

**SARDAR PATEL UNIVERSITY
VALLABH VIDYANAGAR**



**SYLLABUS EFFECTIVE FROM: 2017-18
FACULTY OF SCIENCE
MSC Plant and Machinery Valuation
Semester- I**

ACADEMIC REGULATIONS AND COURSES OF STUDY

R.PG.VAL.1 ADMISSION

- 1.01 A candidate for admission to the Post-Graduate degree programme for M.Sc.(Plant & Machinery Valuation) must have passed the Bachelor Degree Examination preferably in commerce, science, engineering, architecture, mathematics, statistics, economics, law, management and agricultural science of this University or an examination recognized as equivalent thereto.
[Such as Section A & B Examination conducted by the Institution of Engineers (India) and Section A & B of Association Membership Course conducted by The Institution of Mechanical Engineers (India)]
- 1.02 Student who has passed qualifying examination from any other University or examining body and is seeking admission to this programme must produce an eligibility certificate from this University.

R.PG.VAL.2 PROGRAMME OF STUDY

- 2.01 A student shall follow at a time any one of the prescribed programmes – viz. M.Sc.(Real Estate Valuation) and M.Sc. (Plant & Machinery Valuation).

R.PG.VAL.3 EXEMPTIONS

- 3.01 A candidate shall be eligible for exemption(s) for the courses studied at the Bachelor Degree Examination or at the Post Graduate Degree Examination. Exemption shall be subject to approval by the head of the department.

RPG.VAL.4 ATTENDANCE

- 4.01 Candidate will be required to attend at least 75% of the total theory lectures organized under each of the course by them during the semester.

RPG.VAL.5 EXAMINATION

- 5.01 The ratio between the external and internal assessment will be 70:30
- 5.02 (i) The head of the department in consultation with other teachers of the department will prepare in the beginning of the semester a detailed scheme of the periodic test(s), seminars, quizzes etc., and the program for the test examinations and the same will be announced to the candidates. (ii) The record of the test examinations as well as seminars and quizzes will be maintained by the department.

RPG.VAL.6 ELIGIBILITY TO APPEAR IN UNIVERSITY EXAMINATION

- 6.01 Candidate will be required to obtain at least 33% marks in the internal evaluation separately in each head of passing. A candidate who fails to obtain 33% marks in not more than two heads of passing may be allowed to appear at the university examination by the Head of the department concerned on the recommendation of the committee appointed to assess the

candidate's overall performance. (Note: Head of passing will mean a course in theory or practical, or project work).

RPG.VAL.7 EXAMINERS

7.01 A teacher offering a particular course will be one of the examiners at the university examination and the other examiner may be either a teacher from same university or from outside the university.

RPG.VAL.8 FINAL RESULT

8.01 The final result for the award of the degree will be declared on the basis of the grand total of all the semester examinations prescribed for the degree examination.

RPG.VAL.9 REPEAT COURSES

9.01 No candidate will be allowed to reappear in course in which he / she has already passed.

RPG.VAL.10 STANDARD OF PASSING

10.01 The standard of passing of M.Sc. (Plant & Machinery Valuation) degree examination will be as under:

- i. To pass any semester examination for the M. Sc. degree a candidate must obtain at least 40% marks in the university examination and 40% marks in the aggregate of university and internal examination in each course of Theory, Practical and project work.
- ii. Those of the successful candidates who obtain 50% or more marks in the aggregate of all the semesters taken together will be placed in the Second class and those who obtain 60% or more marks in the aggregate will be placed in the first class.
The successful candidates who obtain 70% or more marks in the aggregate of all the semesters taken together will be declared to have passed the examination in the first class with distinction.

RPG.VAL.11 CONTINUATION OF TERM

- i A candidate who fails in more than two courses (any two out of total heads of passing in the particular semester) in a particular semester will not be admitted for further study at a subsequent semester and will be required to repeat the courses in which he/she has failed by joining the department as a regular student in the semester in which these courses are again offered.

A candidate failing in not more than two courses at any semester examination will be promoted to the subsequent semester according to the following scheme.

- ii A candidate failing in the first semester will be permitted to prosecute his / her study up to the third semester but will not be permitted to go to the fourth semester until he / she has cleared all the courses of the first semester even though he / she may have passed in the second and / or third semester.

A candidate failing in the second semester will be permitted to prosecute his /her studies up to the fourth semester.

TABLE - 1

**PROGRAMME OF STUDIES LEADING TO THE
M. SC. (PLANT AND MACHINERY VALUATION)
W.E.F. AY 2017-18 (JULY 2017)**

First Semester

(CBCS)

Sr. No.	Course no.	Course Title	Credits	Total Marks	External	Internal
Core Courses						
1.	PS01CVPM21	PRINCIPLES OF ECONOMICS	4	100	70	30
2.	PS01CVPM22	BOOK KEEPING AND ACCOUNTANCY	4	100	70	30
3.	PS01CVPM23	ELEMENTARY SURVEYING AND ENGINEERING DRAWING	4	100	70	30
4.	PS01CVPM24	INTRODUCTION TO STATISTICS	4	100	70	30
5.	PS01CVPM25	PRINCIPLES OF VALUATION	4	100	70	30
6.	PS01CVPM26	COMPREHENSIVE VIVA-VOCE	1	50	50	--
Elective Courses						
7.	PS01EVPM21	ELE. OF LAWS AND JURISPRUDENCE	4	100	70	30
8.	PS01EVPM22	AIR POLLUTION AND CLIMATE CHANGE	4	100	70	30

Second Semester

Core Courses						
1.	PS02CVPM21	PRIN. OF INSURANCE & LOSS ASSE.	4	100	70	30
2.	PS02CVPM22	PRIN. OF M/C TOOLS & FAC. EQUIP	4	100	70	30
3.	PS02CVPM23	LEGAL STUDY-I	4	100	70	30
4.	PS02CVPM24	VALUATION OF P&M – I	4	100	70	30
5.	PS02CVPM25	VALUATION OF P&M – II	4	100	70	30
6.	PS02CVPM26	COMPREHENSIVE VIVA-VOCE	1	50	50	--
Elective Courses						
7.	PS02EVPM21	INDUSTRIAL PROCESSES	4	100	70	30
8.	PS02EVPM22	WATER POLLUTION AND CONTROL TECHNOLOGY	4	100	70	30

Third Semester

Core Courses						
1.	PS03CVPM2 1	ENVIRONMENTAL IMPACT ASSESSMENT	2	50	35	15
2.	PS03CVPM2 2	FINANCE, BUSI. & MGNT. STUDIES	2	50	35	15

3.	PS03CVPM2 3	TOWN AND REGIONAL PLANNING	4	100	70	30
4.	PS03CVPM2 4	LEGAL STUDY – II	4	100	70	30
5.	PS03CVPM2 5	VALUATION OF P&M–III	4	100	70	30
6.	PS03CVPM2 6	VALUATION P&M–IV	4	100	70	30
7.	PS03CVPM2 7	COMPREHENSIVE VIVA-VOCE	1	50	50	--
Elective Courses						
8.	PS03EVPM2 1	REPORT WRITING	4	100	70	30
9.	PS03EVPM2 2	SUSTAINABLE DEVELOPMENT	4	100	70	30

Fourth Semester

1.	PS04CVPM2 1	FIELD WORK AND SEMINAR	8	200	200	--
2.	PS04CVPM2 2	PROJECT WORK	16	400	400	--
3.	PS04CVPM2 3	COMPREHENSIVE VIVA-VOCE	1	50	50	--

Note:

- (i) CVPM - Core subject, Plant & Machinery stream
- (ii) EVPM - Elective subject, Plant & Machinery stream

Scope:

The scope of the course is very wide. The students passing with the M. Sc. degree in Valuation of Plant & Machinery are expected to have opportunity to work as Registered Valuers under the respective category - viz. Plant & Machinery.

Valuation of Plant & Machinery is required for following purposes:

- i. Bank loan / Mortgage / Security
- ii. Advice on fair purchase / sale price
- iii. Liquidation, Auction etc.
- iv. Land acquisition and fixation of compensation
- v. Leasing
- vi. Acquisition / Mergers / Amalgamation of companies
- vii. Insurance
- viii. Revaluation of companies assets / accounting and management purposes
- ix. Dissolution of firms / family partitions

The course is designed with a view to equip students to enable them to carry out valuation for these and any other purposes required.

Duration: Two years Master Degree Course with Four Semesters (CBCS).

Eligibility: As per R.PG.VAL.1.01

Number of Seats:

M.Sc. (Plant & Machinery Valuation) - 15 (Fifteen)

The syllabus of the M.Sc. (Plant & Machinery Valuation) programme is given at **Annexure-II**.

M. SC. (PLANT AND MACHINERY VALUATION)**First Semester****PS01CVPM21: PRINCIPLES OF ECONOMICS****CREDITS : 4**

UNIT	DESCRIPTION	WEIGHTAGE (%)
Micro-Economics		
1	Consumption: Indifference curve - consumer's surplus – elasticity; Production : input - output analysis - short - run and long - run production function - isoquant curves - least cost combination - return to scale; Price Mechanism: - determinants of price mechanism - individual and market demand schedules - law of demand & its conditions - exceptions and limitations of law of demand; individual and market supply schedules - conditions and limitations - reservation price - equilibrium price - importance of time element.	25
2	Pricing of products under different market conditions: perfect, imperfect or monopoly; Factors of production and payments thereof: (a) Land and Rent - Ricardian theory of rent - scarcity and differential rent - modern theory of rent - concept of quasi rent (b) Labour and Wages - Backward slopping supply curve of labour - determinants of supply of labour - theories of wages with special reference to marginal productivity theory - modern theory - collective bargaining and exploitation of labour - wage differentials and non-competing groups (c) Capital and Interest - Types of capital - gross interest - net interest - the classical theory - the neo classical theory - the liquidity preference theory of rate of interest (d) Organisation and Profit - Functions of entrepreneur - meaning of profit - various concepts of profit theories of profit; Pricing of factors of production.	25
Macro-Economics		
3	Functions & role of money : non-money economy; Inflation and Deflation: Types of inflation - causes - effects - inflationary gap - control of inflation - monetary, fiscal and direct measures - deflation - causes - effects - deflationary gap - measures to control deflation - deficit financing. Price level: relationship between quantity of money and general price level - Prof. Fisher's version of quantity theory of money - determinants of price-level - price index numbers - cost of living index number and weighted index numbers - uses and defects; National Income/National Wealth: Circular flow of income - concepts of GNP & NNP - per capita income and consumption - components of national income - income expenditure and output methods of computing national income.	25
4	Savings and Investment: Savings and types of savings - determinants of savings - investment - types of investment - determinants of investment - relationship between savings and investment; Components of Economy: Primary sector - secondary sector - tertiary sector. Informal sector in Urban economy - Parasitic Components in	25

	Urban economy; Parallel Economy: What is parallel economy? Causes and effects of parallel economy on use of land and its valuation - its impact on real estate market - construction industry and parallel economy.	
--	--	--

Suggested Books

- (i) Introduction to Economics by C.N. Vakil & H.N. Pathak
(Vora & Co. Publishers Pvt.Ltd.)
- (ii) Elementary Economics by K.P.M. Sundharam (S. Chand & Co. Delhi)
- (iii) Economics by T.K. Mitra
- (iv) Economics by Samuelson
- (v) Advanced Economic Theory by H.L. Ahuja
- (vi) Business Economics by Sunny Thomas & Wahida Thomas
- (vii) Micro Economivs by Wahida Thomas & Ashok Gaur

**PS01CVPM22: BOOK KEEPING AND ACCOUNTANCY
CREDITS : 4**

UNIT	DESCRIPTION	WEIGHTAGE (%)
1	The meaning and objects of book keeping. Double Entry book keeping. Introduction to Books of Prime entry and subsidiary books.	25
2	Cash book, bank book, journal ledger, purchase and sale books, debit and credit notes register, writing of books, posting and closing of accounts	25
3	Trading account, profit and loss account, income and expenditure account, presentation of balance sheet	25
4	Factory overhead, administrative overhead, fixed expenses, variable expenses, break-even point Depreciation and methods of computing depreciation used in accounts	25

Suggested Books

- (i) Book Keeping by Jai Narainsingh
- (ii) Book Keeping by Basu & Basu

**PS01CVPM23: ELEMENTARY SURVEYING AND ENGINEERING DRAWING
CREDITS : 4**

UNIT	DESCRIPTION	WEIGHTAGE (%)
Surveying		
1	Introduction: Surveying and leveling, plane and geodetic surveys; control points; different types of maps; conventional symbols; map reading; Classification of surveys and surveying methods: Surveying instruments, common parts bubble tube, telescope, verniers etc. Errors and error propagation.	25
2	Linear Measurement : Chains, bands, tapes; accuracies, errors in measurement, corrections; Directions and Bearings: True meridian, magnetic meridian, use of compass; local attraction errors; angular measurements; Theodolite traversing, Gale's traverse table, optical distance measurement and finding out vertical components from them.	25

3	Elevation Measurement: Principles of different methods; leveling instruments, contours and contour maps; areas and volumes; Horizontal and vertical control for mapping Basic idea of Preparation of Plans and Maps: Introduction to plane tabling; Introduction to remote sensing.	25
Engineering Drawing		
4	Construction and use of plain and diagonal scales; Conventional arrangement of views; first and third angle projections; types of lines, lettering and dimensioning; Introduction to projection of simple solids with varying position of axes and ground lines; Conversion of pictorial views in orthographic views; sectional views.	25

Suggested Books

Surveying

- (i) Surveying by Shri R.C.Bhavsar & Shri R.M. Khetani
- (ii) Surveying Volume -1 by Punamia B.C.
Standard Book House
- (iii) Elementary Surveying by Kulkarni
- (iv) Elementary Surveying by Kanetkar
- (v) Elementary Surveying by Prof. B.N. Ghosh
- (vi) Surveying by Arora Vol.1

Engineering Drawing

- (i) Elementary Engineering Drawing by N.D. Bhatt
Charotar Publishing House
- (i) Engineering Graphics by K.L. Narayan and P. Kannaiah
Tata McGraw Hill

PS01CVPM24 : INTRODUCTION TO STATISTICS

CREDITS : 4

UNIT	DESCRIPTION	WEIGHTAGE (%)
1	Data classifications and processing, graphical representation of data	25
2	Frequency distributions, measures of central tendency; dispersion and skewness	25
3	Elementary theory of probability and probability distributions; Sampling and sampling distribution, estimation; simple test of significance.	25
4	Regression and correlation; multiple correlation coefficient; Index numbers.	25

Suggested Books

- (i) Statistical Methods for C.A. Students by S.P. Gupta
- (ii) Mathematical Statistics by Ray U Sharma
- (iii) Fundamentals of Statistics by D.N. Elhance
- (iv) Mathematical Statistics by C.E. Weatherbush
- (v) Mathematical Statistics by Goyal & Sharma
- (vi) A course in Probability & Statistics by H.J. Malik & K. Mullen.
- (vii) Problem of Statistics for Engineers & Scientists by Re Wolpolz & Raymond H.Myers

PS01CVPM25: PRINCIPLES OF VALUATION
CREDITS : 4

UNIT	DESCRIPTION	WEIGHTAGE (%)
1	Cost, price and value; types of value; Various purposes of valuation, Four ingredients of value, Factors affecting value, value elements, highest and best use, value in use and value in exchange; Annuities, capitalisation, rate of capitalisation, sinking fund, redemption of capital; Construction and use of valuation tables.	25
2	INCOME APPROACH TO VALUE <ul style="list-style-type: none">➤ Rent: Origin, classical theories and evolution of the concept➤ Types of rent – outgoings – income – yield – years’ purchase➤ Lease : lessor and lessee : covenants, terms and conditions➤ Leasing; land and building; occupational lease➤ Valuation : lessor’s interest, lessee’s interest including sub-lease➤ Investment comparisons : Yield from real estate, plant and machinery and other forms of investment – sound investment	25
3	MARKET APPROACH TO VALUE <ul style="list-style-type: none">➤ Market – real estate market – market value; bell type curve➤ Comparison of sale instances – factors, methods and weightages➤ International Valuation Standards	25
4	COST APPROACH TO VALUE <ul style="list-style-type: none">➤ Cost : ingredients – costing methods➤ Depreciation – various methods of depreciation and their uses in different fields.➤ Age – effective age – economic life and remaining life➤ Depreciated replacement cost	25

Suggested Books

- (i) Parks’ Valuation – 5th Edition (1998) by D.N. Banerjee – Eastern Law House, Calcutta
- (ii) Appraisal Principles and Procedures by Henry A. Babcork
American Society Appraisers, P.O. Box 17265, Washington D.C. 20041, U.S.A
- (iii) Basic Real Estate Appraisal by Richard M. Betts and Silas J. Ely
American Society Appraisers, P.O. Box 17265, Washington D.C. 20041, U.S.A
- (iv) Theory and Practice of Valuation by Roshan H. Namavati
Lakhani Book Depot, Near Girgaon Church, Bombay - 400 004
- (v) Modern Methods of Valuation, 8th Edition
by William Britton, Keith Davis and Tony Johnson
- (viii) Valuation Principles and Procedures by Ashok Nain, Kolkata
- (ix) Valuation of Plant & Machinery (Theory & Practice) by Kirit Budhbhatti.

PS01EVPM21: ELEMENTS OF LAWS AND JURISPRUDENCE
(ELE. OF LAWS AND JURISPRUDENCE)
CREDITS : 4

UNIT	DESCRIPTION	WEIGHTAGE (%)
1	<u>Elementary Jurisprudence:</u> Law- its origin, sources and ramifications; Legislative enactments - subordinate legislation - Judicial precedents. <u>Indian Legal System:</u>	25

	Salient features of the Indian Constitution, fundamental rights: directive principles of the state policy; Executive, Legislature and the judiciary; Centre - State relationship.	
2	<u>Law of Contract:</u> Formation of a contract, parties; void, voidable and unenforceable contract; contingent contract; misrepresentation and fraud - effect thereof.	25
3	Termination of contract; remedies for breach; performance of contract; indemnity and guarantee; law of agency; general principles of tort; tort affecting valuation.	25
4	<u>Local Government</u> Types- Rural and Urban, constitutional provisions, powers and functions; Sources of revenue : Tax and Fee, Municipal Finance, essential civic services; <u>Conveyancing</u> Outline procedure for sale of immovable property : contract and conveyance; preliminary inquiries, open contract; contract by correspondence; Title: requisition and searches.	25

Suggested Books

- (i) Jurisprudence by M.J. Sethna, Publishers : Lakhani Book Depot.
Lamington Road, Bombay - 400 007
- (ii) Constitution of India by Basu.
- (iii) Law of Torts by B.S. Sinha, Eastern Book Company, 34 Lal Baugh, Lucknow
- (iv) Mulla on Indian Contract Act (Students Edition)
N.M. Tripathi, Princess Street, Bombay 400 002
- (v) Law of Torts by Desai
- (vi) Indian Judiciary by Dr. P. Dhar
- (vii) Local Self Government in India by M.P. Sharma
- (viii) Treatise on Calcutta Municipal Corporation Act by D.N. Banerjee & S. Sengupta
- (ix) West Bengal Municipal Act, by D.N. Banerjee
- (x) DeSouza's Conveyancing, by C.R.Datta and M.N. Das

PS01EVPM22: AIR POLLUTION AND CLIMATE CHANGE CREDITS: 4

UNIT	DESCRIPTION	WEIGHTAGE (%)
1	Definition, history, sources of air pollution - natural and anthropogenic, primary and secondary, Aeroallergens - sources, biology and health effects, general effects of atmospheric pollutants (PM, HC, CH ₄ , CO ₂ , H ₂ S, CO, NO _x , SO _x) on humans, animals, plants and materials; Ambient air quality emission standards, automobile pollution (photochemical oxidants, photochemical smog), characteristics - auto exhaust, and its control (catalytic converters), air pollution episodes (Bhopal, Chernobyl, Los Angeles, London smog, Indonesian forest fire), recent case studies on air pollution	25
2	Environmental factors and air pollution - heat, insulation, wind, precipitation, plume behavior, sampling and measurement of air pollution - ambient air and stack monitoring, indoor air pollution, indoor air quality, prevention and control of air pollutants - particulate matter & gaseous pollutants – absorption, adsorption, settling chambers, fabric	25

	filters, scrubbers, cyclone & electrostatic precipitators, Clean Development Mechanisms (CDM): carbon sequestration, carbon footprint, carbon trading, carbon market	
3	Climate Change: Definition of Climate and weather, Evolution of atmosphere, composition and structure, Particles, ions and radicals in atmosphere, Chemical reactions of different chemical species in the atmosphere, Oxygen and ozone chemistry and ozone hole formation. greenhouse gases- global warming, temperature inversion, global effects of GHGs, Classification of Climates, causes and consequences of Climate changes, Impacts of climate change on ecosystems, Global dispersion of toxic substance: Dispersion and circulating mechanisms of pollutants, ozone depletion, dust dome effect, acid rain, photochemical smog, heat island, Kyoto Protocol, Role of IPCC, Climate change methodologies	25
4	Disaster management- Concept of disasters, causes, prevention and correction hazards related to Earthquakes, Tsunami, Volcanic eruption, Cyclones, Floods, Drought, Landslides, Forest fires, Avalanches and Pest infestation, El nino and La Nina.	25

Suggested Books

1. A.K.DE. 1987. Environmental Chemistry. Wiley Eastern Limited
2. Blaikie, P., Cannon, T., Davies, I. and Wisner, B. (1994) At Risk: Natural Hazards, People's Vulnerability, and Disasters. London: Routledge. Bohle, H., Downing, T. and
3. Burroughs, W.J. 2001. Climate Change. Cambridge University Press.
4. Hobbes, P.V. 2002. Atmospheric Chemistry. Cambridge University Press.
5. Houghton, J. 2001. Global Warming. Cambridge University Press.
6. Maslin, M. Global Warming: A Very Short Introduction. (Oxford: Oxford University Press, 2008) [ISBN 9780199548248].
7. Rao, M. 2002. Air Pollution. Prentice & Hall.
8. Sainfeld, J.H. 1975. Air Pollution. Physical and Chemical Fundamentals, McGraw Hill, N.Y.
9. Sharma, B.K. 2002. Air Pollution. Academic Press.
10. Wayne, R.P. 2003. Chemistry of Atmosphere. Oxford University Press.