.No.	EXPERIMENT	PRACT. Hrs.
1	Study and trial on solar water heating system	03
2	Report on visit to wind power generation plant / biogas plant / hydraulic power plant.	03
3	Trace the flue gas path and water-steam circuit with the help of boiler model and write a report.	03
4	Study or Report on visit to sugar factory / Dairy / steam power plant with specifications of boiler and list of mountings and accessories..	03
5	Study of separating and throttling calorimeter.	03
6	Study of steam turbine.	03
7	Study of different types of I.C. engines (four stroke and two stroke C.I. and S.I.)	03
8	Study of various systems of I.C. engines. (a) Fuel supply system (b) Cooling system (c) Ignition system (d) Government system. (e) Lubrication system	06
9	Study of (a) Fuel pump (b) Fuel injector (c) Carburetor.	03
10	Study and compare various heat exchangers such as radiators, evaporators, condensers, plate heat exchangers etc.	03
11	Numerical on vapour processes and ideal gas processes (minimum two problems on each)	06



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LIST OF EXPERIMENTS

Practical: 03 Hrs. per Week

S.No.	EXPERIMENT	PRACT. Hrs.
12	Two phase systems equilibrium diagram on p-v , T-s, h-s plane	03
13	Study of flow of heat in natural environment at least 10 cases and relation to second law of thermodynamics	03



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PROGRAMMES:

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ENGINEERING

PAPER CODE:

REFERENCE BOOK

- 1** Engineering Thermodynamics by P. K. Nag, Tata McGraw Hill Ltd.
- 2** Engineering Thermodynamics, C. P. Gupta, Rajendra Prakash
- 3** Thermal Engineering by P.L. Ballani. (Khanna Publisher's N. Delhi)
- 4** A Course in thermodynamics And Heat Engines by Kothanandran, Khajuria and Arora (Dhanpat Rai & Sons Delhi)
- 5** Treatise On Heat Engineering by Vasandani & Kumar (Metrocopolitan Book Co. Ltd, New Delhi)
- 6** Thermodynamics by G.T. Van Wylene (john Wiley & Sons)
- 7** Thermodynamic And Heat Engines Vol . I & II by R. Yadav. (Central Book Depot, Allahabad)
- 8** Heat Power by Kashitish Chandra Pal (Orient Longman Hyderabad)
- 9** I.S. 2986- 1966.
- 10** Tapiya Abhiyantriki (Hindi) by G.B. Bamankar (Deepak Prakashan, Morar Gwalior) .



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SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 403

COMMON WITH

PROGRAMMES:

**NAME OF THE COURSE: THEORY OF
MACHINES**

**R01
PAPER CODE:**

RATIONALE

The work of mechanical and production engineer is not only to supervise, run and plan production processes, but also include fault diagnosis and prevention of breakdowns. This can only be done, if he is familiar with the working of basic mechanism used on shop floors and in machines, how they fail and what are the loads coming on different members and different joints of the machines.

The aim of the course is to provide acquaintance of the basic mechanism and machines to the students. This will enhance their capability of fault diagnosis and of taking corrective measure, which in turn will reduce the down time.



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COURSE CODE: 403

COMMON WITH

PROGRAMMES:

**NAME OF THE COURSE: THEORY OF
MACHINES**

R01

PAPER CODE:6256

SCHEME OF STUDIES

Lectures: 05 Hrs. per Week

Practical: 03 Hrs. per Week

S. No.	Topics	Theory Hrs	Practical Hrs	Total Hrs
1	Simple mechanism	08	06	14
2	Velocity and acceleration of points and links.	12	04	16
3	Dynamic force analysis, crank effort diagram and flywheel	10	04	14
4	Brakes and Dynamometers	10	04	14
5	Power Transmission	10	08	18
6	Governors	06	04	10
7	Cams and followers	06	04	10
8	Balancing of machine parts	04	04	08
9	Vibrations	04	02	06
10	Gear and gear trains	05	05	10
	Total	75	45	120



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SEMESTER: **FOURTH SEMESTER**

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COURSE CODE: **403**

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PROGRAMMES:

NAME OF THE COURSE: **THEORY OF
MACHINES**

R01
PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
1	Simple Mechanism: Introduction of theory of machines, definitions- statics, dynamics, kinematics, kinetics, kinematic pair, kinematic chain, mechanism, machine inversions, relation between number of links, number of joints and number of pairs, Four bar chain and its inversion, Slider crank chain and its inversions.	08
2	Velocity and Acceleration of Points and Links : Angular and linear velocity, relative and absolute velocity, velocity in links. Instantaneous centre, locating instantaneous centre of rotation, velocity determination of four bar mechanism by relative velocity method, Acceleration of link centripetal and tangential, total relative and absolute acceleration. Velocity and acceleration diagrams for four bar and other mechanisms. Klein's construction for single slider crank mechanism. Analytical method of calculating the velocity and acceleration of piston in a reciprocating engine mechanism.	12
3	Dynamic force analysis, Crank Effort Diagrams and Flywheel : Dynamics of reciprocating engine mechanism. Inertia force due to reciprocating mass, piston effort crank effort, turning moment on crank shaft, Analytical and graphical methods of construction of turning moment diagrams for steam and I.C. engines. Fluctuation of energy and speed. Coefficient of fluctuation of energy and speed. Flywheel and its function . Calculation of moment of inertia. weight of flywheel for steam and I.C. engines.	10
4	Brakes and Dynamometers: Brakes - need, types, braking force, braking torque. band brakes, block brakes, internally expanded brakes, dynamometer- meaning, need and types . Simple numerical calculation on above items	10



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R01

PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
5	Power Transmission : Drives : meaning, Classification, belt, chain, rope and gear drives. Flat and ' V ' belt, ratio of tensions . Slip length of belt calculation for open and cross belt drive. H.P. transmitted. Effect of centrifugal force, centrifugal tension, total tension maximum stress in belt. Maximum Power transmitted. Velocity for maximum H.P. condition. V-Belt drives, advantages and disadvantages of V-Belt drives. Rope Drives : Types, ratio of tensions, Designation of ropes as per B.I.S. Chain Drive : Classification, designation of chain drives as per B.I.S.	10
6	Governors : Functional difference with flywheel. Classification : Watt, porter, proell and hartnell- their construction and working. Sensitivity, stability, power and effort, hunting phenomenon and isochorism of governor.	06
7	Cams and Followers : Need, Classification. motion of follower Displacement, velocity and acceleration diagrams uniform velocity, uniform acceleration and retardation. Simple harmonic motion. Cam profile for radial. offset knife edged follower.	06
8	Balancing of Machine Parts : Concept Static and dynamic balancing of rotating parts. Simple numerical problems on static balancing of several masses in single plane graphical and analytical method.	04
9	Vibrations : Introduction elements of vibration. System classification and explanation of the types of vibration according to the actuating force on the body like undamped vibration. Free damped vibration and forced damped vibration. Classification and explanation of the types of vibration according to the number of degrees of critical speed of shaft.	04



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COURSE CODE: 403

COMMON WITH

PROGRAMMES:

**NAME OF THE COURSE: THEORY OF
MACHINES**

R01

PAPER CODE:

Lectures: 05 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
10	Gear and Gear Train: Introduction , classification of gears , gear terminology , law of gearing ,velocity of sliding , forms of teeth – cycloid profile teeth , involutes profile teeth, path of contact, arc of contact. Interference in involutes gear , minimum no of teeth in gear and pinion classification of gear train . Function of idler. Calculation of velocity ratio, train value of gear train- simple, compound epicyclic and reverted gear train, motor car gear box.	05



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PROGRAMMES:

**NAME OF THE COURSE: THEORY OF
MACHINES**

**R01
PAPER CODE:**

LIST OF EXPERIMENTS

Practical: 03 Hrs. per Week

S.No.	EXPERIMENT	PRACT. Hrs.
1	Study of inversions of four bar chain mechanism	02
2	Study of inversions of single slider crank chain mechanism (a) crank slotted lever mechanism (b) Whitworth quick return motion mechanism	04
3	Dynamic force analysis of single cylinder four stroke engine.	06
4	Study of flywheel	02
5	Study of governor	04
6	Study of different cam and follower	04
7	Study of different gear trains	05
8	Study of power transmission methods	08
9	Study of different types of break and dynamometer	04
10	Study of types of vibration and their measurement methods	02
11	Study of dynamic balancing procedure of rotating parts	04



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 403

COMMON WITH

PROGRAMMES:

**NAME OF THE COURSE: THEORY OF
MACHINES**

R01

PAPER CODE:

REFERENCE BOOKS

- 1** Theory of Machines by J.M. Shah & H.M. Jadhvani.
- 2** Theory of Machines by Abdulla Shariff
- 3** Theory of Machines by M.R. Malhotra & H.C. Gupta. (Technical India Pub.)
- 4** Theory of machines by P.L. Ballani .
- 5** Theory of Machines by Thomas Bevan .
- 6** Theory of Machines by S. S. Ratan.
- 7** Theory of Machines By R.S.Khurmi
- 8** Theory of Mechanism and Machine By Jagdish Lal



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

**NAME OF THE COURSE: INDUSTRIAL
MANAGEMENT**

PAPER CODE:

RATIONALE

Diploma pass-outs are generally engaged in middle level management. It is found necessary to impart the diploma pass-outs at final year level certain concepts, principles, procedures and understanding of management techniques so that he is brought out to a fairly high level of competency in "supervisor-ship."

The course has two aspects - behavioral science and mathematical approach towards management.

Behavioral science includes communication skills, grievance handling, motivation, morale and leadership.

Mathematical approach includes PPC, CPM, PERT and Inventory management. It has been felt necessary to provide the students knowledge about newer trends in management like TQM, JIT, ISO and role of Computers.

It is hoped that the course will help the students to be successful in middle management role.



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

**NAME OF THE COURSE: INDUSTRIAL
MANAGEMENT**

PAPER CODE:6129

SCHEME OF STUDIES

Lectures: 04 Hrs. per Week

SR. NO.	TOPIC	SCHEME OF STUDIES		
		Hrs. of Study		
		Theory	Practical	Total
1	INTRODUCTION	02	-	02
2	SYSTEM THINKING	02	-	02
3	MATERIALS MANAGEMENT	10	-	10
4	PRODUCTION PLANNING AND CONTROL	08	-	08
5	VALUE ANALYSIS	02	-	02
6	PROJECT PLANNING BY NETWORK	10	-	10
7	INDUSTRIAL RELATIONS	06	-	06
8	SUPERVISION AND LEADERSHIP	06	-	06
9	ORGANISATIONAL DYNAMICS	06	-	06
10	OPERATIONS RESEARCH	04	-	04
11	NEW TRENDS IN MANAGEMENT	04	-	04
	TOTAL	60	-	60



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

NAME OF THE COURSE: INDUSTRIAL

MANAGEMENT

PAPER CODE:

COURSE CONTENT

Lectures: 04 Hrs. per Week

SR. NO.	DETAILED COURSE CONTENT
1	INTRODUCTION : Definition and functions of management. Management theories - Decision, Quantitative, Mathematical and Behavioral Science.
2	SYSTEM THINKING : System definition and parameters. Different production and non-production systems, system design, different types of models under system thinking.
3	MATERIALS MANAGEMENT : Introduction, function, purchase systems, stock turn-over, ordered quantity. Inventory, need of inventory control, EOQ and simple numerical problems on EOQ. Safety stock, different techniques of inventory control, ABC analysis (simple treatment only). Stores management - storing procedure and store records.
4	PRODUCTION PLANNING AND CONTROL : Production systems, characteristics of each type, production and consumption rate. PPC functions, Gantt chart, advantages and preparation of Gantt chart (simple cases only), Critical ratio scheduling.
5	VALUE ANALYSIS : Concept of cost and value, types of value, objectives and procedure of value analysis, VA test, DARSIRI method of VA.
6	PROJECT PLANNING BY NETWORK : Network definition, objectives. CPM and PERT, activity, event, network formation, Fulkerson's rule, dependency of activities, dummy activity, duration, EST, EFT, LST, LFT, EPO, LPO, Total float and Free float. Network analysis in tabular form.
7	INDUSTRIAL RELATIONS : Need, objectives and functions of personnel management, job analysis and job description, recruitment procedure, selection, difference between recruitment and selection, training and its advantages. Communication in industry - its need and importance, techniques and barriers of communication. Grievances - its meaning and factors responsible for grievances, procedure for handling grievances. Strikes and Lock-out. Motivation - meaning and its benefits, techniques of motivation. Morale - definition and importance, factors responsible for high morale. Job satisfaction - factors influencing job satisfaction.



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

**NAME OF THE COURSE: INDUSTRIAL
MANAGEMENT**

PAPER CODE:

Lectures: 04 Hrs. per Week

8	SUPERVISION AND LEADERSHIP : Meaning and role of Supervisor in an industry. Older workers and their supervision. Concept of Leadership, qualities of good leader, leadership styles.
9	ORGANISATIONAL DYNAMICS : Characteristics and principles of Organisation, Modern organisational approach, types of organisation, meaning and significance of various types of organisation, resistance to change, factors for reducing the resistance to change.
10	OPERATIONS RESEARCH : Definition and concept of OR, methods of OR, simple Linear Programming problem formulation and solution by Graphical method.
11.0	NEW TRENDS IN MANAGEMENT :
11.1	Role of computers in management, Introduction to Management Information System (MIS).
11.2	Total Quality Management (TQM) - Introduction, stages of development - Inspection, Quality Control, Quality Assurance, Total Quality Control, TQM.
11.3	Introduction to ISO-9000.
11.4	Deming's PDCA Cycle (Plan, Do, Check and Action).
11.5	Japanese Quality Management, culture, Kaizen Strategy (continuous improvement), Quality Circle, Just In Time (JIT) - concept and application.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

**NAME OF THE COURSE: INDUSTRIAL
MANAGEMENT**

PAPER CODE:

REFERENCE BOOKS

1. Learning Package on Industrial Management
Publisher : TTTI, Bhopal.
2. CPM and PERT - Principles and Applications
By L.S.Shrinath
3. Industrial Engg. and Management
By O.P.Khanna.
Khanna Publisher.
4. Industrial Organisation and Management
By K.K.Ahuja
5. Modern Production Operation Management
By Buffa
Wiley Eastern Ltd. (latest edition)
6. Production Operation Management
By Goel B.S.
Pragati Prakashan.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 404

COMMON WITH

PROGRAMMES:

R01, E01, E03, I02, M02

NAME OF THE COURSE: INDUSTRIAL

MANAGEMENT

PAPER CODE:

MEMBERS OF CURRICULUM DEVELOPMENT

1. Shri V.M.Shah, Principal, Ujjain Poly. College, UJJAIN.
2. Shri C.G.Dhabu, Principal, Women's Poly. College, INDORE.
3. Shri R.K.Moondra, I/C HMED, Ujjain Poly. College, UJJAIN.
4. Shri Arun Nagrani, W/S Supdt., Shri Vishnav Poly. College, INDORE.
5. Shri P.K.Uppal, Astd. W/S Supdt., Women's Poly. College, INDORE.
6. Shri A.K.Jain, Sr. Lect., Shri Vishnav Poly. College, INDORE.
7. Shri Rajeev Namdeo, Lecturer, Shri Vishnav Poly. College, INDORE.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 411

COMMON WITH PROGRAMMES:

C/M/E/

RAC/CTM/AUTO/

ETE/ /OPTO/PRINT/TEXT/

PLASTIC/MOM

NAME OF THE COURSE: ENTREPRENEURSHIP

PAPER CODE:6046

RATIONALE

Since long entrepreneurship has been recognized as an essential ingredient of economic development . Concept of entrepreneurship has varied from time to time to suit the changing ethos of socio-economic reality. It was applied to business for the first time in 18th century, to designate a dealer who buys and sells goods at uncertain prices. Later on an entrepreneur was considered a dynamic agent of change, or the catalyst who transformed increasingly physical, natural and human resources, into corresponding production possibilities. In recent years, managerial aspects of entrepreneurship are being emphasized. It employs innovativeness, an urge to take risk in the face of uncertainties, and intuition, i.e. a capacity of seeing things in a way which afterwards proves to be true.

The course is kept in soft core under DCS, DME and DEE/ Videography/ Arch/CDDM/ Garment/ MOM/ Prod/ RAC/ MOM/CTM/ Auto/ Comp/ ETE/ IT/ Opto/ Print/ Textile technology to bring to surface certain common characteristics such as perception of economic opportunity, technical and organizational skills, managerial competence, and motivation to achieve result.



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 411

COMMON WITH PROGRAMMES:

C/M/E/ /

RAC/CTM/AUTO/

ETE/IT/OPTO/PRINT/TEXT/

PLASTIC/MOM

NAME OF THE COURSE: ENTREPRENEURSHIP

PAPER CODE:6046

SCHEME OF STUDIES

Lectures: 06 Hrs. per Week

S.NO.	TOPICS	THEORY HRS.)	PRACT.(H RS.)	TOTAL
1.	INTRODUCTION TO ENTREPRENEURSHIP	10	-	10
2.	INDUSTRIES AND BUSINESS ORGANIZATIONA	12	-	12
3.	INSTITUTIONAL ASSISTANCE	12	-	12
4.	INCENTIVS/ CONCESSION/ FACILITIES AVAILABLE TO SSI ENTERPRENEUR	12	-	12
5.	PLANNING OF INDUSTRIAL UNIT	20	-	20
6.	ACHIVEMENT MOTIVATION	12	-	12
7.	FINANCIAL MANAGEMENT OF AN INDUSTRIAL UNIT (SSI)	12	-	12
	TOTAL	90	-	90



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 411

**COMMON WITH PROGRAMMES:
C/M/E/RAC/CTM/AUTO/ETE/OPTO/
PRINT/TEXT/PLASTIC**

NAME OF THE COURSE: ENTREPRENEURSHIP

PAPER CODE:6046

COURSE CONTENT

Lectures: 06 Hrs. per Week

S. NO.	DETAILED COURSE CONTENT
	<p>1. INTRODUCTION TO ENTERPRENEURSHIP</p> <ul style="list-style-type: none">• Definition of Entrepreneur / Entrepreneur• Difference between Entrepreneurship / Entrepreneurship• Need for Entrepreneurship• qualities of successful entrepreneur• Myths about Entrepreneurship• Classification of entrepreneurs on the basis of different criteria• Reasons for the failure of entrepreneurs <p>2. INDUSTRIES AND BUSINESS ORGANIZATIONS</p> <ul style="list-style-type: none">• Concept of Industry or Enterprise• Classification of Industries(a) On the basis of capital investment<ul style="list-style-type: none">- Tiny (Micro) Industry- Small Scale- Medium Scale- Large Scale(b) Others<ul style="list-style-type: none">- Rural Industry- Cottage Industry(c) Forms of Business Organization<ul style="list-style-type: none">- Proprietorship- Board & Co-operative- Partnership- Public Ltd.- Private Ltd.- IT Sector- Government Co-operative / Undertakings(d) Tiny small scale Industry<ul style="list-style-type: none">- Definition- Its significance in National Development.- Govt. policies for SSI promotions- Sector / Product for SSI. <p>3. INSTITUTIONAL ASSISTANCE</p> <ul style="list-style-type: none">(a) Types of Institutional assistance<ul style="list-style-type: none">- Infra - structural assistance

- Technical Assistance
- Financial assistance
- Marketing Assistance
- (b) Information / guidance & Training
 - SISI
 - MPCON
 - CED- MA
 - ASK
 - CSIR
 - NRDC
- (c) Infrastructure
 - D/C
 - AVN/AKVN
- (e) Finance
 - SIDBI
 - NABARD
 - KVIB
 - MPWDC
 - M.P.A.V.V.N.
 - MPFC
 - NSIC
- (d) Marketing
 - MP- AGRO
 - NSIC
 - PM.LUN
 - EXPORT COPPORATION
 - KVIP
 - MPHSVN
 - MPLDC
- (e) Quality Control
 - BIS
 - FPO
 - MPLUN
 - F.D.A.
 - AG. MKT. Board

4. INCENTIVES / CONCESSION / FACITLITIES AVAILABLE

- Seed money
- Incentive / subsidies
- Others (Phones, Lands etc)

5. PLANNING OF AN INDUSTRIAL UNIT (SSI)

- Pre- Planning Stage
 - Scanning the environment
 - Market survey
 - Seeking information
 - product / project selection
- Implementation Stage
 - PPR Preparation
 - DIC registration
 - Arrangement of Land
 - Arrangement of Power
 - Obtaining NOC / Licenses from various departments
 - DPR Preparation
 - Seeking financial assistance
 - Commercial Production
- Post Implementation stage
 - Permanent registration from D.I.C.
 - Availing Subsidies
 - Diversification / Modification
 - Setting up of marketing channel / Distribution.

6. ACHIVEMENT MOTIVATION

- Historical perspective
- Concept of achievement motivation
- Significance of achievement motivation
- Development of achievement motivation

7. FINANCIAL MANAGEMENT OF AN INDUSTRIAL UNIT (SSI)

- Tools of financial analysis
- Ratio analysis
- Fund Flow / Cash flow analysis
- Working capital and concepts
- Financial accounting



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 411

**COMMON WITH PROGRAMMES:
C/M/E/RAC/CTM/AUTO/ETE/OPTO/
PRINT/TEXT/PLASTIC**

NAME OF THE COURSE: ENTREPRENEURSHIP

PAPER CODE:6046

PROJECT WORK/ASSIGNMENT

1. To prepare chart to showing various factors affecting entrepreneurship.
2. To collect details related to various schemes run by the Govt. for Self-Employment and Entrepreneurship.
3. To identify and select a project and conduct Market-Survey thereof.
4. To collect various formats used in industries & departments/institutions working in the field of entrepreneurship.
5. Visit few small scale industries situated in city, nearby industrial area.
6. Discuss the problems related to SSI (Small Scale Industries) with an entrepreneur.
7. Collect information about market rates quality and quantity of goods for their choice.
8. Develop logical and analytical approach to purchase the raw material / finished goods
9. To prepare case study of successful entrepreneurs.
10. Preparation of Project report for the industry/ Business they are willing to start.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 411

COMMON WITH PROGRAMMES:

C/M/E/RAC/CTM/AUTO/ETE/OPTO/

PRINT/TEXT/PLASTIC

NAME OF THE COURSE: ENTREPRENEURSHIP

PAPER CODE:6046

REFERENCES

1. Entrepreneurial Development Vol. I,II,III
By Vasant desai Himalaya Publicaton
2. CEDMAP (Center of Entrepreneurial development Madhya Pradesh)
3. Udyamita Vikas
By Anand Prakashan



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 412

COMMON WITH PROGRAMMES:

CME /CTM/TEX TECH/MOM/R01

NAME OF THE COURSE: MARKETING MANAGEMENT

PAPER CODE:5181

RATIONALE

In the Era of Globalization and Liberalization, this course of Marketing Management is of utmost important to the entrepreneur, industrialist and people working in the field of Marketing and related work.

This course specially designed to help the students in widening their knowledge and understanding of the current market trends and also helpful to start their career in their respective fields along with the knowledge of marketing.

To produce something is not very difficult but to make people come forward to buy it is very difficult task. This statement shows the importance and need of this course in the present scenario.



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 412

COMMON WITH PROGRAMMES:

CME /CTM/TEX TECH/MOM/R01

NAME OF THE COURSE: MARKETING MANAGEMENT

PAPER CODE:5181

SCHEME OF STUDIES

Lectures: 06 Hrs. per Week

Sr .no	DETAILED COURSE CONTENTS	HRS
1	MARKETING AND CONCEPT	08
2	MARKETING ENVIRONMENT	06
3	MARKETING PLANNING AND ORGANISATION	08
4	MARKET SEGMENTATION	06
5	MARKETING MIX	06
A	PRODUCT MANAGEMENT	08
B	PLACE MANAGEMENT	08
C	PRICE MANAGEMENT	08
D	PROMOTION MANAGEMENT	08
6	UNDERSTANDING CONSUMERS	06
7	MARKETING RESEARCH AND SALES FORECASTING	10
8	SALES MANAGEMENT	08
	TOTAL	90



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: **FOURTH SEMESTER**

SCHEME: **JUL. 2008**

COURSE CODE: **412**

COMMON WITH PROGRAMMES:

CME /CTM/TEX TECH/MOM/R01

NAME OF THE COURSE: **MARKETING MANAGEMENT**

PAPER CODE:5181

Lectures: 06 Hrs. per Week

S NO.	DETAILED COURSE CONTENT
1	MARKETING & CONCEPT
1.1	Evolution of marketing-a historical background
1.1.1	The stage of barter
1.1.2	The stage of money economy
1.1.3	The stage of industrial revolution
1.1.4	The stage of competition
1.1.5	The emergence of marketing
1.2	Selected definitions of marketing
1.3	Different concept of marketing
1.3.1	The exchange concept
1.3.2	The production concept
1.3.3	The product concept
1.3.4	The sales concept
1.3.5	The marketing concept
1.4	Difference between selling & marketing
1.5	Benefits & significance of marketing
1.5.1	Helps to remove causes for under development
1.5.2	Improve productivity & efficiency
1.5.3	Canalize country's economic resources properly
1.5.4	Insure better deal for consumer
1.5.5	Make economic planning meaningful & relevant etc.
2	Marketing environment
2.1	Internal & external factors
2.1.1	Demographic environment
2.1.2	Economic environment
2.1.3	Political environment
2.1.4	Physical environment
2.1.5	Technological environment
2.1.6	Competitive environment

2.1.7	Social & cultural environment
2.2	Micro & macro environment
3	Marketing planning & organization
3.1	Scope & importance of planning
3.2	Steps in marketing planning process
3.3	Purpose & principle of organization
3.4	Models of marketing organization
3.4.1	Line & staff type
3.4.2	Product based organization
3.4.3	Territory oriented organization
3.4.4	Complex organization
3.5	Task of chief marketing executive
3.6	Decentralization
4	Market segmentation
4.1	Types of market
4.2	Definitions & benefits of segmentation
4.3	Methods of segmentation
4.3.1	Geographic segmentation
4.3.2	Demographic segmentation
4.3.3	Psychographic segmentation
4.3.4	Buyer behavior Segmentation
4.3.5	Volume segmentation
4.4	Steps in market segmentation
4.5	Market targeting
5	Market mix
5.1	Definition of market mix
5.2	Elements of marketing mix (4 P'S)-Product,Place,Price,Promotion
5.3	Environmental variable (uncontrollable variables)
5.3.1	Customer variable
5.3.2	Competition variable
5.3.3	Trade variable
5.3.4	Environmental variable
5.4	Product management

5.4.1	<p>Components of product</p> <ul style="list-style-type: none"> • The core or basic constituent • The associated features • The brand names, package, label
5.4.2	<p>Types of product</p> <ul style="list-style-type: none"> • The generic product • The branded product • The differentiated product • The customized product • The augmented & potential product
5.4.3	The product line & product mix
5.5	New product development (NPD)
5.5.1	Significance & classification of new product
5.5.2	Stages in NPD
5.5.3	Estimating the demand for new product
5.5.4	Test marketing
5.6	Product life cycle (PLC)
5.6.1	Concepts & benefits of PLC
5.6.2	Different stages in PLC
5.6.3	Strategies used in different stages
5.7	Place management
5.7.1	<p>Physical distribution</p> <ul style="list-style-type: none"> • Definitions & importance of physical distribution • Designing the physical distribution system
5.7.2	<p>The distribution channel</p> <ul style="list-style-type: none"> • The role & importance of distribution channel • Planning & designing of distribution channel • Types of distribution intermediaries
5.8	Price management
5.8.1	The meaning & importance of pricing
5.8.2	Objectives of pricing
5.8.3	Factors affecting pricing –Internal & external
5.8.4	<p>Pricing methods</p> <ul style="list-style-type: none"> • Cost based pricing • Break even pricing • Demand based pricing • Competition based pricing • Product line pricing • Tender pricing • Affordability pricing • Differentiated pricing
5.8.5	Pricing policies & setting the price

5.9	Promotion management
5.9.1	Sales promotion <ul style="list-style-type: none"> • Importance & objectives of sales promotion • Tools & techniques of sales promotion
5.9.2	Advertising <ul style="list-style-type: none"> • Role & importance of advertising • Types of advertising • Deciding on the advertising budget • Evaluating advertising effectiveness
5.9.3	Difference between sales promotion & advertising
6	Understanding consumer
6.1	Factor influencing buyer behavior <ul style="list-style-type: none"> • Information from variety of sources • Socio-cultural environment of buyer • Group influence • Religion & language • Concern about status
6.2	Buying motives –Product & patronage motive
6.3	Buying habits – Convenience, shopping and spatiality goods
7	Marketing research & sales forecasting
7.1	Definition & importance of marketing research
7.2	Steps in marketing research <ul style="list-style-type: none"> • Defining problem • Problem analysis • Developing research design • Developing research procedure • Data collection –Primary & secondary • Analyzing & interpretation • Summarizing & preparing the research report
7.3	Method of market research
7.4	Necessity & purpose of sales forecasting
7.5	Methods of sales forecasting
8	Sales management
8.1	Designing the sales force

8.2	Managing the sales force <ul style="list-style-type: none">• Recruitment & selection• Training, compensation, control• Supervision & direction• Motivation of salesman
8.3	Fixing sales quota
8.4	Duties & responsibilities of sales manager



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 412

COMMON WITH PROGRAMMES:

CME /CTM/TEX TECH/MOM/R01

NAME OF THE COURSE: MARKETING MANAGEMENT

PAPER CODE:5181

LIST OF REFERENCE BOOKS

1. Marketing management - Analysis, Planning & Control - Philip Kotler
2. Principles & practice of Marketing in India - C.B.Memoria & R.L.Joshi
3. Contemporary Marketing – Louis & Bone & David L. Kurtz
4. Essential of Management –Koontz
5. Marketing management- S.A. Sherlekar



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: FOURTH SEMESTER

SCHEME: JUL. 2008

COURSE CODE: 406

COMMON WITH

PROGRAMMES:

**NAME OF THE COURSE: PROFESSIONAL
ACTIVITIES**

A03, R01

PAPER CODE:

RATIONALE:

In today's competitive world, the nature of organizations is changing at very rapid speed. In this situation the responsibility of diploma holder is not unique. He will be a part of a team in the organization. As such the individual skills are not sufficient to work at his best.

This subject will develop the student as an effective member of the team. It will develop the abilities and skills to perform at highest degree of quality as an individual as well as a member of core group or team. Such skills will enhance his capabilities in the field of searching, assimilating information, managing the given task, handling people effectively, solving challenging problems.

This subject is classified under humanity science

OBJECTIVES:

THE STUDENTS WILL BE ABLE TO:

1. Developing working in teams
2. Apply problem solving skills for a given situation
3. Use effective presentation techniques
4. Apply techniques of effective time management
5. Apply task management techniques for given projects
6. Enhance leadership traits
7. Resolve conflict by appropriate method
8. Survive self in today's competitive world
9. Face interview without fear
10. Follow moral and ethics
11. Convince people to avoid frustration



RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MECHANICAL ENGINEERING

SEMESTER: **FOURTH SEMESTER**

SCHEME: **JUL. 2008**

COURSE CODE: **406**

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: **PROFESSIONAL
ACTIVITIES**

A03, R01

PAPER CODE:

Lectures: 02 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
1	SOCIAL SKILLS SOCIETY, SOCIAL STRUCTURE, DEVELOP SYMPATHY AND EMPATHY	01
2	Swot Analysis – Concept , How to make use of SWOT	01
3	Inter personal Relation Sources of conflict, Resolution of conflict , Ways to enhance interpersonal relations.	02
4	Problem Solving I)STEPS IN PROBLEM SOLVING, 1)IDENTIFY AND CLARIFY THE PROBLEM, 2)INFORMATION GATHERING RELATED TO PROBLEM, 3)EVALUATE THE EVIDENCE, 4)CONSIDER ALTERNATIVE SOLUTIONS AND THEIR IMPLICATIONS, 5)CHOOSE AND IMPLEMENT THE BEST ALTERNATIVE, 6)REVIEW II)Problem solving technique. (any one technique may be considered) 1) Trial and error, 2) Brain storming, 3) Lateral thinking	02
5	Presentation Skills Body language -- Dress like the audience Posture, Gestures, Eye contact and facial expression. PRESENTATION SKILL – STAGE FRIGHT, Voice and language – Volume, Pitch, Inflection, Speed, Pause Pronunciation, Articulation, Language, Practice of speech. Use of aids –OHP,LCD projector, white board	03



RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL

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SCHEME: **JUL. 2008**

COURSE CODE: **406**

COMMON WITH

PROGRAMMES:

NAME OF THE COURSE: **PROFESSIONAL
ACTIVITIES**

A03, R01

PAPER CODE:

Lectures: 02 Hrs. per Week

S.NO	CONTENT	STUDY Hrs.
6	<p>Industrial Visits Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form a part of the term work. TWO industrial visits may be arranged in the following areas / industries :</p> <ul style="list-style-type: none">i) Manufacturing organizations for observing various manufacturing processes including heat treatmentii) Material testing laboratories in industries or reputed organizationsiii) Auto workshop / Garageiv) Plastic material processing unitv) ST workshop / City transport workshop	07
7	<p>Lectures by Professional / Industrial Expert be organized from ANY</p> <p>THREE of the following areas :</p> <ul style="list-style-type: none">i) Use of a plastics in automobiles.ii) Nonferrous Metals and alloys for engineering applicationsiii) Surface Treatment Processes like electroplating, powder coating etc.iv) Selection of electric motors.v) Computer aided drafting.vi) Industrial hygiene.vii) Composite Materials.viii) Heat treatment processes.ix) Ceramicsx) Safety Engineering and Waste elimination	07



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S.NO	CONTENT	STUDY Hrs.
8	<p>Individual Assignments : Any two from the list suggested</p> <ul style="list-style-type: none">a) Process sequence of any two machine components.b) Write material specifications for any two composite jobs.c) Collection of samples of different plastic material or cutting tools with properties , specifications and applications.d) Preparing models using development of surfaces.e) Assignments on bending moment , shear forces , deflection of beams and torsion chapters of strength of material.f) Select different materials with specifications for at least 10 different machine components and list the important material properties desirable.g) Select 5 different carbon steels and alloy steels used in mechanical engineering applications and specify heat treatment processes employed for improving the properties. Also give brief description of the heat treatment processes.h) List the various properties and applications of following materials – a. Ceramics b. fiber reinforcement plastics c. thermo plastic plastics d. thermo setting plastics e. rubbers. <p>OR</p> <p>Conduct ANY ONE of the following activities through active participation of students and write report</p> <ul style="list-style-type: none">i) Rally for energy conservation / tree plantation.ii) Survey for local social problems such as mal nutrition, unemployment, cleanliness, illiteracy etc.iii) Conduct aptitude , general knowledge test , IQ testiv) Arrange any one training in the following areas :<ul style="list-style-type: none">a) Yoga. B) Use of fire fighting equipment and First aid <p>Maintenance of Domestic appliances.</p>	08



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S.NO	CONTENT	STUDY Hrs.
9	Group discussion and Interview technique – Introduction to group discussion, Ways to carry out group discussion, Parameters— Contact, body language, analytical and logical thinking, decision making The students should discuss in a group of six to eight students and write a brief report on the same as a part of term work. Two topics for group discussions may be selected by the faculty members. Some of the suggested topics are - i) Sports ii) Current news items iii) Discipline and House Keeping iv) Current topics related to mechanical engineering field. INTERVIEW TECHNIQUE NECESSITY, TIPS FOR HANDLING COMMON QUESTIONS	03
10	Working in Teams UNDERSTAND AND WORK WITHIN THE DYNAMICS OF A GROUPS. TIPS TO WORK EFFECTIVELY IN TEAMS, ESTABLISH GOOD RAPPOR, INTEREST WITH OTHERS AND WORK EFFECTIVELY WITH THEM TO MEET COMMON OBJECTIVES, TIPS TO PROVIDE AND ACCEPT FEEDBACK IN A CONSTRUCTIVE AND CONSIDERATE WAY , LEADERSHIP IN TEAMS, HANDLING FRUSTRATIONS IN GROUP	. 02
11	Task Management INTRODUCTION, TASK IDENTIFICATION, TASK PLANNING ,ORGANIZING AND EXECUTION, CLOSING THE TASK	02
	TOTAL	38



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CONTENTS:

Lectures: 02 Hrs. per Week

Assignment: (Any Eight Assignment)

1) SWOT analysis:- Analyse yourself with respect to your strength and weaknesses, opportunities and threats. Following points will be useful for doing SWOT.

- a) Your past experiences,
- b) Achievements,
- c) Failures,
- d) Feedback from others etc.

2) Undergo a test on reading skill/memory skill administered by your teacher.

3) Solve the puzzles.

4) Form a group of 5-10 students and do a work for social cause e.g. tree plantation, blood

donation, environment protection, camps on awareness like importance of cleanliness in

slump area, social activities like giving cloths to poor etc. (One activity per group)

5) Deliver a seminar for 10-12 minutes using presentation aids on the topic given by your teacher.

6) Watch/listen an informative session on social activities. Make a report on topic of your

interest using audio/visual aids. Make a report on the programme.#####

7) Conduct an interview of a personality and write a report on it.

8) Discuss a topic in a group and prepare minutes of discussion. Write thorough description of

the topic discussed

9) Arrange an exhibition, displaying flow-charts, posters, paper cutting, photographs etc on the

topic given by your teacher.

Note: - Please note that these are the suggested assignments on given contents/topic. These

assignments are the guide lines to the subject teachers. However the subject teachers are free to

design any assignment relevant to the topic. The **term work** will consist of any eight assignments.

MINI PROJECT ON TASK MANAGEMENT. DECIDE ANY TASK TO BE

COMPLETED IN ASTIPULATED TIME WITH THE HELP OF TEACHER.

WRITE A REPORT CONSIDERING VARIOUS STEPS IN

TASK MANAGEMENT.



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Learning Resources:

Books:

Sr. No	Author	Title of the book	Publisher
1	Marshall Cooks Adams	Time management	Viva Books
2	E.H. Mc Grath , S.J.	Basic Managerial Skills for All	Pretice Hall of India, Pvt Ltd
3	Allen Pease	Body Language	Sudha Publications Pvt. Ltd.
4	Lowe and Phil	Creativity and problem solving	Kogan Page (I) P Ltd
5	by Adair, J	Decision making & Problem Solving	Orient Longman
6	Bishop , Sue	Develop Your Assertiveness	Kogan Page India
7	Marion E Haynes	Make Every Minute Count	Kogan page India
8	Steven L McShane and Mary Ann Glinow	Organizational Behavior	Tata McGraw Hill
9	Stephen P. Robbins	Organizational Behavior	Pretice Hall of India, Pvt Ltd
10	Michael Hatton	Presentation Skills	(Canada – India Project) ISTE New Delhi
11		Stress Management Through Yoga and Meditation	Sterling Publisher Pvt Ltd
12	Richard Hale ,Peter Whilom	Target setting and Goal Achievement	Kogan page India
13	Chakravarty, Ajanta	Time management	Rupa and Company
14	Harding ham	Working in Teams	A Orient Longman



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INTERNET ASSISTANCE

1. <http://www.mindtools.com>
2. <http://www.stress.org>
3. <http://www.ethics.com>
4. <http://www.coopcomm.org/workbook.htm>
5. <http://www.mapfornonprofits.org/>
6. <http://www.learningmeditation.com> <http://bbc.co.uk/learning/courses/>
7. <http://eqi.org/>
8. <http://www.abacon.com/commstudies/interpersonal/indisclosure.html>
9. <http://www.mapnp.org/library/ethics/ethxgde.htm>
10. http://www.mapnp.org/library/grp_cnfl/grp_cnfl.htm
11. <http://members.aol.com/nonverbal2/diction1.htm>
12. http://www.thomasarmstron.com/multiple_intelligences.htm
13. <http://snow.utoronto.ca/Learn2/modules.html>
14. <http://www.quickmba.com/strategy/swot/>