DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL
SCHEME OF STUDIES & EXAMINATION FOR
MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
(TWO YEAR FULL TIME)
(Choice Based Credit scheme w.e.f. 2018-19)

Program Outcomes (POs):

After completion of the program graduates will be able to

1. Apply the knowledge of Urban & Regional Planning ,science, mathematics, architectural, engineering and management principles for developing problem solving attitude.
2. Identify, formulate and solve problems in the domain of Urban & Regional Planning field.
3. Use different software tools for Analysis and planning in Urban & Regional Planning domain.
4. Design and conduct experiments, analyse and interpret data, for development of simulation experiments.
5. Function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility.

			DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT								
			SCHEME OF STUDIES & EXAMINATIONS								
			MASTER OF PLANNING (URBAN & REGIONAL PLANNING) **Choice Based Credit Scheme w.e.f. 2018-19**								
I SEMESTER **(TWO YEAR FULL TIME)**											
S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	P		Theory	Portfolio			
1	MPLAN-601C	PC	Planning History and Theory	3	-	50	50	-	100	3	3
2	MPLAN -603C	PC	Socio-economic basis for Planning	3	-	50	50	-	100	3	3
3	MPLAN -605C	PC	Planning Techniques	3	-	50	50	-	100	3	3
4	MPLAN -607C	PC	Infrastructure & Transport Planning	3	-	50	50	-	100	3	3
5	MPLAN 609C	PE I	Housing and Community Development	3	-	50	50	-	100	3	3
6	MPLAN -611C		Habitat and Environment studies								
7	MPLAN -613C		Demography and Planning								
8	MPLAN -615C	EEC	Planning Studio-I		6	100	-	100	200	6	3
9	MPLAN -617C	MLC	Research Methods & Communication Skills	3	-	50	50	-	100	3	3
			Audit 1	2	-	25	75		100	0	3
			Total	20	6	425	375	100	900	24	-

The courses are categorized as follows:

i) Programme Core (PC) courses include the core courses relevant to the field of specialization
ii) Programme Elective (PE) courses include the elective courses relevant to the the specialization.
iii) Open Elective (OE) courses include the elective courses offered by the other department
iv) Employability Enhancement Courses (EEC) include Design/Studio courses, dissertation, thesis, practical training
v) Mandatory Learning Courses (MLC)

Note

For Audit Courses & Open Electives, provisions in ordinance of Common M.Tech Programme shall be followed

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT

SCHEME OF STUDIES & EXAMINATIONS

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
Choice Based Credit Scheme w.e.f. 2018-19

II SEMESTER
(TWO YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	P/ Studio	Sessionals	Theory	Portfolio			
1	MPLAN -602C	PC	City and Metropolitan Planning	3	-	50	50	-	100	3	3
2	MPLAN -604C	PC	Urban & Regional Project Planning and Management	3	-	50	50	-	100	3	3
3	MPLAN -606C	PC	Advanced Planning Techniques	3	-	50	50	-	100	3	3
4	MPLAN -608C	PE - II	Inclusive Urban Planning	3	-	50	50	-	100	3	3
	MPLAN -610C		Planning for Tourism								
	MPLAN -612C		Urban Heritage Conservation &Urban Renewal								
5	MPLAN -614C	EEC	Planning Studio II		6	100	-	100	200	6	3
6	MPLAN -616C	EEC	Practical Training	0	-	60		40	100	2	
7			Audit-2	2	-	25	75		100	0	3
			Total	14	6	385	275	140	800	20	-

Audit course 1 & 2

AUD531C	English for Research Paper Writing	HUM Dept
AUD533C	Disaster Management	Civil Engg Dept
AUD535C	Sanskrit for Technical Knowledge	HUM Dept
AUD537C	Value Education	HUM Dept
AUD539C	Constitution of India	HUM Dept
AUD541C	Pedagogy Studies	HUM Dept
AUD543C	Stress Management by Yoga	HUM Dept
AUD545C	Personality Development through Life Enlightenment Skills	HUM Dept

Note

1. For Audit Courses & Open Electives, provisions in ordinance of Common M.Tech Programme shall be followed

DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT

SCHEME OF STUDIES & EXAMINATIONS

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
Choice Based Credit Scheme w.e.f. 2018-19

III SEMESTER
(TWO YEAR FULL TIME)

S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	P/Studio		Theory	Portfolio			
1	MPLAN -701C	PC	Regional Planning and Development	3	-	50	50	-	100	3	3
3	MPLAN -705C	PC	Rural Development and Infrastructural Planning	3	-	50	50	-	100	3	3
4	MPLAN -707C	PE-III	Regional, Urban & Rural Governance	3	-	50	50	-	100	3	3
	MPLAN -709C		Smart Cities								
	MPLAN -711C		Urban & Regional Development and Finance Management								
5.	MTOE551C	Open Elective	Business Analytics	3	-	25	75	-	100	3	3
	MTOE553C		Industrial Safety								
	MTOE555C		Operations Research								
	MTOE557C		Cost Management of Engineering Projects								
	MTOE559C		Composite Materials								
	MTOE561C		6. Waste to Energy								
	MTOE563C		7. Sustainable Development and Climate Change								
6	MPLAN -713C	EEC	Planning Studio III		6	100	-	100	200	6	3
7	MPLAN -715C	EEC	Dissertation Phase I		3	50	-	50	100	3	3
			Total	12	9	325	225	150	700	21	-

Note:

2. Students will be allowed to use Non-Programmable Scientific Calculator. However, sharing of calculator will not be permitted in the examination.
3. The choice of students for any elective shall not be binding on the department.
4. Dissertation coordinator will be assigned the load of 1 hrs per week excluding his/her own supervising load. However, the dissertation supervisor teacher will be assigned a load of one hour per candidate per week subject to the maximum of two periods of teaching load irrespective of number of students/groups under him/her.
5. For Audit Courses & Open Electives, provisions in ordinance of Common M.Tech Programme shall be followed

			DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL, SONEPAT								
			SCHEME OF STUDIES & EXAMINATIONS								
			MASTER OF PLANNING (URBAN & REGIONAL PLANNING) **Choice Based Credit Scheme w.e.f. 2018-19**								
IV SEMESTER **(TWO YEAR FULL TIME)**											
S.No.	Course No.	Category	Course Title	Teaching Schedule		Marks of Class work	Exam Marks		Total marks	Credit	Duration of Exam
				L	P		Theory	Portfolio			
1	MPLAN-702C	EEC	Dissertation Phase II/ Thesis	-	16	150	-	150	300	16	
2	MPLAN-704C	MLC	Legal Issues and Professional Practice	3	-	50	50	-	100	3	3
				3	16	200	50	150	400	19	

Note:

1. Thesis coordinator will be assigned the load of 3 hrs per week excluding his/her own supervising load. However, the thesis supervisor teacher will be assigned a load of one hour per candidate per week subject to the maximum of two periods of teaching load irrespective of number of students/groups under him/her.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN601C PLANNING HISTORY AND THEORY

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Evolution of City Building
Relevance of the study of evolution of settlements; Hunter, gatherer, farmer and formation of organized society; Cosmological and other influences, origins and growth of cities, effects of cultural influence on physical form; Human settlements as an expression of civilizations; Basic elements of the city; Concepts of space, time, scale of cities.

UNIT II: Planning History
Town planning in ancient India; Medieval, renaissance, industrial and post-industrial cities; City as a living spatial entity; Concepts of landmark, axis, orientation; City form as a living space; City as a political statement: New Delhi, Chandigarh, Washington D.C. Brasilia etc.; Contribution of individuals to city planning: Lewis Mumford, Patrick Geddes, Peter Hall, etc.; Dynamics of the growing city, impact of industrialization and urbanization, metropolis and megalopolis.

UNIT III: Definitions and Objectives of Planning
Definitions of town and country planning; Orthodoxies of planning; Goal formulation, objective, scope, limitations; Sustainability and rationality in planning; Components of sustainable urban and regional development. Planning concept in India, ancient, Pre independence and post-independence development. Aims and objectives of planning Levels of planning in India and their interrelationships, PlanningAdministration.

UNIT IV: Theories of City Development and Planning Theories
Theories of city development including Concentric Zone Theory, Sector Theory, Multiple Nuclei Theory and other latest theories; Land use and land value theory of William Alonso; Ebenezer Howard's Garden City Concept; and Green Belt Concept; City as an organism: a physical, social, economic and political entity; Emerging Concepts: global city, inclusive city, safe city, etc.; City of the future and future of the city; Shadow cities, divided cities; Models of planning: Advocacy and Pluralism in Planning; Systems approach to planning: rationalistic and incremental approaches, mixed scanning and middle range planning; Equity planning; Political Economy Model; Types of development plans, plan makingprocess.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. TotalEIGHTquestionsaretobeset(twoquestionsfromeachunit),andcandidatehavetoattemptanyfivequestions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN603C SOCIO-ECONOMIC BASIS FOR PLANNING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Nature and Scope of Sociology

Sociological concepts and methods, man and environment relationships; Socio-cultural profile of Indian society and urban transformation; Tradition and modernity in the context of urban and rural settlements; Issues related to caste, age, sex, gender, health safety, and marginalized groups; Displacement, resettlement and rehabilitation due to compulsory land acquisition.

UNIT II: Community and Settlements

Social problems of slums and squatters communities, urban and rural social transformation and their impact on social life, safety, security; Crimes in urban areas and their spatial planning implications, social structure and spatial planning; Role of socio-cultural aspects on growth patterns of city and neighborhood communities; Social planning and policy, and community participation; Marginalization and concepts of inclusive planning, and gender concerns in planning. Settlement Policy: National Commission on Urbanization, Rural Habitat Policy and experiences from developing countries regarding settlement structure, growth and spatial distribution .Economic considerations in settlement planning & Design

UNIT III: Elements of Micro and Macro Economics

Concepts of demand, supply, elasticity and consumer markets; concept of revenue costs; Economies of scale, economic and social costs, production and factor market; Different market structures and price determination; market failures, cost-benefit analysis, public sector pricing; Determinants of national income, consumption, investment, inflation, unemployment, capital budgeting, risk and uncertainty, and long-term investmentplanning. National Industrial Policy

UNIT IV: Development Economics and Lessons from Indian Experiences

Economic growth and development, quality of life; Human development index, poverty and income distribution, employment and livelihood; Economic principles in land use planning; Policies and strategies in economic planning, balanced versus unbalanced growth, public sector dominance; changing economic policies, implications on land.

NOTE:

The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN605C PLANNING TECHNIQUES

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Survey Techniques and Mapping
Data base for physical surveys including land use, building use, density, building age, etc., and socio-economic surveys; Survey techniques; Land use classification or coding and expected outputs; Techniques of preparing base maps including understanding the concepts of scales, components and detailing for various levels of plans like regional plan, city plan, zoning plan, and local area plan.

UNIT II: Analytical & Demographic Methods
Classification of regions, delineation techniques of various types of regions, analysis of structure of nodes, hierarchy, nesting and rank size; Scalogram, sociogram, etc.; Planning balance sheet; Threshold analysis; Input output analysis, SWOT analysis.Methods of population forecasts and projections; Lorenz Curve, Ginni Ratio, Theil's index, rations: urban – rural, urban concentration, metropolitan concentration; Location dimensions of population groups – social area and strategic choice approach – inter connected decision area analysis.

UNIT III: Introduction to GIS Mapping
Coordinate system, Georeferencing and geo-coding; GIS data processing (Digitization, topology building and metadata creation), Data structures and modeling, GIS analysis (Buffer, proximity and overlay), Decision making through GIS, Information systems (Land Information system, Urban Information system for various activity sectors).

UNIT IV: Planning Standards
Spatial standards, performance standards and benchmarks, and variable standards; UDPFI guidelines, zoning regulations and development control rules and regulations.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN607C INFRASTRUCTURE & TRANSPORT PLANNING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Role of Infrastructure in Development
Elements of Infrastructure (physical, social, utilities and services); Basic definitions, concepts, significance and importance; Data required for provision and planning of urban networks and services; Resource analysis, provision of infrastructure, and land requirements; Principles of resource distribution in space; Types, hierarchical distribution of facilities, Access to facilities, provision and location criteria, Norms and standards,etc.

UNIT II: Planning and Management of Water, Sanitation and Storm Water
Water – sources of water, treatment and storage, transportation and distribution, quality, networks, distribution losses, water harvesting, recycling and reuse, norms and standards of provision, institutional arrangements, planning provisions and management issues; sanitation – points of generation, collection, treatment, disposal, norms and standards, grey water disposal, DEWATS, institutional arrangements, planning provisions and management issues.

Storm water – rainfall data interpretation, points of water stagnation, system of natural drains, surface topography and soil characteristics, ground water replenishment, storm water collection and disposal, norms and standards, institutional arrangements, planning provisions and management issues;

UNIT III: Planning and Management of Municipal Wastes, Power and Fire
Municipal and other wastes – generation, typology, quantity, collection, storage, transportation, treatment, disposal, recycling and reuse, wealth from waste, norms and standards, institutional arrangements, planning provisions and managementissues.
Power – Sources of power procurement, distribution networks, demand assessment, norms and standards, planning provisions and management issues. Fire – History of fire hazards, vulnerable locations, methods of firefighting, norms and standards, planning provisions and management issues.

UNIT IV: City Development and Transport Infrastructure Planning, Management and Design
Role of transport, types of transport systems, evolution of transport modes, transport problems and mobility issues**;** Urban form and Transport patterns, land use – transport cycle, concept of accessibility; Hierarchy, capacity and geometric design elements of roads and intersections**;** Basic principles of Transport infrastructure design; Traffic and transportation surveys and studies, traffic and travel characteristics; Urban transport planning process – stages, study area, zoning, data base, concept of trip generation Transport, environment and safety issues; principles and approaches of traffic management, transport system management. National Transport Policy

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHTquestions are to be set (two questions from each unit),and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN609C HOUSING & COMMUNITY DEVELOPMENT

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Concepts and Definitions
Shelter as a basic requirement, determinants of housing form, Census of India definitions, introduction to policies, housing need, demand and supply, dilapidation, structural conditions, materials of constructions, housing age, occupancy rate, crowding, housing shortage, income and affordability, poverty and slums, houseless population

Various housing typologies viz. traditional houses, plotted development, group housing, multi-storied housing, villas, chawls, etc., slums and squatters, night shelters, public health issues related to housing, various theories of housing, concept of green housing, green rating of housing projects.

UNIT II: Social and Economic Dimensions
Housing as social security, role of housing in development of family and community well-being, status and prestige related to housing, safety, crime and insecurity, deprivation and social vulnerability, ghettoism, gender issues, housing for the elderly. Contribution of housing to micro and macro economy, contribution to national wealth and GDP, housing taxation, national budgets, fiscal concessions, forward and backward linkages.

UNIT III: Housing and the City
Understanding housing as an important land use component of city plan / master plan, considerations for carrying out city level housing studies, projections, land use provisions; Suitability of land for housing, housing stress identification, projecting housing requirements, calculating housing shortages, housing allocation.
Approaches to neighborhood living in traditional and contemporary societies, elements of neighborhood structure, Planning and design criteria for modern neighborhoods, norms and criteria for area distribution, housing and area planning standards, net residential density and gross residential density, development controls and building byelaws, UDPFI guidelines, NBC 2005 provisions and Case studies of neighborhood planning. National Hosing Policies, URDPFI

UNIT IV: Rural Housing
Issues, challenges and opportunities of rural housing, shortfall in rural housing as per 1991 census, National Housing and Habitat policy of 'housing for all, Indira Awas Yojana of the Government of India, provisions for below poverty line category, credit-cum-subsidy component of IAY, housing upgradation in rural areas (conversion of unserviceable kutcha houses into semi-pukka/pukka houses), institutional mechanism for improved shelter delivery, role of Housing and Urban Development Corporation, Building Material Technology Promotion Council (BNTPC), Central Building Research Institute, district rural development agencies/zila parishads, Rural Building Centres, Non-government organization (NGO), proposal for National Mission for Rural housing, Rural Housing and Habitat Development Corporation, construction designs, materials and technologies for rural housing.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50 (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN611C HABITAT & ENVIRONMENT STUDIES

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

Unit –I: Habitat: • Introduction to Habitat- Habitat and Urbanization; Significance of Habitat in National Development Goals; Current Issues in Habitat: Health and Safety Related Issues in Habitat, Shift of Habitat from Social Sector to Private Sector Participation • Habitat Design - Habitat Typology, Habitat Layouts, Habitat Density, Community Facilities, Public and Private Sector Habitat Development, Social Aspects of Habitat, Built Environment and Human Behavior, Habitat Norms and Standards • Habitat for the Poor- Issues in Slums and Squatter Settlements; Government Initiatives for Providing Habitat • Habitat Demand- Habitat Need Assessment, Estimating and Forecasting

Unit –II: Habitat & Housing Requirements

Habitat & Housing Requirements (Qualitatively and Quantitatively); Understanding Current Methods of Habitat &Housing Demand Assessment • Affordable Habitat- Household Affordability, Concept of Affordable Habitat &Housing Affordable Habitat in India, Affordable Housing Policy 2009, Affordable Habitat in Public Private Participation, Emerging thoughts • Housing Policy- Understanding Five Year Plans, National Housing & Habitat Policy- Review, Policy Framework for Urban and Rural Habitat, Comparative Policy Analysis • Rental Habitat in India: An Overview, Current Practices and Upcoming Initiatives. • Poverty and Informal Sector: Poverty and Poor Settlements – Definition, Dimensions, Deprivation, Measurement, Defining Parameters, Absolute and Relative Poverty; Magnitude of Problem; Concern for Poverty; Spontaneous Growth of Settlements; Perspective of Slums and Squatters; Functions in Urban Context; Squatter Formations by Illegal Occupation; Migratory Impulses and their Association with Growth of Informal Sector; Socio-Economic Deprivation and

Unit –III: Environment

Environment Degradation; Development of Informal Sector; Role of Informal Sector in Habitat Stock, Economy, Commercial Activities, Etc.; Implications in Physical Planning • Informal Sector Housing and Basic Needs - Lack of Essential Infrastructure; Poor Condition of Existing Services; Identification of Basic Needs; Provision for Various Target Groups; Standards for Basic Needs; Investment for Housing; Essential Components; Ownership and Tenure Security; Service Delivery - Gaps in Existing Institutional Systems of Delivery Environment •

Unit –IV: Man and Environment

Changing Perspectives in Man-Environment Relationship with Focus on Issues of Population, Urbanization, Resource Depletion and Pollution • Concept of Ecology; Fundamentals of Ecosystem—Its Structure and Function • Environmental Degradation (Environmental Concerns and Challenges) and Its Impact on Various Ecosystems • Planning for Environmentally Sensitive Zones (Resources Availability, Settlements Pattern, Problems and Potentials, Regulating Mechanisms for Development) • Tools and Techniques for Environmental Planning and Management- Introduction to Environmental Impact Assessment, Strategic Environment Assessment and Environmental Management Plans • Environmental Policies and Initiatives Including Policies, Strategies, Protocols, Treaties • Sustainable Development (Concept and Methods)

NOTE:

The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
I	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I
MPLAN613C DEMOGRAPHY & PLANNING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

Unit I :Demography •

Distribution and Density of Population - Measures of Population Distribution and Concentration; Factors Affecting Population Distribution and Density; World Population Distribution; Density Distribution in India • Population Change - Fertility and Its Measures; Mortality and Its Measures; Mobility; Factors Affecting Population Change; Determinants of Fertility and Mortality;

Unit II : **Demographic Transition Theory;**

Some Population Theories (Overview only) • Migration - Types of Migration; Determinants of Migration; Migration Models • Population Composition - Age and Sex Composition and Its Determinants; Age Pyramids; Working Force and Its Determinants; Composition of Work Force and Occupational Composition • Population Projections – Assumptions, Methods, Techniques.

Unit III: Quantitative Methods •

Measures of Central Tendency and Dispersion - Arithmetic Mean; Weighted Mean; Geometric and Harmonic Mean; Median and Mode; Variance and Standard Deviation • Time Series and Forecasting - Trend Analysis - Cyclical Variation, Seasonal Variation, Irregular Variation; Various Methods in Time Series Analysis – Moving Average, Ratio to Trend, Link Relative and Residual • Factor Analysis - Principal Component Analysis • Probability Distribution and Sampling Distribution - Use of Expected Value in Decision Making; Binomial, Poisson and Normal Distribution (only application);

Unit IV Sampling :

Determination of Sample Size and Types of Sampling; Sampling Distribution (concept only); Design of Experiments (concept only) • Correlation and Regression - Two Variable versus Multiple Linear Regression; Simple and Multiple Correlation; Estimation of Parameters – The Method of Ordinary Least Squares; Hypothesis Testing, Goodness of Fit 13 • Use of Software for Analyzing Data; Applications of Features of Excel for statistical analysis; Introduction to other Statistical Analysis Software.

NOTE:

The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN615C PLANNING STUDIO-I

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100		100	200	6	-

CONTENT:

The planning studio is focused on the study of master plan of city/town and appraisal of the land use followed by a design and layout of housing.

EXERCISE I:

Study of any one land use in any existing Master plan of an Indian town/city as per the guidelines given below: (GIS based data collection, analysis and Mapping should be encouraged during the exercise.)

Minimum Requirements:

(i) Study of a Master plan/development plan of selected town (clearly indicating existing and proposed landuses).

(ii) Study of an existing land use map of selected town highlighting the land use which has been selected forstudy E.g. open spaces or commercial land use, residential, industrial etc. indicating all its such categories and extend and nature of the use / activity.

(iii) Study of the future proposals as given in the Master Plan regarding the selected landuse.

(iv) Analysis of standards adopted in the proposed Master Plan regarding the selected land use, with suggestions of improvements, ifany.

(v) Development stages of design of alternative proposals for developing the land use within the overall framework of MasterPlan.

The proposal may include (I) An existing land uses map indicating all its subcategories and extent and nature of use/ activity.(II) A map showing the future proposal as given in the development plan along with all facts and figures .(III) Analysis of standards adopted in the Development Plan regarding the various land uses, with suggestion of improvements and various techniques etc.(IV) A comprehensive report of not more than 75 double spaced typed pages of A-4 size containing introduction, reasons for selection of the Town and the planning alternatives with analysis, calculations, observations and recommendation etc.

EXERCISE II:

Design and lay out for a Housing project, Industrial project, Institutional areas etc. on an existing site of area as per the respective norms of the town and country planning norms. Site planning is a process whereby the optimum utilization of potential of site is considered recognizing the constraints the site has. It uses three dimensional space of the site and the associated locational advantages, human activities and the regulations that are assigned to a particular site. The site is developed using a set of standards / norms in a given context which varies from location to location. A student is expected to understand the intricacies and interface between various variables such as soil conditions, topography, environmental dimensions, location, spatial standards applicable to the site, etc.

The items to be submitted may include.

(I)Site analysis clearly indicating all physical features, potentials and problems as well as land suitable for buildings (II) Design of dwelling units-All plans and at least, two elevations and one section on 1:100 scale. (III) Layout of buildings and roads. (IV) Layout showing trunk sewer, main waterlines and refuse collection points. (V) Layout showing landscaping proposal along with buildings and roads all on 1:1000 scale (VI) Report not more than 25 double spaced typed pages of A4 size containing introduction site analysis, area calculations and other procedures followed in design process.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester.

This exercise needs to be supported by frequent site visits & detailed case studies.

There should be regular presentations of various internal stages.

I	Sessional evaluation	Weightage
	Seminar	20 %
	Programme formulation	20%
	Concept	20 %
	Preliminary Design	40%
II	**Portfolio evaluation**	
	Detail Design	100%

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-I

MPLAN617 C RESEARCH METHODS AND COMMUNICATION SKILL

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

Unit I : **Overview of Research Process in Urban and Regional Planning**

Overview of Research Process in Planning, Resources, Developing a Research Topic, role of Planning research; the steps in conducting research; broad area of research interest in Urban and Regional Planning, potential research questions; Master's research project. Literature Review: identifying sources; strategizing the literature review, constructing Hypotheses, types of hypothesis, Elements of good research, types of research, research methods: qualitative, quantitative and mixed measures, Research design as a part of the designer's thinking: problem statement, critical thinking, Information searching techniques: field study to archives and libraries. Statistical theories: regression analysis, factor analysis and multivariate analysis

Unit II **Research Methodology & Study Designs**

Identifying Variables, methodology to identify concepts related to research and develop operational definitions, building a conceptual model for research, analyzing the relationships between identified variables to understand data needed to collect in research: Types of Study Designs Components of research design; differences between qualitative and quantitative designs, **S**uitability of various study designs Qualitative research: types of research survey, interviews in research, observation, physical traces, Correlational research, Experimental and quasi experimental research, imulation and modeling research, Case studies and combined strategies

Unit III: **Data collection and Analysis**

Selecting a Method of Data Collection, Choosing the appropriate method for data collection, the level of formality in interviews and surveys, and selecting samples; qualitative research and evaluation research, selecting a method of Data Collection Speculations and claims, reasoning

Unit IV: **Research Proposal**

Research proposal preparation in Urban and Regional Planning , Ethical Issues in Research, Validity and Reliability in Research Understanding ethical issues in research design, using the Institutional Research Board for research involving human subjects, understanding threats to internal and external validity in research. Research paper/report preparation: components, Methods to use information: issues of copy right, citation & referencing: Harvard and Chicago styles. End Note. Presentation techniques: oral presentation, layout, printing process, internet, overhead, power point

NOTE:

The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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SEMESTER –II : MASTER OF PLANNING (URBAN & REGIONAL PLANNING)

MPLAN602C CITY AND METROPOLITAN PLANNING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Urban Growth and System of Cities
Growth of cities scale, complexity and its impact on national development, cities as engines of growth, cities as ecosystems, resources in cities.

UNIT II: City – Region Linkages
City, fringe and the periphery - physical and functional linkages, peri-urban development.

UNIT III: Metro and Mega Cities: Problems and Issues
Growth trends and processes, characteristics, problems, concepts and concerns of urban sustainability, issues related to diversity and unintended growth, economic, social and environmental sustainability, quality of life, inclusivity and equity, climate change, transit oriented development, participatory planning. Inner city – issues and problems, approach to development. Urban development schemes like SMART city concepts, AMRUT , HRIDAY,JNNURM etc

UNIT IV: Human Settlement Planning, Urban Development Policies and Programmes
Concepts, approaches, strategies and tools; Policies and programmes at various levels, impact on metro and mega city development.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN604C URBAN &REGIONAL PROJECT PLANNING & MANAGEMENT

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Project planning
Introduction to Projects; Nature of planning projects; Project Life Cycle; Identification of projects

UNIT II: Project Formulation and Appraisal
Relationship between projects and planning issues including sectoral policy at: Local, State and National levels Project appraisal: Market analysis – Macro environment survey, survey methods, market characterization, demand forecasting; Technical Analysis – Magnitude, processes, materials, equipment, factors of production availability, implementation schedule; suitability of the plans, layout and design, location of the project; location analysis; supporting infrastructure requirements- Capital Budgeting – Estimation of costing of components; developing over project cost; Social cost benefit analysis – UNIDO, Merles, ZOPP/GOPP, etc.

UNIT III: Project Management and Implementation, and Project Evaluation and Monitoring
Project characteristics - pitfalls in management of a project; Techniques of management; Planning milestones - responsibility charts and principle responsibility, principles of activity planning; Project Implementation – methods, hurdles, facilitative factors; Project culture: line management, steering committee, role of project manager; Project Control: cost and time, quality - ISI standards and its application to Indian context; Introduction to Project Management Software (Ms Projects) and its usage. Types of evaluation - concurrent, ex-ante and ex-post. Methods of evaluation, techniques of evaluation, end results, Presentation of evaluation findings, Techniques of Monitoring of DevelopmentWorks.

UNIT IV: Regulatory Frameworks Governing Projects
National Rehabilitation and Resettlement Policy (2007) - Social Impact mitigation; National Environmental Policy (2006) –Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 markseach.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN606C ADVANCED PLANNING TECHNIQUES

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Survey Techniques
Data Base for Physical surveys (including land use / building use / density / building age, etc.) and Socio-economic surveys; Questionnaire formulation, Sampling and survey techniques, etc. Land use classification / coding.

UNIT II: Fundamentals of GIS for Planning

Fundamentals of Geospatial technology, Overview of geospatial technologies and Mapping , Remote Sensing, Image Interpretation and Image Processing, GIS analysis and modeling, Survey Techniques and Navigation System,GIS Mapping and Projections, Government initiatives for GIS applications , Geo –portal in Planning : BHUVAN,

UNIT III: GIS and RS applications in Urban and Regional Planning

Applications of GIS &Remote Sensing in Planning, GIS based Master Plans, GIS applications in Regional Planning, Disaster Management, Environment Planning & Housing,

UNIT IV: Analytical Techniques, Report Writing,Research Design & implementation and Presentations
Data tabulation; Interpretation of information; Graphical presentation of data; Spatial representation of data; Types of reports with specific focus on technical report writing; Organizing the report, structure chapter organization, Writing the report (analytical findings); Referencing in text, use of software in referencing.Approaches in research, developing a

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method for research; Questionnaire Design, Types of data, sampling methods; developing aims, objectives, scope, limitations; and literature research – using library, accessing the Internet

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:

1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN608C INCLUSIVE URBAN PLANNING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Understanding Inclusive Planning
Definitions and components

UNIT II: Stakeholders Profile and Needs, Access to Shelter, Services and Livelihoods
Urban Poor, Informal Sector, Gender, Children, Elderly, Disabled, Displaced people, etc.; Slums - dimensions, causative factors, determinants, location characteristics of settlements; Informal sector - growth, characteristics, functions, economic contributions, linkages with formal sector, impact on Urban Development

UNIT III: Participatory Planning Process and Policies, Programmes and Legislation
Methods, role of stakeholders (including civil society organizations), etc.; Related Acts, Five year plans, policies and programmes at various levels.

UNIT IV: Planning interventions
Inclusive zoning, development and building regulations, Slum Improvement.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 markseach.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN610C PLANNING FOR TOURISM

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Introduction to Tourism
Definitions, scope, nature, classification and dimension, tourism as an industry, tourism in developed and developing world.

UNIT II: Tourism Sector – Impacts
Relationship between Tourism and Urban Development, Tourism multiplier and forecasting methods: capacity building and carrying capacity planning for tourism projects, tourism and cultural and social change: Socio-cultural problems, environmental degradation.

UNIT III: Planning for Tourism
Nature and scope of a tourism plan- key issues and stages, data requirements, surveys, role of key players / stake holders in tourism policy and planning, sustainable tourism development planning; community planning and tourism; implementation and management, role of travel and tourism promoting agencies, monitoring the tourism development; Tourism marketing - concept, techniques andstrategies.

UNIT IV: Policies and Programmes
Tourism policies at various levels.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passingmarks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

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MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN612C URBAN HERITAGE CONSERVATION &URBAN RENEWAL

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
3	-	50	50	-	100	3	3

CONTENT:

UNIT I: Introduction to Urban Heritage
Typology / classification, inventories, mapping; Human habitation in historical context; Heritage as a motivating force in sustainable urban conservation and development,

UNIT II: Heritage Conservation
Natural heritage conservation - typologies, policies for conservation, regulatory measures, community participation; Concept of Historic Urban Landscapes; Built heritage conservation - determinants of built form on heritage; Historic urban infrastructure and traditional water harvesting systems. Integration of historic monuments / areas / cores / urban systems in the developmental process and land use, regulatory measures and community involvement; Intangible cultural heritage and development: issues, conservation strategies. Preparation of conservation and heritage managementplans.

UNIT III: Heritage and Tourism, Policies and Programs, Legislation
Cultural and heritage based tourism - nature, potential and prospects, marketing aspects; Acts and laws recognizing conservation / regeneration; Heritage toolkit; Implications of 74th Constitution Amendment Act.

UNIT IV: Design in Human Habitation
Social / cultural / ecological / energy determinants of design; Imagibility of the city; Structure of urban spaces – location criteria of activities and urban uses; Urban Regeneration, renewal, rehabilitation, revitalization, reconstruction and redevelopment - concepts, interventions, processes, approaches and methods, tools.

NOTE:
The subject teacher would make detailed teaching programme along with extensive reading and circulate to the students at the commencement of the semester.

I	Sessional evaluation	Weightage
	Minor Test – I	20%
	Minor Test – II	20%
	Assignment / Mini Project / Term paper	30%
	Quiz/Tutorial/Class Test	30%
II	**Theory examination**	100%

INSTRUCTIONS TO QUESTION PAPER SETTER:
1. Exam shall be of 3 hours duration and of maximum marks: 50. (minimum passing marks:20)
2. Total EIGHT questions are to be set (two questions from each unit), and candidate have to attempt any five questions selecting one from each unit, each question of 10 marks each.

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II

MPLAN614C PLANNING STUDIO -II

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	6	100	-	100	200	6	

CONTENT:

Study of an existing large cities and emerging metropolitan cities for its Urban Development and Planning.

The exercise pertains to large cities and emerging metropolitan cities and ranges from preparation of sustainable development plans to sector specific themes pertaining to tourism, SEZs or a particular land use etc.
The aim of the area appreciation is to enable the students to understand and contextualize the location of city, with its linkages and connectivity and in relation to the socio-economic, spatial and cultural characteristics of that city, zone, location, etc. The main purpose is to make the students appreciate the locational attributes of land parcels for future development in acity.
Due to the size of the area, this exercise is done in groups of students being assigned to a particular area. The following planning issues at area level should be identified:

- Review of the Master Plan / Zonal / Area plan in relation to the selected areas.
- Appreciation / Analysis of ward leveldata.
- Perception of areas in terms of legal / illegal / authorized / unauthorized, Slums, Urban Aesthetics.
- Social Categorizations of people - Type of population living, people's perception about area and its planning problems.
- Land use including Agriculture land and land use conflicts, extent (%) of broad land use such as commercial, industrial, residential, institutional and recreational.
- Extent of formal / informal activities present in the area including their location and conflicts.
- General land tenure of the area and land value for different uses.
- Major types of transport, type of roads, hierarchy of roads, type of transport modesused.
- Amenities: Location of Social and Physical infrastructure and their problems as perceived by local population. Look for specific infrastructure such as Water supply, drainage (water logging areas), waste collection and disposal system, sanitation,etc.
- Environmental Issues: Open Spaces – Availability and extent of open space to built-up area, garbage disposal, encroachment (through photographic evidences and sketches).

GIS based data collection, analysis and Mapping should be encouraged during the exercise.

Initial study involves understanding of the theories through extensive literature search and relevant case studies and associated norms and standards.

Further study pertains to application of GIS, remote sensing, demographic data and statistical analysis. Students are expected to analyze the data collected and come out with proposals and recommendations for planned development of the city.

Further study pertains to topical issues i.e. property tax reforms, informal sector, development of railway land, etc. The study is based on primary surveys and students are expected to analyze the information and arrive at recommendations.
Minimum Requirements:

(A) Alternative proposals for developing the land use within the overall framework of Master Plan.
(B) A comprehensive report containing introduction, reasons for selection of the town and particular land use in it, analysis, calculations, observations and recommendations.

NOTE:

Detailed teaching programme to be made and circulated to the students at the commencement of the semester. This exercise needs to be supported by frequent site visits & detailed case studies.
There should be regular presentations of various internal stages.

I	Sessional evaluation	Weightage
	Seminar	20 %
	Programme formulation	20%
	Concept	20 %
	Preliminary Design	40%
II	**Portfolio evaluation**	
	Detail Design	100%

MASTER OF PLANNING (URBAN & REGIONAL PLANNING)
SEMESTER-II
MPLAN616 C` PRACTICAL TRAINING

Teaching Schedule		Marks of Sessional work	Marks of Examination		Total marks	Credits	Duration of Examination (h)
L	P		Theory	Portfolio			
-	-	60	--	40	100	2	0

INTENT: The course intents to give insight into Planning practice

CONTENT: Practical training for 6 weeks is to be carried out during the summer vacation after the second semester. Trainee may undertake the training in State/ Central Government Organizations like Town and country planning departments, urban local bodies, Development authorities like HUDA or HSIIDC or housing boards in planning wing, Planning board NCRPB, or Central govt offices having planning wing, Consultant planning offices having planners registered with the Institute of Town Planners, India and should have minimum experience of 10 years and the students should obtain prior approval from the department. The students are expected to learn nuances of working on Master Plans/ Development Plans/ City development Plans/Zonal Plans etc. The students will work minimum 35 hours per week and submit weekly performance reports. During practical training students are required to study various aspects, as discussed during the preceding semester course and submit a report on the following aspects:

A	**General Information** Name of Student Registration no. of student Placement of training Duration of training
B	**Nature of organizational enterprise** (explain type of activities the organization is involved in)
C	**Organization structure** and position of trainee
D	**Types of consultancy** followed (Enclose typical documents)
E	**Chronological list of responsibilities assigned to the Trainee**
F	**List of the Works done during training** (Enclose typical work outputs)
G	**Experiences and inferences drawn during training**
A	Typical planning stages followed
B	Legislative framework adopted
C	Details of Planning Standards adopted
D	Details of Planning Surveys adopted
E	Innovative Practices for implementation, Controls, development management and financial aspect
F	Transport planning practices adopted
G	Services (Physical infrastructure) Standards and Design Practices adopted
H	Communication systems, practices and planning processes adopted
I	Environmental policies and standards adopted
J	Standard Presentation practices adopted
K	any other information
I	Special features of the project work (enclose documents to explain and highlight peculiarities)

NOTE:

Detailed Training manual to be made and circulated to the students at the commencement of the semester. Trainee must attach the certified copies of the work carried out by him/ her as an annexure in the report.

I	Evaluation	Weightage
	Sessional evaluation	
	Training Report	60%
II	**Portfolio Evaluation**	
	Viva Voce	40%

AUD531C: ENGLISH FOR RESEARCH PAPER WRITING(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

Students will be able to:

1. Understand that how to improve your writing skills and level of readability,
2. Learn about what to write in each section,
3. Understand the skills needed when writing a Title, and
4. Ensure the good quality of paper at very first-time submission

Course Outcomes:

The Students will become conscious citizens of India aware of their duties, rights and functions of various bodies of governance and welfare; thereby well equipped to contribute to India.

Syllabus contents:

UNIT I: **Basics of Writing Skills:**
Subject Verb Agreements; Parallelism; Structuring Paragraphs and Sentences; Being Concise and Removing Redundancy; Avoiding Ambiguity and Vagueness; Dangling Modifiers

UNIT II: **Reviewing and Citation:**
Clarifying Who Did What; Highlighting Your Findings from Literature; Hedging and Critiquing; Paraphrasing; Avoiding Plagiarism; Formatting and Citation (Publication Manual of the American Psychological Association)

UNIT III: **Sections of a Research Paper:**
Writing Effective and Impressive Abstract; Writing Introduction; Review of Literature; Defining Objectives of the Study; Methodology Adopted; Results Obtained; Discussion and Conclusion; Editing and Proof Reading to Ensure Quality of paper

UNIT IV: **Oral Presentation for Academic Purposes:**
Oral Presentation for Seminars, Conferences and Symposiums; Poster Presentation; Choosing AppropriateMedium; Interaction and Persuasion

TEXT / REFERENCE BOOKS:

1. Goldbort R (2006) Writing for Science, Yale University Press (available on Google Books).
2. Day R (2006) How to Write and Publish a Scientific Paper, Cambridge University Press.
3. Highman N (1998), Handbook of Writing for the Mathematical Sciences, SIAM. Highman'sbook.
4. Adrian Wallwork, English for Writing Research Papers, Springer, New York Dordrecht Heidelberg London, 2011
5. Mc Murrey,David A. and Joanne Buckley. Handbook for Technical Writing. New Delhi: Cengage Learning, 2008.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD533C: DISASTER MANAGEMENT(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

1. Learn to demonstrate a critical understanding of key concepts in disaster risk reduction and humanitarian response
2. Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives
3. Develop an understanding of standards of humanitarian response and practical relevance in specific types of disasters and conflict situations
4. Critically understand different aspects of disaster management

Course Outcomes:

A student will be able to:

1. Know the significance of disaster management,
2. Study the occurrences, reasons and mechanism of various types of disaster
3. Learn the preventive measures as Civil Engineer with latest codal provisions
4. Apply the latest technology in mitigation of disasters

Syllabus contents:

UNIT I: **Introduction to Disaster Management:** Definitions: Disaster, Emergency, Hazard, Mitigation, Disaster Prevention, Preparedness and Rehabilitation, Risk and Vulnerability, Classification of Disaster, Natural and Man made Disasters, Disaster Management Act 2005, Role of NDMA, NDRF, NIDM
Risk and Vulnerability to disaster mitigation and management options: Concept and Elements, Risk Assessment, Vulnerability, Warning and Forecasting.

UNIT II: **Hydro-meteorological based disasters I:** Tropical Cyclones, Floods, droughts, mechanism, Causes, role of Indian Metrological Department, Central Water Commission, structure and their impacts, classifications, vulnerability, Early Warning System, Forecasting, Flood Warning System, Drought Indicators, recurrence and declaration, Structural and Non-structural Measures.
Hydro-meteorological based disasters II: Desertification Zones, causes and impacts of desertification, Characteristics, Vulnerability to India and Steps taken to combat desertification, Prevention.

UNIT III: **Geological based disasters**: Earthquake, Reasons, Direct and Indirect Impact of Earthquake; Seismic Zones in India, Factors, Prevention and Preparedness for Earthquake, Tsunamis, Landslides and avalanches: Definition, causes and structure; past lesson learnt and measures taken; their Characteristic features, Impact and prevention, structural and non-structural measures.

UNIT IV: **Manmade Disasters I:** Chemical Industrial hazards; causes and factors, pre- and post disaster measures; control ; Indian Standard Guidelines and Compliance; Oil Slicks and Spills, Outbreak of Disease and Epidemics, Traffic accidents; classification and impact, War and Conflicts; Fire risk assessment; Escape routes; fire fighting equipment;
Use of remote sensing and GIS in disaster mitigation and management.

TEXT / REFERENCE BOOKS:

1. Thomas D. Schneid., Disaster Management and Preparedness, CRC Publication, USA, 2001
2. Patrick Leon Abbott, Natural Disasters, Amazon Publications, 2002
3. Ben Wisner., At Risk: Natural Hazards, People vulnerability and Disaster, Amazon Publications, 2001
4. Oosterom, Petervan, Zlatanova, Siyka, Fendel, Elfriede M., "Geo-information for Disaster Management", Springer Publications, 2005

5. Savindra Singh and Jeetendra Singh, Disaster Management, Pravalika Publications, Allahabad
6. Nidhi GaubaDhawan and AmbrinaSardar Khan, Disaster Management and Preparedness, CBS Publishers & Distribution
7. Selected Resources Published by the National Disaster Management Institute of Home Affairs, Govt. of India, New Delhi.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD535C: SANSKRIT FOR TECHNICAL KNOWLEDGE(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

1. To get a working knowledge in illustrious Sanskrit, the scientific language in the world
2. Learning of Sanskrit to improve brain functioning
3. Learning of Sanskrit to develop the logic in Mathematics, Science & other subjects
4. Enhancing the memory power

Course Outcomes:

Students will be able to

1. Understand basic Sanskrit language
2. Understand Ancient Sanskrit literature about science and technology
3. Get equipped with Sanskrit and explore the huge knowledge from ancient literature

Syllabus contents:

	Audit 1 and 2: Sanskrit for Technical Knowledge	
Unit	Content	
I.	Nominative Forms of Pronouns– अस्मद्,युस्मद् एतत् एवं तत् के रूप– पुल्लिग,नपुंसकलिंग एवं स्त्रीलिंग अकारान्त षब्दरूप पुल्लिग एवं नपुंसकलिंग में धातुएं– पठ्,खाद्,लिख,गम् (पांच लकारों में) सामान्य वाक्य बनाना	06
II.	आकरान्त (यथा–रमा) ईकरान्त (यथा – नदी) षब्दों का प्रायोग तत्,एतत्,यत्,किम्– षब्दों का सभी कारकों में वाक्य में प्रयोग,	06
III.	विसर्ग सन्धि,स्वर सन्धि,अयादि सन्धि,	06
IV.	प्रत्ययों का प्रयोग – षतृ,षानच्,क्तवतु, कत,कतृवाच्य से कर्मवाच्य में परिवर्तन – (क्त एवं क्तवतु) केवल प्रथम पुरूष का वाच्य परिवर्तन	06

TEXT / REFERENCE BOOKS:

1. "Abhyaspustakam" – Dr.Vishwas, Samskrita-Bharti Publication, New Delhi
2. "Teach Yourself Sanskrit" Prathama Deeksha-VempatiKutumbshastri, Rashtriya Sanskrit Sansthanam, New Delhi Publication
3. "India's Glorious Scientific Tradition" Suresh Soni, Ocean books (P) Ltd., New Delhi.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD537C: VALUE EDUCATION(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

The students will be able to

1. Understand value of education and self- development
2. Imbibe good values in students
3. Let the should know about the importance of character

Course Outcomes:

The students will be able to

1. Knowledge of self-development
2. Learn the importance of Human values
3. Developing the overall personality
4. Strengthen the "EQ"

Syllabus contents:

Unit I: Hierarchy and Classification of values,
Values and Belief Systems, Competence in professional ethics,
Value judgment based on cultural, tradition and interdependence.

Unit II: Need for value education
Sense of duty.Devotion, Self-reliance.
Honesty, Humanity, trust.Patriotism and national Unity.
Harmony in the nature and realization of coexistence
Vision of better India

Unit III: Understanding the meaning and realizing the effect of the following:
Aware of self- destructive habits, Knowledge, Acceptance, Love, Situations, happiness, Bliss, Peace,Power, Purity , Realization, Assertiveness, Regard, Respect, Sensitive, Divinity, emotions, Repentance, hurt, Ego, Attachment, worry, Resentment, Fear, Anxiety, Greed, Criticism, Tension, Frustration, Expectation, Irritation, Anger, Guilt, Jealous, Pear Pressure, True Friendship, Cooperation - Coordination- competition.
Enhancing self esteem and personality.

Unit IV: Hinduism, Jainism, Buddhism, Christianity, Islam, Sikhism.
Self-management and Good health (Role, Responsibility, Relation, Routine, Requirements, Resources)
My True self and Original qualities.Supreme-soul- source of values.
What Scientists say about super power?

TEXT / REFERENCE BOOKS:

1. Chakroborty, S.K. Values and Ethics for organizations Theory and practice. Oxford University Press, New Delhi.
2. R R Gaur, R Sangal, G P Singh.Human Values and Professional Ethics. Excell Books, New Delhi.
3. Value Education in Spirituality- Course-I, course -II by Brahma Kumaris Education Wing, RajyogaEducation & Research Foundation, Mount Abu, Rajasthan.
4. True Management: I K International Publication 2018.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD539C: CONSTITUTION OF INDIA(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

Students will be able to:

1. Understand the premises informing the twin themes of liberty and freedom from a civil rights perspective.
2. To address the growth of Indian opinion regarding modern Indian intellectuals' constitutional role and entitlement to civil and economic rights as well as the emergence of nationhood in the early years of Indian nationalism.
3. To address the role of socialism in India after the commencement of the Bolshevik Revolution in 1917 and its impact on the initial drafting of the Indian Constitution.

Course Outcomes:

The Students will become conscious citizens of India aware of their duties, rights and functions of various bodies of governance and welfare; thereby well equipped to contribute to India.

Syllabus contents:

Unit I: **Making of the Indian Constitution and its Philosophy**
Sources of Indian Constitution, its Preamble and Salient Features.

Unit II: **Constitutional Rights & Duties**
Fundamental Rights: Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, Right to Constitutional Remedies
Fundamental Duties

Unit III: **Organs of Governance**
Legislature: Parliament and its Composition; Qualifications and Disqualifications of Its members
Executive: President, Governor and Council of Ministers
Judiciary: Appointments, Qualifications, Powers and Functions of judges

Unit IV: **Local Administration and institutes for welfare**
District Administration Head: Role and Importance; Municipalities: Introduction, Mayor and role of Elected Representative
Panchayati Raj Institutions: Introduction, Gram Panchayat, Panchayat Samiti and Zila Panchayat
Institutes and Bodies for the welfare of SC/ST/OBC and women

TEXT / REFERENCE BOOKS:

1. The Constitution of India, 1950 (Bare Act), Government Publication.
2. Dr. S. N. Busi, Dr. B. R. Ambedkar. Framing of Indian Constitution, 1st Edition, 2015.
3. M. P. Jain, Indian Constitution Law, 7th Ed., Lexis Nexis, 2014

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD541C: PEDAGOGICAL STUDIES(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	**Class Work**	:	**25Marks**
			Examination	:	**75 Marks**
			Total	:	**100 Marks**
			Duration of Examination	:	**3 Hours**

Course Objectives:

The course will enable the student teachers:

1. To understand the concept of pedagogy and conceptual framework.
2. To gain insight on the meaning and nature of different pedagogies.
3. To determine aims and strategies of teaching- learning.
4. To understand the principals, maxims of successful teaching and the different methods of teaching.
5. Comprehend the need and importance of various devices of teaching and learning and their relationship between the two.
6. Point out and illustrate the difference between teaching and learning and their relationship between the two.
7. To appreciate that science/ engineering is a dynamic and expanding body of knowledge.

Course Outcomes:

Students will be able to understand:

1. It will improve teaching effectiveness of prospective teachers.
2. A prospective teacher will be able to design curriculum and assess the curriculum of their discipline in an effective way by understating the needs of the learners.
3. How can teacher education, school curriculum and guidance support effective pedagogy?
4. It will be functional for professional development among teachers.

Syllabus contents:

Unit I: Introduction and Methodology

- Aims and Rationale, Conceptual Framework, Terminology related to Pedagogy
- Contexts, Research Questions
- Theories of Learning, Curriculum, Scope of Pedagogy

Unit II: Teaching

- Meaning and importance of Behavioral Objectives
- Writing of Objectives in Behavioral Terms
- Phases and Variables of Teaching
- Principles, levels and maxims off teaching
- Relationship between Teaching and Learning

Unit III: Methods of Teaching

- Methods: Inductive, Deductive, Project, Analytic, Synthetic, Brain Storming, Case Discussion
- Concept and Significance of Individualized and Cooperative Teaching-Language Laboratory, Tutorials, Keller's Plan (PSI), Computer Supporting Collaborative Learning
- Mastery Learning: Concept, Basic Elements, Components and Types of Mastery Learning Strategies

Unit IV: Evaluation Strategies

- Evaluation in Teaching: Concept of Evaluation, Relationship between Teaching and Evaluation, Types of Evaluation (Formative and Summative)
- Methods of Evaluation through Essay Type. Objective Type and Oral Method, Comparative merits and demerits of evaluation methods
- Latest Trends in Evaluation

TEXT / REFERENCE BOOKS:

1. Ackers J, Hardman F (2001) Classroom interaction in Kenyan primary schools, Compare, 31 (2): 245-261.
2. Agrawal M (2004) Curricular reform in schools: The importance of evaluation, Journal of Curriculum Studies, 36 (3): 361-379.

3. Akyeampong K (2003) Teacher training in Ghana - does it count? Multi-site teacher education research project (MUSTER) country report 1. London: DFID.
4. Akyeampong K, Lussier K, Pryor J, Westbrook J (2013) Improving teaching and learning of basic maths and reading in Africa: Does teacher preparation count? International Journal Educational Development, 33 (3): 272–282.
5. Alexander RJ (2001) Culture and pedagogy: International comparisons in primary education. Oxford and Boston: Blackwell.
6. Chavan M (2003) Read India: A mass scale, rapid, 'learning to read' campaign.
7. www.pratham.org/images/resource%20working%20paper%202.pdf.
8. Dyer C (2008) Early years literacy in Indian urban schools: Structural, social and pedagogical issues, Language and Education, 22 (5): 237-253.
9. Sharma N (2013) An exploration of teachers' beliefs and understanding of their pedagogy, MPhil thesis, Mumbai: TATA Institute of Social Sciences.
10. Zeichner K, Liston D (1987) Teaching student teachers to reflect, Harvard Educational Review, 56 (1): 23-48.
11. Watkins C, Mortimore P (1999) Pedagogy: What do we know? In Mortimore P (ed.) Understanding pedagogy and its impact on learning. London: Paul Chapman Publishing.
12. Tyler R (1949) Basic principles of curriculum and instruction. Chicago: Chicago University Press.
13. Arends, R.1. (1 994) Learning to Teach, New York: McGraw-Hill.
14. Lunenberg M, Korthagen F, Swennen A (2007) The teacher educator as a role model, Teaching and Teacher Education, 23: 586-601.
15. Meena . Wilberforce E. Curriculum Innovation in Teacher Education: Exploring Conceptions among Tanzanian Teacher Educators. ÅBO AKADEMI UNIVERSITY PRESS, 2009.
16. Cooley, W. W., and Lohnes, P. R. (1976). Evaluation research in education. New York: Irvington.
17. Hassard, Jack, 2004, The Art of Teaching Science, Oxford Univesity Press.
18. Joyce, B., Weil, M., Calhoun, E. : (2000). Models of teaching, 6th edition, Allyn & Bacon.
19. Kyriacou, C. (2007) Effective teaching in schools – theory and practice. Cheltenham: Nelson Thornes.
20. Nye, B., Konstantopoulos, S. & Hedges, L.V. (2004) 'How large are teacher effects?' Educational evaluation and policy analysis, 26(3), 237-257.
21. National Staff Development Council. (2001). NSDC's standards for staff development. Oxford, OH: Author.
22. Serpell, Z. & Bozeman, L. (1999). Beginning teacher induction: A report on beginning teacher effectiveness and retention. Washington, DC: National Partnership for Excellence and Accountability in Teaching.

NOTE:

1. Inthe semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD543C: STRESS MANAGEMENT BY YOGA (AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

1. To achieve overall health of body and mind
2. To overcome stress

Course Outcomes:

Students will be able to:

1. Develop healthy mind and healthy body thus improving social health also
2. Improve efficiency
3. Improving "SQ"

Syllabus contents:

Unit I:

1. Causes of stress, consequences of stress, diagnosis of stress, solution of reducing stress.
2. Difference and relation b/w Yog and Yoga,
3. benefits of meditation and Yoga,
4. Rules and Regulation of Yog and Yoga.
5. Empowerment of Soul and fitness of body.

Unit II:

1. Do`s and Don't's in life.
2. How to be and not to be?
3. Understanding spirituality and materials.
4. Impact of: Truth at mouth/ Truth in thoughts
   Non Violence outside / Compassion in thoughts, Celibacy (kamnayn- desire), purity of mind , non-covetousness, Cleanliness, satisfaction, self study and surrender to almighty, Austerity, Penance

Unit III: Role of Meditation in reducing Stress.
Role of Yoga in reducing Stress.
Pranyama: AnulomVilom ,Ujjai, Costal Breathing, Abdominal Breathing, Sunyak, Kumbhak

Unit IV: **Asan:** Sukhasana, Vajrasana, Padmasana, Swastik Asana, Ling Mudra, Gorakshasana, Talasana, Konasana, Trikonasana, Chakrasana, Utkatasana, Dhurva Asana, Garuda Asana, Bhadrasana, Parvatasana, Yoga Mudra, Paschimottasana, Vakrasana, Gomukhasana, Bakasana, Tulasana, Matsyasana, Mayuri Asana, Bhujagasana, DhanurVakrasana, PavanMuktasana, Viprtkarani, Makarasana, Shavasana, Dridasana, Yonimudra, Nauli, Dhenu Mudra.

TEXT / REFERENCE BOOKS:

1. 'Yogic Asanas for Group Tarining-Part-I": Janardan Swami Yogabhyasi Mandal, Nagpur
2. "Rajayoga or conquering the Internal Nature" by Swami Vivekananda, AdvaitaAshrama, (Publication Department), Kolkata
3. "Value Education in Spirituality- Course-IV" by Brahma Kumaries Education Wing, Rajyoga Education Research Foundation, Mount Abu, Rajasthan.
4. "Stress Management for Dummies" by Allen Elkin, IDG Books India (P) Ltd.
5. "Yoga Courses for All" by Dr Hansraj Yadav, BhartyaVidyaBhawan, Mumbai

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.

3. Electronics gadgets including Cellular phones are not allowed in the examination.

AUD545C: PERSONALITY DEVELOPMENT THROUGH LIFE ENLIGHTENMENT SKILLS(AUDIT COURSE 1 & 2)

M. Tech. Semester – I/II (Common for all Branches)

L	P	Credits			
2	--	--	**Class Work**	**:**	**25Marks**
			Examination	**:**	**75 Marks**
			Total	**:**	**100 Marks**
			Duration of Examination	**:**	**3 Hours**

Course Objectives:

Students will be able to:

1. To learn and achieve the highest goal happily
2. To become a person with stable mind, pleasing personality and determination
3. To awaken wisdom in students

Course Outcomes:

1. The study of Shrimad-Bhagwad-Geeta will help the student in developing his personality and achieve the highest goal in life.
2. The person who has studied Geeta will lead the nation and mankind to peace and prosperity.
3. Study of Neetishatakam will help in developing versatile personality of students.

Syllabus contents:

Unit I: **Holistic Development of Personality**

Neetisatakam-Verses-19,20,21,22 (Wisdom), Verses-29, 31 32 (Pride and Heroism) ,Verses-26,28,63,65 (Virtue)

Unit II: **Approach to Day to Day Work and Duties**

Shrimad BhagwadGeeta: Chapter 2 (Verses- 41, 47, 48), Chapter 3 (Verses- 13, 21, 27, 35), Chapter 6 (Verses- 05, 13, 17, 23, 35), Chapter 18 (Verses- 45, 46, 48)

Unit III: **Statements of Basic Knowledge**

Shrimad BhagwadGeeta: Chapter 2 (Verses- 56, 62,68), Chapter 12 (Verses- 13, 14, 15, 16, 17, 18)

Unit IV: **Personality of a Role Model**

Shrimad BhagwadGeeta: Chapter 2 (Verses- 17), Chapter 3 (Verses 36, 37, 42), Chapter 4 (Verses 18, 38, 39), Chapter 18 (Verses 37, 38 63)

TEXT / REFERENCE BOOKS:

1. Srimad Bhagavad Gita by Swami SwarupanandaAdvaita Ashram (Publication Department), Kolkata
2. Bhartrihari's Three Satakam (Niti-sringar-vairagya) by P.Gopinath, Rashtriya Sanskrit Sansthanam, New Delhi.
3. BhagvadGeeta- Prof. Satyavrata Siddhantalankar, Orient Publishing.

NOTE:

1. Inthe semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

MTOE651C: BUISNESS ANALYTICS (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

The main objective of this course is to give the student a comprehensive understanding of business analytics methods

1. Understand the role of business analytics within an organization.
2. Business Analytics industry sequence is to familiarize the students with the concept of Data Analytics (Big Data) and its applicability in a business environment
3. Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.
4. To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.
5. To become familiar with processes needed to develop, report, and analyze business data.
6. Use decision-making tools/Operations research techniques.
7. Mange business process using analytical and management tools.

Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc

Course Outcomes:

1. At the end of the Fall semester, students should have acquired an understanding of Analytics – the terminology, concepts and familiarity of potential tools and solutions that exist today Students will demonstrate knowledge of data analytics.
2. Students will demonstrate the ability of think critically in making decisions based on dataand deep analytics
3. Students will demonstrate the ability to use technical skills in predicative and prescriptivemodeling to support business decision-making
4. Students will demonstrate the ability to translate data into clear, actionable insights. student should be better familiar with overall analytics tools/techniques and their use in corporate

Syllabus contents:

UNIT I: Business analytics: Overview of Business analytics, Scope of Business, analytics, Business Analytics Process, Relationship of Business Analytics, Process and organisation, competitive advantages of Business Analytics. Statistical Tools: Statistical Notation, Descriptive Statistical methods, Review of probability distribution and data modelling, sampling and estimation methods overview.

UNIT II: Trendiness and Regression Analysis: Modelling Relationships and Trends in Data, simple Linear Regression, Important Resources, Business Analytics Personnel, Data and models for Business analytics, problem solving, Visualizing and Exploring Data, Business Analytics Technology.

UNIT III: Organization Structures of Business analytics, Team management, Management Issues, Designing Information Policy, Outsourcing, Ensuring Data Quality, Measuring contribution of Business analytics, Managing Changes. Descriptive Analytics, predictive analytics, predicative Modelling, Predictive analytics analysis, Data Mining, Data Mining Methodologies, Prescriptive analytics and its step in the business analytics Process, Prescriptive Modelling, nonlinear Optimization.

UNIT IV: Decision Analysis: Formulating Decision Problems, Decision Strategies, with the without Outcome Probabilities, Decision Trees, the Value of Information, Utility and Decision Making.
Forecasting Techniques: Qualitative and Judgmental Forecasting, Statistical Forecasting Models, Forecasting Models for Stationary Time.

TEXT / REFERENCE BOOKS:

1. Project Management: The Managerial Process by Erik Larson and, Clifford Gray
2. Business Analysis by James Cadle et al.
3. Bajpai Naval, Business Statistics, Pearson, New Delhi.
4. Whigham David, Business Data Analysis, Oxford University, Press, Delhi.
5. Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie or Die. Eric Siegel.
6. Big Data, Analytics and the Future of Marketing and Sales. McKinsey.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

MTOE653C: INDUSTRIAL SAFETY (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:
Course Outcomes:

Syllabus contents:

UNIT I: **Industrial safety:** Accident, causes, types, results and control, mechanical and electrical hazards, types, causes and preventive steps/procedure, describe the salient points of factories act 1948 for health and safety, washrooms, drinking water layouts, light, cleanliness, fire, guarding, pressure vessels, etc., Safety color codes. Fire prevention and firefighting, equipment and methods.
Fundamentals of maintenance engineering: Definition and aim of maintenance engineering, Primary and secondary functions and responsibility of the maintenance department, Types of maintenance, Types and applications of tools used for maintenance, Maintenance cost & its relation to replacement economy, Service life of the equipment.

UNIT II: **Wear and Corrosion and their prevention:** Wear- types, causes, effects, wear reduction methods, lubricants-types and applications, Lubrication methods, general sketch, working and applications, (i). Screw down grease cup, (ii). Pressure grease gun, (iii). Splash lubrication, (iv). Gravity lubrication, (v). Wick feed lubrication (vi). Side feed lubrication, (vii). Ring lubrication, Definition, principle and factors affecting the corrosion. Types of corrosion, corrosion prevention methods.

UNIT III: **Fault Tracing:** Fault tracing-concept and importance, decision tree concept, need and applications, sequence of fault finding activities, show as decision tree, draw decision trees for problems in machine tools, hydraulic, pneumatic, automotive, thermal and electrical equipment's like, (i). Any one machine tool, (ii). Pump (iii). Air compressor, (iv). Internal combustion engine, (v). Boiler, (vi). Electrical motors, Types of faults in machine tools and their general causes.

UNIT IV: **Periodic and Preventive Maintenance:** Periodic inspection-concept and need, degreasing, cleaning and repairing schemes, overhauling of mechanical components, overhauling of electrical motor, common troubles and remedies of electric motor, repair complexities and its use, definition, need, steps and advantages of preventive maintenance. Steps/procedure for periodic and preventive maintenance of: (i). Machine tools, (ii). Pumps, (iii). Air compressors, (iv). Diesel generating (DG) sets, Program and schedule of preventive maintenance of mechanical and electrical equipment, advantages of preventive maintenance. Repair cycle concept and importance.

TEXT / REFERENCE BOOKS:

1	Maintenance Engineering Handbook	Higgins & Morrow	Da Information Services
2	Maintenance Engineering	H. P. Garg	S. Chand and Company
3	Pump-hydraulic Compressors,	Audels	Mcgraw Hill Publication
4	Foundation Engineering Handbook	Winterkorn, Hans	Chapman & Hall London.

NOTE:

4. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
5. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
6. Electronics gadgets including Cellular phones are not allowed in the examination.

MTOE655C: OPERATIONS RESEARCH (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

1. To develop modeling skills in students.
2. To develop skill in students for efficient designing analysis and control of complete system.
3. To make students capable of formulating the practical problems into mathematical problems.
4. To acquaint student with linear as well as non-linear programming problem and their application.

Course Outcomes:

1. Students will be able to apply the dynamic programming to solve problems of discrete and continuous variables.
2. Students will be able to carry out sensitivity analysis.
3. Student will be able to model the real world problem and simulate it.
4. The students will be able to carry forward the operation research techniques in practical problems.

Syllabus contents:

UNIT I: Linear optimization methods: General mathematical model formation of L.P.P, its solution by Graphical method, Simplex method, big –M method, two phase method sensitivity analysis (change in cj, bj&aij's) Revised Simplex method.Concept of duality, formation of Dual L.P.P, advantage of Duality, dual simplex method, parametric programming.

UNIT II: Non liner programming: NLPP Mathematical formulation and solution with equally constraints, Lagrange's method, Graphical method, Kuhn—Tucker necessary &sufficient conditions for the optimality of objective function in GNLP problem.
Dynamic programming: Kuhn –Tucker condition's, Wolfe's and Bcale's method.

UNIT III: Deterministic inventory control models: Meaning & function role of inventory control, reason for carrying inventory, single item inventory control model with & without shortages.
Probabilistic inventory control models: Inventory control models without set up cost and with set up cost.

UNIT IV: Project management; PERT and CPM, Basic difference between PERT & CPM, Phases up project management PERT /CPM network component & precedence relationships, critical path analyses, projects scheduling with uncertain activity times, project time –cost trade-off.
Sequencing problem: Processing an jobs through two machines, three machines and through m-machines. Theory of games: Two- person zero –sum games,pure strategies (with saddle points) mixed strategies (without saddle point), algebraic method only.

TEXT / REFERENCE BOOKS:

1. H.A Taha, Operations Research, An introduction, PHI, 2008
2. H.M.Wanger, Principles of Operation Research PHI, Delhi, 1982
3. J.K.Sharma, Operations Research, Mcmillan India. Ltd,1990
4. S.D.Sharma, Operations Research, KedarnathRamnath publication,1985
5. P.K.Gupta and D.S Hira, Operations Research, S.Chand& Co.,1987
6. Pannerselvam, Operations Research; PHI, 2010
7. Harvey M Wanger , Principles of Operations Research; PHI, 2010

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.

2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

MTOE657C: COST MANAGEMENT OF ENGINEERING PROJECTS (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

Course Outcomes:

Syllabus contents:

UNIT I: INTRODUCTION AND OVERVIEW

Chapter 1 Introduction, basic economic concepts, interest formulae, present worth, rate of return. Elements of financial accounting: depreciation, taxes and their impact in economic studies

Chapter 2 Cost concepts in decision making; elements of cost, relevant cost, overheads, differential cost, incremental cost and opportunity cost, objectives of a costing system, inventory valuation, creation of a data base for operational control, provision of data for decision making.

UNIT II: PROJECT

Chapter 3 Meaning, different types, why to manage, cost overrun centres, various stages of project execution, concept to commissioning. Project execution as conglomeration of technical and non technical activities. Detailed engineering activities, Pre project execution main clearances and documents project team: Role of each member.

Chapter 4 Importance Project site: Data required with significance. Project contracts.Types and contents. Project cost control. Bar charts and network diagram. Project commissioning: Mechanical and process. Project appraisal and selection, recent trends in project management

UNIT III: ECONOMIC ANALYSIS FOR ENGINEERING PROJECTS

Chapter 5 Cost behavior and profit planning, Marginal costing, distinction between marginal costing and absorption costing, Break even analysis, cost volume profit relationship, various decision making problems.

Standard costing and variance analysis, pricing strategies Pareto analysis, Target analysis, life cycle costing, Costing of service sector.

Chapter 6 just in time approach, material requirement planning, enterprise resource planning, Total Quality management and theory of constraints, Activity based cost management, Bench marking, Balanced score card, value chain analysis,

Budgetory control, Flexible budget, Performane budget, Zero based budget, Measurement of divisional profitability pricing decisions including transfer pricing.

UNIT IV: QUANTITATIVE TECHNIQUES FOR COST MANAGEMENT

Chapter 7 PERT CPM; Activity networks, basic PERT/CPM calculations, Planning and scheduling of activity networks, Assumptions in PERT modeling, time cost tradeoffs, PERT/ cost accounting, Scheduling with limited resources, Generalized activity networks GERT, Prospects of PERT/CPM

Chapter 8 Linear programming, Transportation problems, Assignment problems, Simulation, Learning curve theory.

TEXT / REFERENCE BOOKS:

1	Cost Accounting: A Managerial Emphasis	Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan	Pearson Edu.
2	Fundamentals of Financial Management	Prasanna Chandra	Tata McGraw Hill
3	Quantitative Techniques in Management	N D Vohra	Tata McGraw Hill
4	Foundation Engineering Handbook	Winterkorn, Hans	Chapman & Hall London.
5	Principles and Practice of cost accounting	Ashish K Bhattacharya	A H Wheeler

6	Principles of engineering economy	E L Grant et al.	John Wiley and Sons, New York.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
2. The students will be allowed to use non-programmable scientific calculator. However, sharing/exchange of calculator is prohibited in the examination.
3. Electronics gadgets including Cellular phones are not allowed in the examination.

MTOE659C: COMPOSITE MATERIALS (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

Course Outcomes:

Syllabus contents:

UNIT I: **INTRODUCTION:** Definition – Classification and characteristics of Composite materials. Advantages and application of composites.Functional requirements of reinforcement and matrix.Effect of reinforcement (size, shape, distribution, volume fraction) on overall composite performance.**REINFORCEMENTS:** Preparation-layup, curing, properties and applications of glass fibers, carbon fibers, Kevlar fibers and Boron fibers. Properties and applications of whiskers, particle reinforcements. Mechanical Behavior of composites: Rule of mixtures, Inverse rule of mixtures. Isostrain and Isostress conditions.

UNIT II: **Manufacturing of Metal Matrix Composites:** Casting – Solid Stat e diffusion technique, Cladding – Hot isostatic pressing.Properties and applications. Manufacturing of Ceramic Matrix Composites: Liquid Metal Infiltration – Liquid phase sintering. Manufacturing of Carbon – Carbon composites: Knitting, Braiding, Weaving. Properties and applications.

UNIT III: **Manufacturing of Polymer Matrix Composites:** Preparation of Moulding compounds and prepregs – hand layup method – Autoclave method – Filament winding method – Compression moulding – Reaction injection moulding. Properties and applications.

UNIT IV: **Strength:** Laminar Failure Criteria-strength ratio, maximum stress criteria, maximum strain criteria, interacting failure criteria, hygrothermal failure. Laminate first play failure-insight strength; Laminate strength-ply discount truncated maximum strain criterion; strength design using caplet plots;stress concentrations.

TEXT / REFERENCE BOOKS:

1. Material Science and Technology – Vol 13 – Composites by R.W.Ca hn – VCH, West Germany.
2. Materials Science and Engineering, An introduction. WD Callister, Jr., Adapted by R. Balasubramaniam, John Wiley & Sons, NY, Indian edition, 2007.
3. Hand Book of Composite Materials-ed-Lubin.
4. Composite Materials – K.K.Chawla.
5. Composite Materials Science and Applications – Deborah D.L. Chung.
6. Composite Materials Design and Applications – Danial Gay, Suong V. Hoa, and Stephen W. Tasi.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
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MTOE661C: WASTE TO ENERGY (OPEN ELECTIVE)

M. Tech. Semester – III (Common for all Branches)

L	P	Credits			
3	--	3	Class Work	:	25Marks
			Examination	:	75 Marks
			Total	:	100 Marks
			Duration of Examination	:	3 Hours

Course Objectives:

To give an idea about different biomass and other solid waste materials as energy source and their processing and utilization for recovery of energy and other valuable products. A comprehensive knowledge of how wastes are utilized for recovery of value would be immensely useful for the students from all fields.

Course Outcomes:

In these days of energy crisis and environmental deterioration, students will understand the concept of energy by waste products. It is being used globally to generate electricity and provide industrial and domestic applications. Students will also enable to understand the environmental issues related to harnessing and utilization of various sources of energy and related environmental degradation.

Syllabus contents:

UNIT I: Sun as Source of Energy, Availability of Solar Energy, Nature of Solar Energy, Solar Energy & Environment. Various Methods of using solar energy –Photothermal, Photovoltaic, Photosynthesis, Present & Future Scope of Solar energy.

UNIT II: Introduction to Energy from Waste: Classification of waste as fuel – Agro based, Forest residue, Industrial waste, MSW

UNIT III: Biogas: Properties of biogas (Calorific value and composition) - Biogas plant technology and status - Bio energy system - Design and constructional features - Biomass resources and their classification, Biomass conversion processes, Thermo chemical conversion, Direct combustion, Types of biogas Plants, Applications.

UNIT IV: Thermo-chemical Conversion: Pyrolysis, Combustion, Gasification, Liquification. Bio-Chemical Conversion: Aerobic and Anaerobic conversion, Fermentation etc. Bio-fuels: Importance, Production and applications. Bio-fuels: Types of Bio-fuels, Production processes and technologies, Bio fuel applications, Ethanol as a fuel for I.C. engines, Relevance with Indian Economy.

TEXT / REFERENCE BOOKS:

1. Non Conventional Energy, Desai, Ashok V., Wiley Eastern Ltd., 1990.
2. Biogas Technology - A Practical Hand Book - Khandelwal, K. C. and Mahdi, S. S., Vol. I & II, Tata McGraw Hill Publishing Co. Ltd., 1983.
3. Food, Feed and Fuel from Biomass, Challal, D. S., IBH Publishing Co. Pvt. Ltd., 1991.
4. Biomass Conversion and Technology, C. Y. WereKo-Brobby and E. B. Hagan, John Wiley & Sons, 1996.

NOTE:

1. In the semester examination, the examiner will set 08 questions in all selecting two from each unit. The candidates will be required to attempt five questions in all selecting at least one from each unit. All questions will carry equal marks.
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