

CURRICULAM FOR
DIPLOMA IN
CIVIL ENGG.

FOURTH SEMESTER

Implemented From Session 2015-16
Under Credit Based grading System



SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL
DIPLOMA IN CIVIL ENGINEERING

SEMESTER: **FOURTH SEMESTER**
COURSE CODE: **401**
NAME OF THE COURSE: **ADVANCE SURVEYING**

PAPER CODE:6276

CONTENT

S no	Course content
1	PLANE TABLE SURVEY : Principles of plane table survey. Accessories required. Setting out of plane table , Leveling ,Centering and orientation. Methods of plane table surveying – Radiation, Intersection, and Traversing. Merits and Demerits of plane table Surveying. situations where plane table survey is used. Use of Telescopic Alidade.
2	THEODOLITE SURVEY: Components of Transit Theodolite and Their functions. Technical terms used. Temporary adjustments of Transit Theodolite. Swinging the telescope, Transiting, Changing the face. Measurement of Horizontal angle, method of Repetition, errors eliminated by method of repetition. Measurement of Deflection angle. Measurement of Vertical angle. Measurement of magnetic bearing of a line by Theodolite. Prolonging a Straight line. Sources of errors in Theodolite Surveying. Permanent adjustment of transit Theodolite (only relationship of different axes of Theodolite.) Traversing with Theodolite – Method of included angles, locating details, checks in closed traverse,Calculation of bearings from angles. Traverse Computation - Latitude, Departure Consecutive Co-ordinates error of Closure, Distribution of a angular error, balancing the traverse by Bowditch rule and Transit Rule, Gale’s traverse table. simple problems on above topic.
3	TACHEOMETRIC SURVEY: Principle of Tacheometry. Essential requirements of Tacheometer. Use of Theodolite as a Tacheometer with staff held in vertical and fixed hair method (No derivation). Determination of tacheometric constants, simple numerical problems on above topics
4	CURVES: Types of curves used in road and railway alignments. Notations of simple circular curve. Designation of curve by radius and degree of curves. Method of Setting out curve by offset from Long chord method and Rankine’s method of deflection. angles. Simple Numerical problems on above topics.



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NAME OF THE COURSE:**ADVANCE SURVEYING**

5	ADVANCED SURVEY EQUIPMENTS: Construction and use of one second Micro Optic Theodolite, Electronic Digital Theodolite. Features of Electronic Theodolite Principle of E.D.M, Components of E.D.M and their functions, use of E.D.M. Total station
6	AERIAL SURVEY AND REMOTE SENSING: Aerial Survey Introductions, definition, Aerial photograph. Remote Sensing – Introduction, Electro-Magnetic Energy , Remote sensing system- Passive system , Active system. Applications – mineral, land use / Land cover, Natural Hazards and Environmental engineering system.



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LIST OF EXPERIMENTS

S no	Course content
1	Using accessories carry out temporary adjustments of plane table. Locating details by method of Radiation.
2	Locating details with plane table by method of intersection.
3	Understanding the components of Theodolite and their functions, reading the vernier and temporary adjustments of theodolite.
4	Measurement of Horizontal angle by transit theodolite.
5	Measurement of Horizontal angle by method of Repetition.
6	Measurement of vertical angles by theodolite.
7	Measurement of Magnetic bearing of a line using theodolite.
8	Measurement of deflection angle by taking open traverse of 4 –5 sides.
9	To find Reduced levels and horizontal distances using theodolite as a Tacheometer.
10	To find constants of a given Tacheometer.
11	Study and use of 1 second Micro Optic Theodolite for measurement of Horizontal and Vertical angles.
12	Study of E.D.M. for knowing its components.
13	Use of EDM for finding horizontal and vertical distances and reduced levels.
14	Determine the geographical parameters by total station.
15	Use of Aerial survey (GPS, google earth, ISRO satellite etc.)



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PAPER CODE:6276

REFERENCES

S. No.	Title	Author	Publisher
1	Surveying and Levelling,	N N Basak,	Tata Mc Graw-Hill
2.	Surveying and Levelling Part I and II,	T .P. Kanetkar & S. V, Kulkarni,	PuneVidhyarthi Griha Prakashan.
3	Surveying and Levelling Vol. I and II	Dr. B. C. Punamiya	Laxmi Publication
4	Text book of Surveying,	S.K.Husain, M.S. Nagaraj	S. Chand and company
5	Surveying and Levelling Vol. I and II,	S. K. Duggal,	Tata Mc Graw-Hill
6	Plane Surveying,	A.M.Chandra,	New Age International Publishers
7	Higher Surveying,	A.M.Chandra	New Age International Publishers



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DIPLOMA IN CIVIL ENGINEERING

SEMESTER: **FOURTH SEMESTER**
COURSE CODE: **402**
NAME OF THE COURSE:SOIL MECHANICS

PAPER CODE:6277

CONTENT

S no	Course content
1	PHYSICAL PROPERTIES OF SOIL: Soil as a three phase system. Water content, Determination of water content by oven drying method as per IS code. Void ratio, porosity and degree of saturation, density index. Unit weight of soil mass – bulk unit weight, dry unit weight, unit weight of solids, saturated unit weight, submerged unit weight. Determination of bulk unit weight and dry unit weight by core cutter method and sand replacement method as per IS code. Specific gravity, determination of specific gravity by pycnometer
2	CLASSIFICATION OF SOIL : Field identification tests of fine grained soil, IS. classification chart. Consistency of soil, stages of consistency, Atterberg's. limits of consistency viz. Liquid limit, plastic limit and shrinkage limit, plasticity index. Determination of liquid limit, plastic limit and shrinkage limit as per IS code. Classification of fine grained soil by using plasticity chart. Seive analysis of soil and sedimentation of soil, log, scale of particle size. Stokes law, Consistency limit diagram. Particle size distribution, CIVIL sieve analysis as per. IS code particle size distribution curve, effective diameter of soil, Uniformity coefficient and coefficient of curvature, well graded and uniformly graded soils. Particle size classification of soils & IS classification of soil
3	PERMEABILITY OF SOIL & SEEPAGE ANALYSIS : Definition of permeability. Laminar and turbulent flow. Importance of permeability. Darcy's law of permeability, coefficient of permeability, typical values of coefficient of permeability for different soil. Factors affecting permeability. Determination of coefficient of permeability by constant head and falling head permeability tests, simple problems to determine coefficient of permeability. Seepage through earthen structures, seepage velocity, seepage pressure, phreatic line, flow lines and equipotential lines. Flow net, characteristics of flow net, application of flow net (no numerical problems)

4	<p>SHEAR STRENGTH OF SOIL : Shear failure of soil, field situation of shear failure. Concept of shear strength of soil. Components of shearing resistance of soil – cohesion, internal friction. Mohr-coulomb failure theory (Coulomb’s Law), Strength envelope, strength Equation. Purely cohesive and cohesion less soils. Laboratory determination of shear strength of soil – Direct shear test, Box shear test and tri-axial test Unconfined compression test & vane shear test, plotting strength envelope, determining shear strength parameters of soil</p>
5	<p>BEARING CAPACITY OF SOILS AND EARTH PRESSURE : Concept of bearing capacity, ultimate bearing capacity, safe bearing capacity and allowable bearing pressure. Terzaghi’s analysis and assumptions made. Effect of water table on bearing capacity. Field methods for determination of bearing capacity – Plate load test and standard penetration test. Test procedures as Per IS:1888 & IS:2131. Typical values of bearing capacity from building code IS:1904. Definition of active earth pressure and passive earth pressure, structures subjected to earth pressure in the field. Earth pressure, effective pressure. Neutral pressure, and total pressure Magnitude of earth pressure. Rankines theory, Assumptions made in the Rankine’s theory. Earth retaining structures. Earth pressure on earth retaining structures. Bearing capacity of soil during earthquake.</p>
6	<p>COMPACTION OF SOIL & STABILIZATION: Concept of compaction, purpose of compaction field situations where compaction is required. Standard proctor test – test procedure as per IS code, Compaction curve, optimum moisture content, maximum dry density, Zero air voids line. Modified proctor test. Factors affecting compaction. Field methods of compaction – rolling, ramming & vibration and Suitability of various compaction equipments. California bearing ratio, CBR test, significance of CBR value. Difference between compaction and consolidation. Concept of soil stabilization, necessity of soil stabilization. Different methods of soil stabilization – CIVIL soil stabilization, lime stabilization, cement stabilization, bitumen stabilization, fly-ash stabilization.</p>
7	<p>SITE INVESTIGATION AND SUB SOIL EXPLORATION : Necessity of site investigation & sub-soil exploration. Types of exploration – general , detailed. Method of site exploration open excavation & boring. Criteria for deciding the location and number of test pits and bores. Trial pits types of Augers. Auger boring, wash boring and percussion drilling. Disturbed & undisturbed soil samples for lab testing. Field identification of soil – dry strength test, dilitancy test & toughness test. Empirical correlation between soil properties and SPT values. Record of boring Bore hole log.</p>



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NAME OF THE COURSE:SOIL MECHANICS

LIST OF EXPERIMENTS

S no	Course content
1	Determination of water content of given soil sample by oven drying method as per IS Code.
2	Determination of bulk unit weight dry unit weight of soil in field by core cutter method as per IS Code.
3	Determination of bulk unit weight dry unit weight of soil in field by sand replacement method as per IS Code.
4	Determination of Liquid limit & Plastic limit of given soil sample as per IS Code.
5	Determination of grain size distribution of given soil sample by CIVIL sieve analysis as per IS Code
6	Determination of coefficient of permeability by constant head test.
7	Determination of coefficient of permeability by falling head test Practical (Live demo or Prerecorded demo)
8	Determination of shear strength of soil using direct shear test.
9	Determination of shear strength of soil using Laboratory Vane shear test.
10	Determination of MDD & OMC by standard proctor test on given soil sample as per IS Code.
11	Determination of CBR value of given soil sample.
12	Determination of shear strength of soil using unconfined compressive strength.
13	Determination of shear strength of soil using tri-axial shear test.



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NAME OF THE COURSE:SOIL MECHANICS

PAPER CODE:6277

REFERENCES

S. No.	Title	Author	Publisher
1	Soil Mechanics & Foundation Engineering,	Dr. B. C. Punmia,	Standard Book house, New Delhi.
2.	Soil Mechanics & Foundation Engineering,	V.N.S. Murthi	Tata McGraw Hill , New Delhi.
3	Soil Mechanics,	B. J. Kasmalkar	Pune Vidhyarti Griha, Pune
4	Geo-technical Engineering,	Gulhati & Dutta	Tata McGraw Hill , New Delhi



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SEMESTER: **FOURTH SEMESTER**

PAPER CODE:6278

COURSE CODE: **403**

NAME OF THE COURSE:**MECHANICS OF STRUCTURES**

CONTENT

S no	Course content
1	STRESS & STRAIN : Definition of rigid body, plastic body, CIVIL properties of metal such as elasticity & elastic limit . Definition of stress, strain, modulus of elasticity, S.I. Unit. Classification of stress, strain, Sign convention. Stress, strain curve for mild steel and HYSD bar , yield stress/ proof stress, Ultimate stress, breaking stress and percentage elongation. Deformation of body due to axial load. Deformation of a Body subjected to axial forces. Deformation of body of stepped c/s due to axial load, max. stress and min. stress induced. Stresses in bars of composite section & deformation. Shear stress, shear strain & modulus of rigidity, complementary shear stress, state of simple shear, punching shear.
2	ELASTIC CONSTANTS & PRINCIPAL STRESSES : Definition of lateral strain, Poisson's ratio, Change in lateral dimensions. Volumetric strain due to uni-axial force and change in volume. Biaxial and tri-axial stresses and volumetric strain & change in volume. Definition of bulk modulus, volumetric strain. Relation between modulus of elasticity, modulus of rigidity and bulk modulus. Definition of principal planes & principal stresses. Principal planes & stress due to bi-axial stress system & due to state of simple shear (Analytical method only). Strain Energy : Types of loading – gradual, suddenly applied load & Impact load. Definition of strain energy, modulus of resilience and proof resilience. Comparison of stresses due to gradual load, sudden load and impact load.
3	SHEAR FORCE AND BENDING MOMENT : Types of beams - cantilever, simply supported, fixed and continuous beams, types of loading- point load, uniformly distributed load, support reactions for determinate structures. Concept of shear force and bending moment, sign convention. Relation between bending moment, shear force and rate of loading. Shear force and bending moment diagrams for simply supported beams, overhanging beams and cantilever subjected to point loads, UDL and couples, point of contra flexure.

4	MOMENT OF INERTIA : Concept of moment of inertia, M.I of plane areas such as rectangle, triangle, circle, semicircle and quarter circle. Parallel axis and perpendicular axis theorem, M.I of composite sections, built up sections, symmetrical and unsymmetrical sections, radius of gyration & polar moment of inertia.
5	STRESSES IN BEAMS: Bending Stresses in Beams: Concept of pure bending, theory of simple bending, assumptions in theory of bending, neutral axis, bending stresses and their nature, bending stress distribution diagram, moment of resistance. Application of theory of bending to symmetrical and unsymmetrical sections. Shear stresses in beams, Shear stress equation, meaning of terms in equation, shear stress distribution for rectangular, hollow rectangular, circular sections and hollow circular sections, I sections and T sections. Relation between max. shear stress and average shear stress.
6	ANALYSIS OF TRUSSES: Definition frames, classification of frames, perfect, imperfect, redundant and deficient frame, relation between members and joints, assumption in analysis. Method of joint, method of section and graphical method to find nature of forces.
7	COLUMNS : End conditions, and equivalent length. Radius of gyration and slenderness ratio classification as per mode of failure. Euler's and Rankine's formulae. Use of Euler's and Rankine's formulae in solving various problems.



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COURSE CODE: **403**

NAME OF THE COURSE:**MECHANICS OF STRUCTURES**

REFERENCES

S. No.	Title	Author	Publisher
1	Strength of Materials	F. L. Singer,	Harpe Collins Publishers India , Delhi
2.	Strength of Materials,	R. S. Khurmi,	S. Chand & Company, Delhi
3	Mechanics of Structures,	S. B. Junnarkar- volume –I & II,	Charotar Publishing House, Anand.
4	Strength of Materials,	Sadhu Singh.	



SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

DIPLOMA IN CIVIL ENGINEERING

SEMESTER: FOURTH SEMESTER

PAPER CODE:6279

COURSE CODE: 404

NAME OF THE COURSE:TRANSPORTATION ENGG.-1

CONTENT

S no	Course content
1	OVERVIEW OF TRANSPORTATION ENGINEERING : Role of transportation in the development of nation. Modes of transportation system – roads, railway, airways, waterways, Importance of each mode, comparison and their relative merits and demerits. Necessity & importance of Cross drainage works for roads & railways.
2	RAILWAY ENGINEERING : Alignment and Gauges, Classification of Indian Railways, zones of Indian Railway. Alignment- Factors governing rail alignment. Rail Gauges – types, factors affecting selection of gauge. Rail track cross sections – standard cross section of BG & M.G Single & double line in cutting and embankment. Permanent ways.
3	IDEAL REQUIREMENT, COMPONENT PARTS : <i>Rails</i> – function & its types. <i>Rail Joints</i> – requirements, types, <i>Creep of rail</i> - causes & prevention of creep. <i>Sleepers</i> – functions & Requirement, types – wooden, metal, concrete sleepers & their suitability, sleeper density. <i>Ballast</i> – function & different types with their properties, relative merits & demerits. <i>Rail fixtures & fastenings</i> – fish plate, bearing plates, spikes, bolts, keys, anchors & anti creepers. Railway Track Geometrics. Coning of wheels, tilting of rails, Gradient & its types, Super elevation, limits of Super elevation on curves, Cant deficiency, negative cant, grade compensation on curves. Branching of Tracks. Definition of point & crossing, a simple split switch turnout consisting of points and crossing lines. Sketch showing different components, their functions & working. Line sketches of track junctions-crossovers, scissor cross over, diamond crossing, triangle. Inspection of points and crossings. <i>Station and Yards</i> : Site selection for railway stations, Requirements of railway station, Types of stations (way side, crossing, junction & terminal) Station yards , types of station yard, Passenger yards, Goods yard Locomotive yard, its requirements, water column , Marshalling

	yard, its types. <i>Track Maintenance</i> - Necessity, types, Tools required and their function, organization, duties of permanent way inspector, gang mate, key man
4	<p>BRIDGE ENGINEERING : Site selection and investigation Factors affecting selection of site of a bridge. Bridge alignment Collection of design data Classification of bridges according to function, material, span, size, alignment, position of HFL. Component parts of bridge. Plan & sectional elevation of bridge showing component parts of substructure & super structure. Different terminology such as effective span, clear span, economical span, waterway, afflux, scour, HFL, freeboard, etc. <i>Foundation</i> – function, types Piers-function, requirements, types. <i>Abutment</i> – function, types, <i>Wing walls</i> – functions and types. <i>Bearing</i> – functions, types of bearing for RCC & steel bridges. <i>Approaches</i> – in cutting and embankment. <i>Bridge flooring</i>- open and solid floors. <i>Permanent and Temporary Bridges</i>- Permanent Bridges - Sketches & description in brief of culverts, causeways, masonry, arch, steel, movable steel bridges, RCC girder bridge, pre-stressed girder bridge, cantilever, suspension bridge. Temporary Bridges- timber, flying, floating bridges <i>Inspection & Maintenance Of Bridge</i> - Inspection of bridges, Maintenance of bridges & types, routine & special maintenance.</p>
5	<p>TUNNEL ENGINEERING : Definition, necessity, advantages, disadvantages. Classification of tunnels. Shape and Size of tunnels. Tunnel Cross sections for highway and railways. <i>Tunnel investigations and surveying</i> –Tunnel surveying locating center line on ground, transferring center line inside the tunnel. <i>Shaft</i> - its purpose & construction. <i>Methods of tunneling in Soft rock</i> - needle beam method, fore-poling method. line plate method, shield method. <i>Methods of tunnelling in Hard rock</i> – Full face heading method, Heading and bench method, drift method. Precautions in construction of tunnels. <i>Drilling equipments</i>-drills and drills carrying equipments. Types of explosives used in tunnelling. Tunnel lining and ventilation.</p>



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NAME OF THE COURSE: **TRANSPORTATION ENGG.-1**

PAPER CODE:6279

PRACTICALS

Visits & Report Generation :Student will have to prepare at least 08 reports on visits to different maintenance and operations related to railway tracks during visits. The write-ups for the reports should include following information :

- (i) Objects of maintenance operations.
- (ii) Materials required.
- (iii) Tools and Equipments needed.
- (iv) Maintenance procedure.
- (v) Precautions to be taken during maintenance operations.
- (vi) Remedial measures and quality control to reduce the maintenance requirements.

TOPICS FOR VISITS & REPORTS

1. Through packing
 2. Shovel packing
 3. Track maintenance
 4. Systematic overhauling
 5. Lifting of track
 6. Lowering of track
 7. Counteraction, measurement and adjustment of creep
 8. Organization, Tools and equipments for maintenance.
 9. Maintenance of points and crossings
 10. Maintenance of level crossing.
 11. Maintenance of proper Drainage
 12. Maintenance of gauge
 13. Maintenance of track components.
 14. Welding of Rails.
 15. Visit to a nearby bridge site where the construction is in Progress
 16. Visit for cross drainage works for roadways and railways
- Other items may be suggested by Teacher/guide.



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COURSE CODE: **404**

NAME OF THE COURSE:**TRANSPORTATION ENGG.-1**

REFERENCES

S. No.	Title	Author	Publisher
1	Railway Engineering,	S.C. Saxena	Dhanpatrai & sons
2.	Railway Track	K.R. Antia,	The New Book Co. Pvt. Ltd Mumbai
3	Principles of Railway Engineering	S.C. Rangwala,	Charotar Publication.
4	Principles and Practice of Bridge Engineering,	S.P. Bindra	Dhanpatrai & sons.
5	A Text Book of Transportation Engineering	N.L.Arora and S.P.Luthra,	IPH New Delhi.
6	Elements of Bridge Engineering	J.S. Alagia	Charotar Publication.
7	Bridge Engineering	D.R. Phatak,	Everest Publisher
8	Elements of Bridges,	D. Johnos Victor,	Oxford & IBH Publishing co.
9	Road, Railway and Bridges,	Birdi & Ahuja.	Std. Book House.
9	Tunnel Engineering,	S.C. Saxena,	Dhanpatrai & sons.
10	Explosive Engineering,	C. B. Navalkar, -	
11	IS / International Codes. :	IS 4880, I.S. 5878, Part-I to X.	



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DIPLOMA IN CIVIL ENGINEERING

SEMESTER: **FOURTH SEMESTER**

PAPER CODE:4200

COURSE CODE: **411**

NAME OF THE COURSE:**ENTREPRENEURSHIP**

CONTENT

S no	Course content
1	<p>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
2	<p>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.

3	<p>INSTITUTIONAL ASSISTANCE</p> <p>(a) Types of Institutional assistance</p> <ul style="list-style-type: none"> - Infra - structural assistance - Technical Assistance - Financial assistance - Marketing Assistance <p>(b) Information / guidance & Training</p> <ul style="list-style-type: none"> - SISI - MPCON - CED- MA - ASK - CSIR - NRDC <p>(c) Infrastructure</p> <ul style="list-style-type: none"> - D/C - AVN/AKVN <p>(e) Finance</p> <ul style="list-style-type: none"> - SIDBI - NABARD - KVIB MPFC - MPWDC NSIC <p>M.P.A.V.V.N.</p> <p>(d) Marketing</p> <ul style="list-style-type: none"> - MP- AGRO - NSIC - PM.LUN - EXPORT COPPORATION - KVIP - MPHSVN MPLDC <p>(e) Quality Control</p> <ul style="list-style-type: none"> - BIS - FPO - MPLUN F.D.A. - AG. MKT. Board
4	<p>INCENTIVES / CONCESSION / FACITLITIES AVAILABLE</p> <ul style="list-style-type: none"> • Seed money • Incentive / subsidies • Others (Phones, Lands etc)
5	<p>PLANNING OF AN INDUSTRIAL UNIT (SSI)</p> <ul style="list-style-type: none"> • Pre- Planning Stage <ul style="list-style-type: none"> - Scanning the environment - Market survey - Seeking information - product / project selection • Implementation Stage <ul style="list-style-type: none"> - PPR Preparation - DIC registration - Arrangement of Land

	<ul style="list-style-type: none"> - Arrangement of Power - Obtaining NOC / Licenses from various departments - DPR Preparation - Seeking financial assistance - Commercial Production • Post Implementation stage <ul style="list-style-type: none"> - Permanent registration from D.I.C. - Availing Subsidies - Diversification / Modification - Setting up of marketing channel / Distribution.
6	<p>ACHIVEMENT MOTIVATION</p> <ul style="list-style-type: none"> • Historical perspective • Concept of achievement motivation • Significance of achievement motivation • Development of achievement motivation
7	<p>FINANCIAL MANAGEMENT OF AN INDUSTRIAL UNIT (SSI)</p> <ul style="list-style-type: none"> • Tools of financial analysis • Ratio analysis • Fund Flow / Cash flow analysis • Working capital and concepts • Financial accounting



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COURSE CODE: **411**
NAME OF THE COURSE: **ENTREPRENEURSHIP**

PAPER CODE:4200

REFERENCES

S. No.	Title	Author	Publisher
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



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DIPLOMA IN CIVIL ENGINEERING

SEMESTER: **FOURTH SEMESTER**

PAPER CODE:4300

COURSE CODE: **412**

NAME OF THE COURSE:**MARKETING MANAGEMENT**

CONTENT

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

	<p>2.1.6 Competitive environment</p> <p>2.1.7 Social & cultural environment</p> <p>2.2 Micro & macro environment</p>
03	<p>MARKETING PLANNING & ORGANIZATION</p> <p>3.1 Scope & importance of planning</p> <p>3.2 Steps in marketing planning process</p> <p>3.3 Purpose & principle of organization</p> <p>3.4 Models of marketing organization</p> <p>3.4.1 Line & staff type</p> <p>3.4.2 Product based organization</p> <p>3.4.3 Territory oriented organization</p> <p>3.4.4 Complex organization</p> <p>3.5 Task of chief marketing executive</p> <p>3.6 Decentralization</p>
04	<p>MARKET SEGMENTATION</p> <p>4.1 Types of market</p> <p>4.2 Definitions & benefits of segmentation</p> <p>4.3 Methods of segmentation</p> <p>4.3.1 Geographic segmentation</p> <p>4.3.2 Demographic segmentation</p> <p>4.3.3 Psychographic segmentation</p> <p>4.3.4 Buyer behavior Segmentation</p> <p>4.3.5 Volume segmentation</p> <p>4.4 Steps in market segmentation</p> <p>4.5 Market targeting</p>
05	<p>MARKET MIX</p> <p>5.1 Definition of market mix</p> <p>5.2 Elements of marketing mix (4 P'S)-Product, Place, Price, Promotion</p> <p>5.3 Environmental variable (uncontrollable variables)</p> <p>5.3.1 Customer variable</p> <p>5.3.2 Competition variable</p> <p>5.3.3 Trade variable</p> <p>5.3.4 Environmental variable</p> <p>Product management</p> <p>5.4.1 Components of product</p> <ul style="list-style-type: none"> • The core or basic constituent • The associated features • The brand names, package, label <p>5.4.2 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)
 - 5.61 Concepts & benefits of PLC
 - 5.62 Different stages in PLC
 - 5.63 Strategies used in different stages
 - Place management
 - 5.71 Physical distribution
 - Definitions & importance of physical distribution
 - Designing the physical distribution system
 - 5.7.2 The distribution channel
 - 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 Pricing methods
 - 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
 - Importance & objectives of sales promotion
 - Tools & techniques of sales promotion

- 5.9.2 Advertising
 - Role & importance of advertising
 - Types of advertising
 - Deciding on the advertising budget
 - Evaluating advertising effectiveness
- 5.9.3 Difference between sales promotion & advertising

UNDERSTANDING CONSUMER

- 6.1 Factor influencing buyer behavior
 - 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

MARKETING RESEARCH & SALES FORECASTING

- 7.1 Definition & importance of marketing research
- 7.2 Steps in marketing research
 - 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

SALES MANAGEMENT

- 8.1 Designing the sales force
- 8.2 Managing the sales force
 - Recruitment & selection
 - Training, compensation, control
 - Supervision & direction
 - Motivation of salesman
- 8.3 Fixing sales quota
- 8.4 Duties & responsibilities of sales manager



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DIPLOMA IN CIVIL ENGINEERING

SEMESTER: **FOURTH SEMESTER**

PAPER CODE:4300

COURSE CODE: **412**

NAME OF THE COURSE:**MARKETING MANAGEMENT**

REFERENCES

S. No.	Title	Author	Publisher
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	



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SEMESTER: **FOURTH SEMESTER**

PAPER CODE:5001

COURSE CODE: **406**

NAME OF THE COURSE:**COMPUTER AIDED DRAWING**

CONTENT

S no	Course content
1	CAD SOFTWARE : Meaning, various CAD software available in the market (AutoCAD, Felix Cad, Auto Civil, 3D Max ; etc.) Starting up of CAD, CAD Window, Tool bar, Drop down menu, Command window, Saving the drawing. Introduction of Graphic screen.
2	CAD COMMANDS : WCS icon, UCS icon, co-ordinates, drawing limits, grid, snap, ortho features. Drawing commands, line, circle, polyline, multiline, ellipse, polygon etc. Editing commands – Copy, move, offset, fillet, chamfer, trim, lengthen, mirror, rotate, array etc. Working with hatches, fills, dimensioning, text etc.
3	SUBMISSION / WORKING DRAWING : Generation of line plan, Detailed Plan, elevation, section, site plan, Area statement, Generation of 3D view and print commands, Introduction to Auto Civil , 3D Max. <u>Note: Above theoretical aspects should be covered in the practical periods.</u>



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NAME OF THE COURSE:**COMPUTER AIDED DRAWING**

PRACTICALS

S no	Course content
1	<p>A: Building Drawing : Following exercises shall be completed with CAD software and Print of all the drawings should be prepared on A3 / A4 size paper :</p> <ol style="list-style-type: none">1) Preparation of line plan of a residential building.2) Preparation of line plan of a Public building.3) Preparation of detailed plan of a small residential building4) Preparation of submission drawing of residential building – showing Plan, Elevation, Section, Schedule of openings, Site Plan and Area Statement.
2	<p>B: Civil Engineering Drawing : Preparation of Drawings with CAD software for the following exercises (Any <i>Three</i>) and Print of all the drawings should be prepared on A3 /A4 size paper.</p> <ol style="list-style-type: none">1) Plan, Cross Section and Longitudinal section of a Culvert (Pipe culvert/Box Culvert).2) Section of an Earthen Dam.3) Plan and Section of K. T. Weir.4) Cross Section of Retaining wall.5) Bonds in brickwork – Plan and Elevation for English bond and Flemish bond for one brick thick wall.6) Cross Section of ESR (Over Head Tank).7) Cross Section of Clarri - flocculator



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SEMESTER: **FOURTH SEMESTER**

PAPER CODE:

COURSE CODE: **407**

NAME OF THE COURSE:PROFESSIONAL ACTIVITIES

CONTENTS

Topic No	Contents
1	SOCIAL SKILLS : Society, Social Structure, Develop Sympathy And Empathy
2	SWOT ANALYSIS : Concept , How to make use of SWOT
3	INTER PERSONAL RELATION : Sources of conflict, Resolution of conflict , Ways to enhance interpersonal relations.
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
5	PRESENTATION SKILLS : <i>Body language</i> - Dress like the audience Posture, Gestures, Eye contact and facial expression. <i>Presentation Skill</i> – Stage Fright <i>Voice and language</i> – Volume, Pitch, Inflection, Speed, Pause, Pronunciation, Articulation, Language, Practice of speech. <i>Use of aids</i> –OHP,LCD projector, white board
6	INDUSTRIAL/FIELD VISITS : (Any two) 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. industrial visits may be arranged in the following areas: i) Organizations involved in Civil Construction for observing various Construction processes.

	<p>ii) Construction Material testing laboratories in industries or reputed organizations.</p> <p>iii) Brick /concrete fencing pole Manufacturing.</p> <p>iv) visit to nearest railway station and study of various civil engineering components i.e. Foot bridge, platform construction, Shade, public utilities, yards, etc.</p>
7	<p>LECTURES BY PROFESSIONAL / INDUSTRIAL EXPERT : To be organized from <i>Any Three</i> of the following areas :</p> <p>i) Use of a ready mix concrete in construction.</p> <p>ii) Specific civil Engineering applications.</p> <p>iii)Use of lifts and escalators in high rise buildings.</p> <p>iv)Building bylaws for municipal area.</p> <p>v) Computer aided drafting.</p> <p>vi)New Building materials.(PVC sanitary fittings, Aluminum wall paneling, colored glass, water proofing compounds)</p> <p>vii)Composite Materials.</p> <p>viii)Ceramics</p> <p>ix) GPS/GIS</p> <p>x)Safety Engineering and Waste elimination</p>
8	<p>INDIVIDUAL ASSIGNMENTS : <i>Any two</i> from the list suggested -</p> <p>a) Process sequence of building construction.</p> <p>b) Write material specifications for any two construction material.</p> <p>c)Layout of three room simple building. d)Preparing models using development of surfaces.</p> <p>e) Assignments on bending moment , shear forces , deflection of beams and torsion chapters of strength of material.</p> <p>f) Select different materials with specifications for at least 10 different civil engineering material components and list the important desirable properties of the material.</p> <p>g) Select 5 different structural steels and alloy steels used in civil engineering constructions.</p> <p>h) List the various properties and applications of following materials – a. Ceramics, b. fiber reinforcement plastics, c. thermo plastics,d. thermo setting plastics, e. rubbers, f. tar steel g. TMT.</p> <p><i>OR</i></p> <p>Conduct <i>Any One</i> of the following activities through active participation of students and write report</p> <p>i) Rally for energy conservation / tree plantation.</p> <p>ii) Survey for local social problems such as mal nutrition, unemployment, cleanliness, illiteracy etc.</p> <p>iii) Conduct aptitude , general knowledge test , IQ test.</p>

	<p>iv) Arrange any one training in the following areas : a) Yoga. B) Use of fire fighting equipment and First aid Maintenance of Domestic appliances.</p>
9	<p>GROUP DISCUSSION AND INTERVIEW TECHNIQUE : Introduction to group discussion, Ways to carry out group discussion, <i>Parameters</i>— 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 -</p> <ul style="list-style-type: none"> i) Sports ii) Current news items iii) Discipline and House Keeping iv) Current topics related to mechanical engineering field. <p>INTERVIEW TECHNIQUE: Necessity, Tips For Handling Common Questions</p>
10	<p>WORKING IN TEAMS : Understand And Work Within The Dynamics Of A Groups. Tips To Work Effectively In Teams, Establish Good Rapport, 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.</p>
11	<p>TASK MANAGEMENT : Introduction, Task Identification, Task Planning, Organizing And Execution, Closing The Task</p>

SEMESTER: **FOURTH SEMESTER****PAPER CODE:**COURSE CODE: **407**NAME OF THE COURSE: **PROFESSIONAL ACTIVITIES****REFERENCES**

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