DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA,BHOPAL

SCHEME OF STUDIES & EXAMINATIONS (IMPLEMENTED FROM SESSION : JULY 2023)

SCHEME	NAME OF BRANCH	BRANCH CODE	SEMESTER
OCBC JULY 2022/2023	MINE SURVEYING	M11	SIXTH (VI)

S.N.	PAPER CODE	SUBJECT CODE	SUBJECT NAME	THEORY COMPONENT								PRACTICAL COMPONENT					TOTAL CREDITS	TOTAL MARKS
				HRS PER WEEK	CREDITS	TERM WORK				THEORY PAPER		HRS PER WEEK	CREDITS	LAB WORK	PRACTICAL EXAM/VIVA			
						QUIZ/ASSIGNMENT	MID TERM TEST*		TOTAL	MARKS	DURATION				MARKS	DURATION		
							I	II										
1	7386	601	ENTREPRENEURSHIP AND START-UPS	4	4	10	10	10	30	70	03 Hrs.	0	0	0	0	0	4	100
2	7589	602	MINE SURVEYING - IV	3	3	10	10	10	30	70	03 Hrs.	4	2	20	30	03 Hrs.	5	150
3	7590	611	DIMENSIONAL STONE TECHNOLOGY OR	3	3	10	10	10	30	70	03 Hrs.	0	0	0	0	0	3	100
	7591	612	MINE SURVEY DRAWING AND PLANNING															
4	7592	621	MINERAL BENEFICIATION OR	3	3	10	10	10	30	70	03 Hrs.	0	0	0	0	0	3	100
	7593	622	MINERAL EXPLORATION															
5	7605	631	ARTIFICIAL INTELLIGENCE OR	3	3	10	10	10	30	70	03 Hrs.	0	0	0	0	0	3	100
	7606	632	ENGINEERING ECONOMICS AND ACCOUNTANCY															
6			CAD LAB	0	0	0	0	0	0	0	0	4	2	20	30	03 Hrs.	2	50
7			INDIAN CONSTITUTION	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8			MAJOR PROJECT **	0	0	0	0	0	0	0	0	6	4	100	50	03 Hrs.	4	150
9			SEMINAR***	3	1	50	0	0	50	0	0	0	0	0	0	0	1	50
10			LIBERARY/VISITS etc.	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
TOTAL				21	17				200	350		15	8	140	110		25	800

NOTE - (1)* Two Best, out of Three Mid Term Tests (Progressive Tests) Marks should be entered here.

(2)** One Credit is carried forward from the Vth semester major project evaluation.

(3)*** One Hour Time duration for each student.

GRAND TOTAL OF CREDITS	GRAND TOTAL OF MARKS
25	800

DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	ENTREPRENEURSHIP AND START-UPS
PAPER CODE	:	7386
SUBJECT CODE	:	601
TREORY CREDITS	:	04
PRACTICAL CREDITS	:	00

Course Learning Objectives:

1. Acquiring Entrepreneurial spirit and resourcefulness.
2. Familiarization with various uses of human resource for earning dignified means of living.
3. Understanding the concept and process of entrepreneurship - its contribution and role in the growth and development of individual and the nation.
4. Acquiring entrepreneurial quality, competency, and motivation.
5. Learning the process and skills of creation and management of entrepreneurial venture.

Course Content:

Unit 1 - Introduction to Entrepreneurship and Start – Ups

- Definitions, Traits of an entrepreneur, Intrapreneurship, Motivation
- Types of Business Structures, Similarities/differences between entrepreneurs and managers.

Unit 2 – Business Ideas and their implementation

- Discovering ideas and visualizing the business
- Activity map
- Business Plan

Unit 3 – Idea to Start-up

- Market Analysis – Identifying the target market,
- Competition evaluation and Strategy Development,
- Marketing and accounting,
- Risk analysis

Unit 4 – Management

- Company's Organization Structure,
- Recruitment and management of talent.
- Financial organization and management

Unit 5 - Financing and Protection of Ideas

- Financing methods available for start-ups in India
- Communication of Ideas to potential investors – Investor Pitch
- Patenting and Licenses

Unit 6: Exit strategies for entrepreneurs, bankruptcy, and succession and harvesting strategy

Learning Outcome:

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

1. Understanding the dynamic role of entrepreneurship and small businesses
2. Organizing and Managing a Small Business
3. Financial Planning and Control
4. Forms of Ownership for Small Business
5. Strategic Marketing Planning
6. New Product or Service Development
7. Business Plan Creation

SUGGESTED LEARNING RESOURCES:

S. No.	Title of Book	Author	Publication
1.	The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company	Steve Blank and Bob Dorf	K & S Ranch ISBN – 978-0984999392
2.	The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses	Eric Ries	Penguin UK ISBN – 978-0670921607
3.	Demand: Creating What People Love Before They Know They Want It	Adrian J. Slywotzky with Karl Weber	Headline Book Publishing ISBN – 978-0755388974
4.	The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business	Clayton M. Christensen	Harvard business ISBN: 978-142219602

SUGGESTED SOFTWARE/LEARNING WEBSITES:

a. https://www.fundable.com/learn/resources/guides/startup

b. https://corporatefinanceinstitute.com/resources/knowledge/finance/corporate- structure/

c. https://www.finder.com/small-business-finance-tips

d. https://www.profitbooks.net/funding-options-to-raise-startup-capital-for-your-business/

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	MINE SURVEYING - IV
PAPER CODE	:	7589
SUBJECT CODE	:	602
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	02

Course Objectives:

Following are the objectives of this course:

- To understand the Dip, Drift, Borehole & Fault with related Problems.
- To determine the azimuth by astronomical aspects.
- To know adjustment & theory of errors.
- To understand the various features and components of photogrammetric surveying.
- To know the modern equipment likes - Remote Sensing, GIS and GPS, EDM and Total Station.

Course Content:

Unit–I Dip, Drift, Borehole & Fault with related Problems

- Definition of terms of Dip, Strike, Apparent dip, Full dip, and Drift.
- Formulae of Apparent dip, Full dip and included angle of them.
- Purpose Borehole, Method of Borehole Surveying & Type of Fault
- Numerical problem in Dip, Drift, Borehole & Fault.

Unit-II Field Astronomy

- Definition of Astronomical Terms
- Co-ordinate System. Terrestrial Latitude & Longitude.
- Spherical Trigonometry, Spherical Triangle and Astronomical triangle.
- Units of Time.
- Determination of Azimuth- By observations of star at equal altitude, By observations on a circular star at elongation, By hour angle of star, By observation of Polaris and By ex-meridian observations on sun or star

Unit-III Survey Adjustment and Theory of Errors

- Introduction & kind of Errors.
- The Laws of Accidental Errors.
- General principles of Least Squares.
- Laws of Weights.
- Determination of Probable Errors.
- Distribution of error of the field measurement.
- Adjustment of chain of triangle.
- Adjustment of two connected triangles.
- Adjustment of geodetic triangles with central station by method of least square.

Unit-IV Photogrammetric Surveying

- Introduction & Basic Principles.
- Photo-Theodolite, Horizontal and Vertical from Terrestrial Photograph.
- Determination of Focal length of lens.
- Aerial Photogrammetry- Aerial Camera, Definition and Nomenclature.
- Scale of Vertical Photograph.
- Relief Displacement on a vertical Photograph.
- Flight Planning for Aerial Photograph- Flight line, Overlap and Side lap.
- Crab and Drift.
- Stereoscopic and parallex.
- Mosaics.

Unit-V Modern Equipment

- Remote Sensing-Basic Principles, Observation platforms, Sensors and Applications.
- GIS and GPS.
- EDM
- Total Station.

Suggested learning resources:

1. Punmia, B.C,; Jain, Ashok Kumar; Jain, Arun Kumar, Surveying I, Laxmi Publications, New Delhi.
2. Basak, N. N., Surveying and Levelling, McGraw Hill Education, New Delhi.
3. Kanetkar, T. P.; Kulkarni, S. V., Surveying and Levelling volume I, Pune Vidyarthi Gruh Prakashan.
4. Duggal, S. K., Survey I, McGraw Hill Education, New Delhi.
5. Saikia, M D.; Das. B.M.; Das. M.M., Surveying, PHI Learning, New Delhi.
6. Subramanian, R., Fundamentals of Surveying and Levelling, Oxford University Press. New Delhi.
7. Rao, P. Venugopala Akella, Vijayalakshmi, Textbook of Surveying, PHI Learning New Delhi.
8. Bhavikatti, S. S., Surveying and Levelling, Volume 1, I. K. International, New Delhi.
9. Arora K R , Surveying Vol. I, Standard Book House.
10. Mine Surveying and Levelling Vol. I, II & III-S..Ghatak

Course outcomes:

After completing this course, student will be able to:

- Calculate the Dip, Drift, Boreholes and Fault Problems.
- Determine the azimuth by astronomical aspects.
- Knowledge of the adjustment & theory of errors.
- Familiar with the various features and components of photogrammetric surveying.
- Knowledge of the modern equipment likes - Remote Sensing, GIS and GPS, EDM and Total Station.

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MINE SURVEYING - IV LAB

Course Objectives:

Following are the objectives of this course:

- To understand types of surveying works required
- To know the type of method and equipments to be used for different surveys
- To know the use and operational details of various surveying equipments.

List of Practical's to be performed

1. Determination of Azimuth - By observations of star at equal altitude.
2. Determination of Azimuth - By observations on a circular star at elongation.
3. Determination of Azimuth - By ex-meridian observations on sun or star.
4. Determine relief Displacement on a vertical Photograph.
5. Discuss the principle of Total Station or EDM.
6. Discuss the principle of GIS & GPS.
7. Determine the length by Total Station.
8. Determination of area by Total Station.
9. Determination of area by Total Station.

Suggested learning resources:

1. Punmia, B.C,; Jain, Ashok Kumar; Jain, Arun Kumar, Surveying I, Laxmi Publications, New Delhi.
2. Basak, N. N., Surveying and Levelling, McGraw Hill Education, New Delhi.
3. Kanetkar, T. P.; Kulkarni, S. V., Surveying and Levelling volume I, Pune Vidyarthi Gruh Prakashan.
4. Duggal, S. K., Survey I, McGraw Hill Education, New Delhi.
5. Saikia, M D.; Das. B.M.; Das. M.M., Surveying, PHI Learning, New Delhi.
6. Subramanian, R., Fundamentals of Surveying and Levelling, Oxford University Press. New Del-hi.
7. Rao, P. Venugopala Akella, Vijayalakshmi, Textbook of Surveying, PHI Learning New Delhi.
8. Bhavikatti, S. S., Surveying and Levelling, Volume 1, I. K. International, New Delhi.
9. Arora K R , Surveying Vol. I, Standard Book House.
10. Mine Surveying and Levelling Vol. I, II &II -S..Ghatak

Course outcomes:

After completing this course, student will be able to:

- Calculate the Dip, Drift, Boreholes and Fault Problems.
- Determine the azimuth by astronomical aspects.
- Determine Relief Displacement on a vertical Photograph.
- Calculate the area from Total Station.

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	DIMENSIONAL STONE TECHNOLOGY
PAPER CODE	:	7590
SUBJECT CODE	:	611
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Objectives:

Following are the objectives of this course:

- To familiarize students with the resources of dimensional stone in India & abroad.
- To understand the basic concept of mining techniques for all types of dimensional stones, processing techniques, multiwire technology.
- To study about environmental impact in surrounding.

Course Content

UNIT – I Resources

Resources of Marble, Granite, Slate, as Dimensional stones in India and world, uses, marketing, export. Geological, mineralogical and physico-mechanical properties of dimensional stones, Criteria for selection of dimensional stone deposit, Procedure for obtaining mining lease and preparation of projectproposal.

UNIT – II Mining

Conventional mining of Sandstone, Limestone, Marble and Granite; Recent developments- wire saw including blind cut technique, chainsaw, belt saw, hydraulic splitting, flame jet cutting, water channeling etc; Blasting techniques in dimensional stone mines: various types of explosives used, controlled blasting for providing horizontal & vertical cut; Splitting by swelling material.

UNIT – III Insitu Splitting Technique

Insitu Splitting Technique used in compact limestone (Kota stone) for utilization of waste as dimensionalstone. Various types of loaders cranes and hydraulic excavator used in dimensional stone mines; Quarry layouts. Hole making technique using hole-finder and laser beam. Application and development of diamond tools, formation of stone block and their handling

UNIT – IV Processing

Dressing- Mono block dresser; Sawing- gang saws, circular saws; Preparation and mounting of blades/discs and segments; slab repair by resin Polishing - Manual, Mechanical; Various types of polishing machines; Abrasives- type, use and selection, shaping; Tile preparation; Automatic tiling plant, slurry handling and treatment including water supply. Multiwire technology.

UNIT – V Environmental Impacts

Environmental impacts of mining and processing of dimensional stones. Secondary use of quarried landand waste of the industry; Land reclamation, Environmental management plan, Environment Protectionmeasures.

Suggested learning resources:

1. Dimensional Stone Technology, S. S Rathore., G. S. Bhardwaj and S. C Jain
2. Recent Development in Machinery and Equipment for Dimensional Stone Mining, S. S. Rathore.
3. Y. C. Gupta and R. L Parmar, held Dec. 13-14, 2003 at Udaipur.

Course outcomes:

After completing this course, student will be able to:

- Get an idea of resources for dimension stones and Indian dimension stone miningtrend.
- Understand the criteria for selection of dimension stone deposit and procedure of obtaining statutory permissions
- Get a benefit of detailed understanding of various techniques of dimensional stonemining including diamond wire saw, blind cut technique etc.
- Get the benefit of processing techniques such as gang saws, automatic tiling plant, multiwire machine for slab making etc.
- Know the environmental impact due to mining and processing activities.

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	MINE SURVEY DRAWING AND PLANNING
PAPER CODE	:	7591
SUBJECT CODE	:	612
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Objectives:

Following are the objectives of this course:

- To understand the concept of mine model, scales & its classification.
- To know the types different plans & sections, sign & symbols given in second schedule.
- To explain the enlargement & reducing method of plans.
- To understand the various feature of mine planning.

Course Content

Unit- I **Scales, Plotting & Mine Models**

- Scales & its Classification.
- Survey office layout
- Concept of Mine Models
- Type of models
- Plotting by Scales & Protractor method
- Plotting by Coordinate System
- Advantages & disadvantages of both methods and theircomparisons.

Unit-II **Signs & Symbols & Survey Office Layout**

- Drawing Sign & Symbols as given in the II Schedule of CMR-2017.
- Drawing Sign & Symbols as given in the II Schedule of MMR-1961.
- Survey Office Layout

Unit-III **Plans & Sections**

- List of plans & sections
- Preparation of each plans & section
- Care & maintenance of mines plans.
- Storage of plans & sections
- Preservation of plans
- Keeping of records
- Checking accuracy of Old Plans.
- Method of Enlargement & Reduction of Plans & sections.
- Different type of instrument uses for Enlargement & Reduction ofPlans & sections

Unit-IV **Plotting Problems**

- Coordinate system
- Dip
- Borehole
- Drift & fault

Unit- V **Basic of Mine Planning**

- Introduction- Mine panning & its Component.
- Role of planning
- Technical information for reserve estimation.
- Bench geometry & mine layout of surface mine planning.
- Details Project Report.

Suggested learning resources:

1. Punmia, B.C,; Jain, Ashok Kumar; Jain, Arun Kumar, Surveying I, Laxmi Publications, New Delhi.
2. Basak, N. N., Surveying and Levelling, McGraw Hill Education, New Delhi.
3. Kanetkar, T. P.; Kulkarni, S. V., Surveying and Levelling volume I, Pune Vidyarthi Gruh Prakashan.
4. Mine Surveying and Levelling Vol. I, II &II -S..Ghatak
5. Mining UMS.
6. J. Bhattacharya, Principle of Mine Planning, Allied Publisher Pvt Limited, New Delhi.
7. S. P. Mathur, Mine Planning for Coal, M. G. Consults, Bilaspur, 1993.

Course outcomes:

After completing this course, student will be able to:

- Select the type of survey scale required for given situation.
- Compute the coordinates, dip, & borehole related problem with their graphical check.
- Discuss the different plans & sections, sign & symbols given in second schedule.
- Explain the enlargement & reducing method of plans.
- Concept of mine plan.

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	MINERAL BENEFICIATION
PAPER CODE	:	7592
SUBJECT CODE	:	621
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Objectives:

Following are the objectives of this course:

- To build the solid foundation on principals andequipment of various mineral beneficiations procedures.
- To understand the suitable parameters and appropriate methodology & machinery for processing various types of minerals.

UNIT – I Introduction

Scope, objectives, minerals/ores for mineral beneficiation or processing, methods of treatment, choice ofmethods, sequence of operations, product, flow sheets, ore sorting – hand / mechanical, electronic, removal of harmful materials, ore transportation.

UNIT – II Comminution

Introduction to comminution, reduction ratio, primary/secondary/tertiary crushing, purpose, theory of crushing, types of crushers and comparison, general crushing and grinding flow sheet, wet/dry grinding, mechanism and various affecting parameters. Power consumption for crushing & grinding.

UNIT – III Laboratory & Industrial Sizing and Sampling

Compare the various sampling techniques. Collecting sample on site (mine face); Purpose, factors governing particle behaviour - Sampling and weighing the ore, moisture and assay value, on stream analysis, automatic control in mineral processing, laboratory and industrial screens, trommels, vibrating screens, etc. wet and dry screening, classification, classifiers.

UNIT – IV Separation/Concentration

Newton's and Stoke's Laws of particle settlement, different sampling techniques and their comparison, different concentration techniques – gravity, chemical froth flotation, wet & dry magnetic separation, electromagnetic, amalgamation, heavy media separation (Hons)& DMS, jigging, shaking tables, sluicing, spirals, thickeners, filtration, etc., Colour based sorting of minerals – optical sorter; Coal washing. Applications and limitations, electrical methods of concentration.

UNIT – V Special Methods

Chemical extraction, cyanide process, leaching, use of ion exchange, solventextraction, pilot plant studies on ores, tailing dams – mode of disposal, construction and design & othersolid-waste (other than overburden) management in mines; generalised plant practice/flow sheets for coal and other important ores – copper, aluminum, lead, zinc, gold, uranium, iron, limestone, magnesiteand beach sand minerals.

Suggested learning resources:

- Mineral processing technology - B. A. Wills
- Principles of Mineral Dressing - A.M. Gaudin
- Ore dressing Practices - S. K. Jain
- Elements of Ore Dressing - A. F. Taggart

Course outcomes:

After completing this course, student will be able to:

- Knowledge on importance of mineral processing and treatment of ore &minerals.
- Knowledge on processing of minerals / ores / coal
- Knowledge on different types of crushers and grinding mills.
- Gain knowledge on various types of sampling and concentration techniques.
- Gains knowledge on special methods of ore treatment.

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	MINERAL EXPLORATION
PAPER CODE	:	7593
SUBJECT CODE	:	622
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Objective:

After undergoing the course of study the student shall be able to

- To know the mineral resources and prospecting techniques
- To understand exploration techniques and strategy
- To study the prefeasibility and feasibility reports and its evaluation methods

Course Content

UNIT- I MINERAL RESOURCES AND PROSPECTING

Introduction to important mineral resources in India and world wide, surface and aerial prospecting, reconnaissance, application of geochemical, geophysical and geostatistical methods.

UNIT- II EXPLORATION

Preliminary and detailed exploration by boring, exploratory mining by shafts, drifts, cross-cuts,collection and compilation of data for computer processing.

UNIT- III EXPLORATION STRATEGY

Exploration investment decision, exploration techniques and strategies, exploration targets.

UNIT -IV EXPLORATION GROUPS AND THEIR ROLE

Strategy and structure of the exploration group, government policies, aspects of exploration,role of exploration in the mining company.

UNIT- V PREPARATION AND EVALUATION OF PROJECT REPORTS

Evaluation of exploration and development projects, study of typical pre-feasibility and feasibility reports.

Suggested learning resources:

1 Deshmukh, R.T., Mineral and Mine Economics, Mira Publications, Nagpur, 1986.

2 Hartman, H. L. (Editor), SME Mining Engineering Handbook, 3rd edition, Vol I & II, Society of Mining Engineers, New York, 2011.

Course outcomes:

After completing this course, student will be able to:

- To knowledge about the available mineral resources, exploration techniques and its stagey.
- To know about the methods of preparation of feasibility reports.
- To know the evaluation techniques.

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	ARTIFICIAL INTELLIGENCE
PAPER CODE	:	7605
SUBJECT CODE	:	631
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Content:

Unit 1 – Introduction to Artificial Intelligence

- Artificial Intelligence (AI) definition
- Goals of AI
- History of AI
- Applications of AI

Unit 2 – Agents and Environments

- Agent Terminology, Types of Agents – Simple Reflex Agents, Model Based Reflex Agents, Goal Based Agents
- Nature of Environments, Properties of Environments

Unit 3 – Search Algorithms

Terminology

- Brute Force Search Strategies – Breadth First Search, Depth First Search.
- Heuristic Search Strategies, Local Search Algorithms.

Unit 4 – Fuzzy Logic Systems

Introduction to Fuzzy Logic and Fuzzy systems,

- Membership functions,
- Fuzzification/Defuzzification

Unit 5 – Neural Networks

Basic structure of Neural Networks

- Perceptron
- Back-propagation

Suggested Learning Resources:

S. No.	Title of Book	Author	Publication
1	Artificial Intelligence By Example: Develop machine intelligence from scratch using real artificial intelligence use cases	Denis Rothman	Packt Publishing ISBN – 978-1788990547

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	ENGINEERING ECONOMICS AND ACCOUNTANCY
PAPER CODE	:	7606
SUBJECT CODE	:	632
TREORY CREDITS	:	03
PRACTICAL CREDITS	:	00

Course Learning Objectives:

- To acquire knowledge of basic economics to facilitate the process of economic decision making.
- To acquire knowledge on basic financial management aspects.
- To develop the basic skills to analyze financial statements.

Course Content:

UNIT-I: Introduction: Managerial Economics; Relationship with other disciplines; Firms: Types, ob- jectives and goals; Managerial decisions; Decision analysis.

Unit-II: Demand & Supply Analysis: Demand; Types of demand; Determinants of demand; Demand function; Demand elasticity; Demand forecasting; Supply; Determinants of supply; Supply function; Supply elasticity.

Unit-III: Production and Cost Analysis: Production function; Returns to scale; Production opti- mization; Least cost input; Isoquants; Managerial uses of production function; Cost Concepts; Cost function; Types of Cost; Determinants of cost; Short run and Long run cost curves; Cost Output Deci- sion; Estimation of Cost.

Unit-IV: Pricing: Determinants of Price; Pricing under different objectives and different market structures; Price discrimination; Pricing methods in practice; Role of Government in pricing control.

Unit-V: Financial Accounting (Elementary Treatment): Balance sheet and related concepts; Profit & Loss Statement and related concepts; Financial Ratio Analysis; Cash flow analysis; Funds flow analysis; Comparative financial statements; Analysis & Interpretation of financial statements; Investments; Risks and return evaluation of investment decision; Average rate of return; Payback Period; Net Present Value; Internal rate of return,

Reference Books:

1. Premvir Kapoor, Sociology & Economics for Engineers, Khanna Publishing House, New Delhi, 2018
2. McGuigan, Moyer and Harris, 'Managerial Economics; Applications, Strategy and Tactics', Thomson South Western, 10th Edition, 2005.
3. Prasanna Chandra. 'Fundamentals of Financial Management', Tata Mcgraw Hill Publishing Ltd., 4th edition, 2005.
4. Samuelson. Paul A and Nordhaus W.D., 'Economics', Tata Mcgraw Hill Publishing Company Limited, New Delhi, 2004.
5. Paresh Shah, 'Basic Financial Accounting for Management', Oxford University Press, New Delhi, 2007. 3. Salvatore Dominick, 'Managerial Economics in a global economy'. Thomson South Western, 4th Edition, 2001.

Course outcomes:

At the end of the course, the student will be able to:

CO1	Understand the macro-economic environment of the business and its impact on enterprise
CO2	Understand cost elements of the product and its effect on decision making
CO3	Prepare accounting records and summarize and interpret the accounting data for managerial decisions
CO4	Understand accounting systems and analyze financial statements using ratio analysis
CO5	Understand the concepts of financial management and investment

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	CAD LAB
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	02
PRACTICAL CREDITS	:	00

Course Objectives:

Following are the objectives of this course:

- To connect the drawing in form of auto cad
- To create object related to mining experiments.
- To edit object
- To solve the geometrical problems.

List of Practicals to be performed

1. **STARTING AUTOCAD:** Overview of CAD, Advantages of AutoCAD over Conventional method of drafting. System requirement, Installing AutoCAD, pointing device (mouse,ablet), Understanding the Auto CAD Interface(Toolbar, Menus), Cursor Menu, the command window, the Text window).Using scripts to runcommand.
2. **ORGANISING YOUR DRAWING:** Conforming to standards & using different set up methods.
3. **IDEA OF USING COORDINATE SYSTEM:** Using a Coordinate system to specify points, Using Directdistance entry, Shifting and Rotating the Co-Ordinate system.
4. **IDEA ABOUT CREATING OBJECTS:** Drawing Lines, Drawing curved objects, Creating Point Objects,changing the drawing order of objects, Creating Solid-filled areas, Creating Regions, Hatching Areas, Customobjects and Proxies.
5. **IDEA OF DRAWING WITH PRECISION:** Adjusting snap and grid alignment, Using Ortho mode,Calculating points and values, Calculating areas, Calculating Distance and Angle, Displaying coordinates & Inquiry methods.
6. **IDEA OF CONTROLLING THE DRAWING DISPLAY:** Using zoom and pan, using aerial View Using Named View, Using TiledView ports, Turning Visual Elements On & off.
7. **IDEA OF EDITING OBJECTS:** Working with named objects. Using layers, colours and line types
8. **IDEA ABOUT ADDING TEXT TO DRAWINGS:** Working with Text styles, using line Text, and checking spelling.
9. **IDEA OF DIMENSIONING AND TOLERANCING:** Dimensioning concepts, creating concepts, creating Dimensions, addingdimensions, editing dimensions, Creating dimensions style, Idea of Using stylefamilies, using style overides. Working with Dimension styles, Adding Geometric tolerances.Creating and Modifying arrowheads.
10. **Section II [Plane Geometry]:** Construction and use of scales including diagonal scales .
11. Enlargementand reduction of irregular plane figures. Construction of triangles , quadrilaterals and polygons . Similar Plane figures , Problems on circles,tangents and normals . Loci such as the paths of points in simple link mechanism. Methods of construction of ellipse , including its elementaryproperties parabola and rectangular hyperbola ,cycloid (sp.) and involutes curve .

12. **Section III [Solid Geometry]:** Orthographic projection. (Diagrams printed in the question papers may be in either First or Third Angle projection; the projection used will be stated. Solutions in either First or Third Angle projection will be accepted.) Projection involving use of auxiliary planes ; simple problems on auxiliary rejection. Simple problems on the intersection ofprisms, pyramids, cylinders, right circular cones and spheres. Determination of true length of a line in space : sections and surface developments of prisms , pyramids , cylinders and right circular cones .Isometric and oblique projection without the use of Isometric scale perspective view.

Suggested learning resources:

- Civil Engineering Drawing, Sharma & Gurucharan Singh, Standard Publishers
- A Course in Civil Engineering Drawing, Sikka, S.K. Kataria & Sons
- Engineering Drawing, Dhanarajay A Jolhe, Tata McGraw Hill

Course out comes:

After completing this course, student will be able to:

- Connect the drawing in form of auto cad
- Idea of creating object related to mining experiments.
- Idea of editing object
- Solve the geometrical problem.

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DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
DIPLOMA IN MINE SURVEYING (M11)

SEMESTER VI

COURSE TITLE	:	INDIAN CONSTITUTION
PAPER CODE	:	--
SUBJECT CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	00

Course Content

Unit 1 – The Constitution - Introduction

- The History of the Making of the Indian Constitution
- Preamble and the Basic Structure, and its interpretation
- Fundamental Rights and Duties and their interpretation
- State Policy Principles

Unit 2 – Union Government

- Structure of the Indian Union
- President – Role and Power
- Prime Minister and Council of Ministers
- Lok Sabha and Rajya Sabha

Unit 3 – State Government

- Governor – Role and Power
- Chief Minister and Council of Ministers
- State Secretariat

Unit 4 – Local Administration

- District Administration
- Municipal Corporation
- Zila Panchayat

Unit 5 – Election Commission

- Role and Functioning
- Chief Election Commissioner
- State Election Commission

Suggested Learning Resources:

S. No.	Title of Book	Author	Publication
1.	Ethics and Politics of the Indian Constitution	Rajeev Bhargava	Oxford University Press, New Delhi, 2008
2.	The Constitution of India	B.L. Fadia	Sahitya Bhawan; New edition (2017)
3.	Introduction to the Constitution of India	DD Basu	Lexis Nexis; Twenty-Third 2018 edition

Suggested Software/Learning Websites:

a. https://www.constitution.org/cons/india/const.html
b. http://www.legislative.gov.in/constitution-of-india
c. https://www.sci.gov.in/constitution
d. https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/

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DIPLOMA WING
RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL
DIPLOMA IN MINE SURVEYING (M11)

SEMESTER - VI

COURSE TITLE	:	MAJOR PROJECT
PAPER CODE	:	--
COURSE CODE	:	--
TREORY CREDITS	:	00
PRACTICAL CREDITS	:	04 (03+01 Credit of the V Sem.)

MAJOR PROJECT

It should be based on real/live problems of the Industry/Govt./NGO/MSME/Rural Sector or an innovative idea having the potential of a Startup.

Evaluation is based on work done, quality of report, performance in viva-voce, presentation etc

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DIPLOMA WING

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA, BHOPAL

DIPLOMA IN MINE SURVEYING (M11)

SEMESTER - VI

COURSE TITLE	:	SEMINAR
PAPER CODE	:	--
COURSE CODE	:	--
TREORY CREDITS	:	01
PRACTICAL CREDITS	:	00

SEMINAR

Evaluation is based on work done, quality of report, performance in Viva-voce, presentation etc .

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