9AR1: PROFESSIONAL PRACTICE & MGMT.

B.ARCH.: 9th Semester **Max. Marks: 100**

2L

UNIT	CONTENTS	CONTACT HOURS
I	**Architect's Office & Its administration**: Nature of profession, difference between trade, business and profession, Office setup and administration. Office organization, proprietorship, partnership, company etc.; Registration as Firm / Company etc.	04
II	**Architectural Professional Association & Architect Act 1972**: Practice Procedure and conduct, Introduction to the importance of professional organizations like IIA, COA & their Membership & their role in future developments. Architectural Competition – Types, procedures, as per guidelines of the Council of Architecture	06
III	**Architectural Services**: Conditions of agreement – scope of work, comprehensive architectural services and conditions of engagement, remuneration, professional fees and charges as per norms. Responsibilities and Liabilities of an architect towards the client. Professional charges of various jobs. Stages of Architectural design and the specific task in each of such stage.	06
IV	**Project Management**: Role of an architect in construction management, Scientific methods of construction management, Objectives and functions of project management, stages of project management (planning, scheduling and organizing). Introduction of PERT (Project Evaluation & Review Technique), Fundamentals of CPM (Critical Path Method) activity, event, float, network construction, time computation, project completion period, resource allocation. Relationship of work, Time & Cost, Cost Analysis in network planning, construction site practices, Inspection and Quality Control.	08
V	**Business Management & Ethics**: Architect's role in society & Human Values. Use of Ethical theories – Kohlberg's theory, Gilligan theory Consensus and controversy, Environment ethics. Business management, sales promotion, human relations and personnel management. Efficiency studies and performance appraisal, billing, accounting, correspondence, information storage and retrieval. Manpower management, safety and labor laws.	06
	TOTAL	**30**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	V.S.Apte ; Architectural Practice & Procedure	2008
2.	Roshan Namavati; Professional Practice	2008
3.	Council of Architecture; Handbook of Professional Documents	
4.	Dr. P.N.Modi, Sanjeev Modi; PERT and CPM	2009
5.	Dr. B.C.Punmia; Project planning and control with PERT and CPM; Laxmi Publications, New Delhi	

9AR2: SUSTAINABLE ARCHITECTURE

B.ARCH.: 9th Semester **Max. Marks: 100**

2L

UNIT	CONTENTS	CONTACT HOURS
I	**Introduction**: Introduction to Sustainability and its various dimensions (economic, social and ecological); Sustainable development of built environment; Global Warming and Climate Change; Concepts in sustainable architecture; sustainable buildings, green buildings, climate responsive buildings, ecological responsive buildings, Energy efficient buildings; Energy policy of India and world.	04
II	**Strategies and Technologies**: Solar Passive Design; Recycling/Reuse strategies, optimization techniques, advances in HVAC, Electrical, Lighting and Plumbing technologies; integration of Active energy efficient systems with buildings – PV cells, wind towers, geothermal heat pump, bio-mass energy etc. Study of non conventional energy sources.	06
III	**Rating systems**: Benchmark: Study of rating systems across globe in general introduction – BREEAM, CASBEE, LEED, detail study of IGBC, GRIHA. Study of energy conservation building codes. Study of LEED/GRIHA rated buildings	06
IV	**Materials and Technology**: Emphasis on traditional building systems, methodologies and on the use of alternate/substitute and environment friendly materials, to make the students aware of local and / or low cost building materials which are cost effective, environment friendly and appropriate to the context of the site, climate and culture.	08
V	**Energy Assessment**: Energy calculations through whole building performance method. General introduction about Building information modeling, Introduction to concept and basic software. REVIT at advance level, ArchiCAD, energy plus, green building studio, IEs.	06
	TOTAL	**30**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Sustainable Building Design Manual; Tata Energy Research Institute	2012
2.	Green Building Materials; Ross Spiengle & Dru Meadows	2004
3.	Understanding Green Building Guidelines; Traci Rose Rider	2009
4.	Milli Majumdar; Energy Efficient Buildings in India; TERI	2001
5.	Francis D.K.Ching; Green Building Illustrated; John Wille & Sons.	2014

9AR3: DISASTER RESISTANT ARCHITECTURE

B.ARCH.: 9th Semester **Max. Marks: 100**

2L

UNIT	CONTENTS	CONTACT HOURS
I	**Introduction to Disasters** Hazard, Risk, Disaster, Vulnerability, Classification of disaster, Man Made & Natural Disasters, High, Medium & Low Impact. Disasters and Factor Causing Disasters, Earthquakes, Tsunami, Landslides, Cyclone, Floods, Fire etc.	04
II	**Impact of Disasters** Effects of natural and Man-made Disaster, Behaviour of structural and non-structural members during and after disaster, Standards and Norms for risk reduction for various disasters i.e. Earthquakes, Tsunami, Landslides, Cyclone, Floods & Fire.	06
III	**Pre-Disaster and Mitigation Measures in Disasters** Disaster Management Plan, Natural Crisis Management Committee, NDMA (national disaster management authority) Management Guideline, Emergency Support Function, Role of Building information systems in Disaster Management.	06
IV	**Design & Planning Solution** Design Guideline and Construction Techniques for disaster resistant structure in RCC, Steel, Stone, Brick & wood; Engineering, Architectural, Landscape and site planning solutions for various disasters, Details for foundation, soil stabilization, retaining wall, plinth, plinth fill, flooring, walls, opening, fenestration and other building components. Study of non engineered Building practices.	08
V	**Case Studies- Disasters in India** Damaged Caused, Disaster management, Mitigation, post disaster structural up gradation in Earthquakes, cyclones, landslides, floods, droughts and tsunami in India.	06
	TOTAL	**30**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Sharma V.K.; Disaster Management; Indian Institute of Public Administration, United Press, New Delhi	1995
2.	Dutta Shekhar Chandra, Mukhopadhyay Parthsarathi ; Improving Earthquake And Cyclone Resistant Structures ; The Energy Resource Institute, New Delhi	2012
3.	Tarnath B.S. ; Wind and Earthquake Resistant Buildings Structural Analysis and Design; Marcel Dekkar	2005
4.	National Disaster Management Authority; National Disaster Management Guidelines; National Disaster Management Authority Government of India	2009
5.	IAEE; Guidelines for Earthquake Resistant non-engineered construction; NPEEE 2004.	2005

9AR4: ARCHITECTURAL DESIGN-VII

B.ARCH.: 9th Semester **Max. Marks: 250**

9S

UNIT	CONTENTS	CONTACT HOURS
I	**Theme**: Understanding design to integrate complexities of urban dimensions, Architectural language & expression.	05
II	**Parameters**: Urban Networks such as Urban greens, Pedestrian connections, Traffic & Transportation, Local and regional architectural language & expression. Socio-Economic, Cultural and Physical context. Congregation of large number of diverse and unknown people.	05
III	**Expected Skills**: To develop ability and skill to design building as a urban insert by understanding the influence of the building on and of the immediate & distant surrounding. Handle circulation of large member of people and various modes of Transport.	10
IV	**Design Outline**: Design of a multi-functional complex programmatic building as an insert at a settlement level ideally on a building site required for a built up area of 5000 – 7500 sqm., Course to be integrated with concurrent courses such as Housing, Urban Design, Conservation, Sustainable Architecture & Disaster Resistance Architecture.	05
V	**Projects**: At least one sufficiently large project to be given in a semester from the list of suggested projects in various categories of building types. *Housing*: Mix Group Housing, Townships, etc. *Educational*: Large scale educational campus, University, etc. *Commercial*: District Centre, Technology Parks, etc. *Transportation*: Bus Terminal, Railway Station, Metro Rail Station, Airport Terminal. *Recreation*: Multipurpose Indoor / Outdoor Sports complex. *Hospitality*: Hotel with convention / Exposition facilities, etc.	110
	TOTAL	**135**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	T.S.S. for Urban Design; Mc Graw Hill	2003
2.	Darek Thomas; Architecture and the Urban Environment; Architectural Press	2002
3.	The Phaidon Atlas of 21st Century; World Architecture; Phaidon Publication	2008
4.	The 20th Century World Architecture; Phaidon	2012
5.	Kevin Lynch; Site planning 3rd Edication	2012

9AR5: DISSERTATION & THESIS SEMINAR

B.ARCH.: 9th Semester **Max. Marks: 300**

6S

UNIT	CONTENTS	CONTACT HOURS
I	**Research Formulation:** The students of the final year are required to undertake research on a topic related to the field of spatial planning on issues emerging out of the present trends and future prospects of the Thesis Project selected. The Thesis Project should be sufficiently large and complex so that student can demonstrate the Skills and Knowledge acquired during the course. The site selected for the Thesis project should be large enough for a built up area more than 7500 Sqm. The project program can be hypothetical however the site selected should be real. Students may select live projects that have real program and objective.	12
II	**Research Design:** Once the problem is formulated the student has to undertake extensive literature survey and state in clear terms the working hypothesis. Students are required to state the conceptual structure within which research would be conducted by defining the aim, objectives, scope & limitations of work.	12
III	**Research Data:** Data shall be collected keeping in mind the cost, time and other resources. Primary data can be collected either through experiment, through survey or by observation such as personal interviews, telephonic interview, mailing of questionnaire or through schedules. Secondary data such as census data, literature studies, unpublished or published thesis or dissertation can be collected.	18
IV	**Research Analysis & Report:** The analysis of data requires a number of closely related operations such as establishment of categories. The application of these categories to see data through coding, tabulation and then drawing statistical inference. Draw conclusions and identify architectural issues involved in the project design and construction. Define strategy to address these issues in the design proposal. Prepare a report of what has been done. The layout of the report should be as follows: the preliminary pages, the main text and end matter. The preliminary pages carry title, declaration, certificate, acknowledgement, list of illustration & tables. The main text of the report should have introduction, review of literature & methodology. The end matter will include glossary and annexure.	24
V	**Thesis Seminar:** Criteria of selection of the site for the thesis project and justification for how the proposed site will support the conceptual idea for the project. Bylaws, zoning regulators & standards applicable to the project. Analytical studies of building prototypes as a whole or in part comparable to the selected project. Formulation of programme of requirements. Conceptual Site analysis and zoning of activities on site.	24
	TOTAL	**90**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Groat L, Wang D.; Architectural Research Methods; John Wiley & Sons, Inc.	2002
2.	Kaplan A.; The Conduct of Inquiry; Chandler, San Francisco	1964
3.	Zumthor P.; Thinking Architecture; Birkhauser, Basel, Switzerland	2010
4.	Shinde S.P. (Dr.); Methodology of Research and issues in Education; Surabhi Educational Society, Hyderabad	2008
5.	Creswell J.W.; "Research Design : Qualitative & Quantitative Approaches"; Thousand Oaks : Sage	1994

9AR6: TRAINING PRESENTATION

B.ARCH.: 9th Semester **Max. Marks: 250**

2S

UNIT	CONTENTS	CONTACT HOURS
I	**Office Administration**: Understanding the basic working system of an Architect's office. Duties & Responsibilities of an Architect. Hierarchy of office staff in various types of Architectural practices. Log-Book with recordings of daily activities of the trainee involved in the office. Preparation of project / presentation reports, Bill of quantities and minutes of meetings with clients / consultants / contractors for the on-going projects undertaken by the office.	6
II	**Presentation & Submission Drawings**: At least one set of presentation drawings of a project prepared for the approval of the client and one set of sanction drawings of a project prepared for approval of the Local authority by the student in Architect's office.	6
III	**Site Visits and Studies**: Visits to construction sites of the on-going projects in the Architect's office for the purpose of checking the accuracy of work or to record progress of work on site and related studies undertaken as per the directions of the supervising architect.	6
IV	**Critical Appraisal**: Critical appraisal of a completed building project designed by the Architect / Firm or on-going project on which the student has worked in the office. The appraisal may be done on the design issues such as functional efficiency, visual appeal, climatic response, Green rating, etc. either one of the parameter or combination there off.	6
V	**Working drawings & details**: Preparation of good for construction *building drawings* such as plans, sections, elevation etc., *space details* such as stair case, toilets, lifts, etc., *fixing details* such as wall cladding, balcony railing, structural glazing, etc., *construction details* such as plinth, sill, lintel, parapet, etc., and *Fabrication details* such as door, windows, grills, etc. under the guidance of supervising architect.	6
	TOTAL	**30**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Osamu A. Wakita, Nagy R. Bakhoum, Richard Mlinde; The Professional Practice of Architectural Working Drawings 4th Edition; John Wiley & Sons	2012
2.	Dr. Roshan H. Namavati; Professional Practice 9th Edition; Lakhani Book Depot	2009
3.	CPWD; CPWD Spcifications Vol. 1 & 2; CPWD	
4.		
5.		

9AR7: ELECTIVE-IV
(HOUSING)

B.ARCH.: 9th Semester **Max. Marks: 100**
3S

UNIT	CONTENTS	CONTACT HOURS
I	**Introduction**: Introduction to House, Home, Household, Apartments, Condominium, Multistoried Buildings, Special Buildings. Neighborhoods- Plotted land development programs, Open Development Plots, Apartments, Gated communities, Townships, Rental Housing, Co-operative Housing.	6
II	**Housing Policies & Programs**: National Housing Policies including Housing for all, housing for Urban poor, Housing institutions at National, State and Local levels. Sites and Services. Slum Housing Program – Slum improvement – Slum redevelopment and Relocation.	6
III	**Housing Planning and Design**: Criteria for site selection : Design principles, norms and standards for infrastructure, land subdivision, housing layout and buildings: Built form, socio-economic and physical implications of various types of housing Building Byelaws, Rules and Development Control Regulations – Site Analysis, Layout Design, Design of Housing Units (Design Problems) – Housing Project Formulation; Concept , criteria and determinants of affordable, low income and informal housing; Design, planning and strategy issues for affordable housing; characteristics and type of low income and informal housing.	6
IV	**Construction Materials & Technologies**: Energy efficient, Cost effective Materials and construction technology; innovative and emerging new materials; Prefabricated housing; Materials and techniques for rural housing.	6
V	**Housing Finance**: Housing Finance at various levels, NHB, HDFC, Subsidy and Cross Subsidy- Various models of Public Private Partnership Projects – Viability Gap Funding – Pricing of Housing Units (Problems).	6
	TOTAL	**30**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Charles Corea / Housing and Urbanization / Urban Research Insitute	1999
2.	Appropriate Roofing Material for Low Cost Housing / NBO	1985
3.	A.K.Jain / Building System for Low Cost Housing / Management Publishing Co.	1992
4.	Sorgi Costa / High Density Housing in Architecture / Duran Loft Publication	2009
5.	John F.C. Turner / Housing by people / Marison Boyars, London	1976

9AR7: ELECTIVE-IV
(URBAN DESIGN)

B.ARCH.: 9th Semester **Max. Marks: 100**
3S

UNIT	CONTENTS	CONTACT HOURS
I	**Introduction** Introduction to Urban Design, its principles and techniques; History of Urban Design; Inter-relationship between Architecture, Urban Design and Urban Planning in terms of scale, time and scope; Introduction to urban legislation and policies.	5
II	**Terminologies and Theories** Urban Design Vocabulary; Elements of Urban Design; Theories introduced by various urbanists - Kevin Lynch, Jane Jacobs, Gordon Cullen, Aldo Rossi; Concept of Urban Redevelopment, Renewal and Regeneration	10
III	**Methods and Techniques** Importance of context in Urban Design-Context analysis, Regional study and Project understanding; Impact of factors such as economy, politics, religion and region on urban design; Mapping and analytical tool- Figure-ground mapping, Activity mapping and Cognitive mapping.	10
IV	**Urban Issues and Theories of New Urbanism** Urban sprawl , Gentrification, Social exclusion in terms of age, gender, class, caste etc.; Concepts of New Urbanism – Sustainable Urbanism, Inclusive City, Neighborhood Planning, Futuristic City, Walkable Neighborhood, Smart city etc.	10
V	**Urban Design Responses** Study of urban projects by eminent urban designers; Urban design exercise.	10
	TOTAL	**45**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Lynch K. /Image of the city/ The MIT Press	1960
2.	Jacob J./Death and Life of Great American Cities/ Random House, New York	1961
3.	Rossi A./Architecture of the city/ The MIT Press	1966
4.	Cullen G./The Concise Townscape/Architectural Press	1961
5.	Moughtin C./ Urban Design- Method and Techniques/ Architectural Press	1999

9AR7: ELECTIVE-IV
(URBAN CONSERVATION)

B.ARCH.: 9th Semester **Max. Marks: 100**
3S

UNIT	CONTENTS	CONTACT HOURS
I	**Urban Conservation understanding** Definition, types, need; principles, ethics & value; tangible & intangible components, Degree of Intervention;Concepts & prevailing practices in conservation, restoration, retrofitting, rehabilitation, consolidation, protection, adaptive reuse.	5
II	**Philosophies of Urban Conservation** Preservation & conservation philosophies; Pioneers & societies in field of conservation; International Charters; International approaches from UNESCO, ICCROM, GETTY foundation, etc.; National approaches: A.S.I., State Archeology, INTACH, Urban Art Commission, Heritage Commissions, local bodies, etc.; Techno legal provisions, codes & byelaws for interventions.	8
III	**Assessment & analyzing** Understanding of original building conditions; Documentation and assessment of current conditions-Physical, contextual, political, social, cultural, economic, ecological; non-destructive survey methods, environmental monitoring, simple & sophisticated analytical methods; Types& causes of damages; Damage-building components & structural systems - superstructure & substructure	12
IV	**Preservation & Prevention** Preservation strategies in Urban Conservation: Analysis of problem; types, degree & limitations for intervention; Levels of intervention- Structure, building complex, precinct; Heritage zones; Conservation strategies- documentation, analysis, techniques, interventions & outcomes; models of preservation, reconstruction & adaptive reuse; Influences & benefits of urban conservation; Sequence & phasing; Materials & methods; Detailing & finishing; Preventive maintenance of historical buildings	10
V	**Adaptation and Application** **Case Studies in Urban Conservation**: Examples of iconic urban conservation projects like Jaipur walled city bazaars, Sambhar Conservation initiative, Gambhiri riverfront etc; **Conservation strategies** for heritage areas along with revitalization techniques – projects undertaken as group work will have to ultimately contribute ideas for theimprovement of the quality of the urban environment.	10
	TOTAL	**45**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Philip Jodido; The Aga Khan Historic Cities Programme – Strategies for Urban Regeneration; Prestel	2011
2.	Dr. Alok Tripathi; The Ancient Monuments and Archaeological sites and Remains Act, 1958; Sundeep Prakashan Delhi	2007
3.	Rama P. B. Singh; Heritagescapes & cultural landscapes; Shubhi Publication Gurgaon	2010
4.	Sachindra Sekhar Biswas; Protecting the Cultural Heritage – National Legislations and International Conventions; Aryan Book International	1999
5.	Gautam Sen Gupta, Kaushik G.; Archaeology in India Individuals, ideas & institutions; M M Publishers Pvt. Ltd.	2007

10AR1: THESIS PROJECT

B.ARCH.: 10th Semester **Max. Marks: 500**

12S

UNIT	CONTENTS	CONTACT HOURS
I	**Analysis and Concept:** In this stage students shall analyze their site to arrive at a zoning of Activities on site. Student is required to Analyze the characteristic features and context of the site including Climatic analysis at both micro and macro level. Drawings, sketches, and physical models necessary to explain circulation, Organization of spaces and form composition shown in Preliminary drawings and study models.	24
II	**Concept Development**: In this stage students shall present the overall scheme of their project in two dimensional drawings and three-dimensional model. Site plan and sections showing circulations, built and open spaces. Building plans showing integration of building elements, space, form and Structure. Building Sections showing integration of building elements, space, form and Structure in Section. Building Elevations showing massing & projections.	36
III	**Design Development**: In this stage students shall develop their conceptual schemes further as per the comments in the previous reviews. Drawings namely, site plan, building plans showing circulation, built & open, furniture layout and sections & elevations showing massing, edges & surface articulation along with structure and services integration to an appropriate scale. Revised building / site model.	42
IV	**Pre-Final Design**: The pre-final design stage must cover all the aspects of design covered in the previous stages in the light of comments offered by the thesis guides and examiners from time to time. In addition to this the students are required to submit revised building/site model.	42
V	**Final Design**: A final set of drawings in the form of a portfolio containing plans, sections, elevations, views / perspectives, 3 copies of the reports in original and CD containing all this to be submitted at this stage to their respective guides for external jury.	36
	TOTAL	**180**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	BIS; National Building Code of India, SP7:2016; BIS	2016
2.	NIASA; Archiving Architectural Thesis; Council of Architecture	
3.	Naresh Shah with Pramod Anaokar; An Introduction to Predesign; Council of Architecture	2015
4.	The Phaidon Atlas of 21st Century World Architecture; Phaidon	2008
5.	T.S.S. for Building Types; Mc Graw Hill	2001

10AR2: ELECTIVE-V : Design Elective Related to Thesis

INTERIOR DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify most important interior space / group of spaces from Thesis Project having carpet area greater than 1000 Sqm. Find type, size, organization and activity in space. Define scope of work and methodology.	04
II	**Data Collection**: Find out various theories and concept for designing space / area selected. Find out role of interior elements, their function and aesthetical criteria. Study of similar cases, conduct physical surveys, stakeholders' interviews, study standards and bye laws applicable.	08
III	**Concept & Analysis**: Analysis of thermal, visual, auditory and sanitary conditions necessary for comfort and convenience of occupants through case studies. Drawings showing conceptual layout of the interior space with all elements of interior design and their effect on the perception of the space.	12
IV	**Design Synthesis**: Coordination of proposed interior space layout with heating and air conditioning system, water supply, sanitary drainage, electrical layout, lighting system, acoustics and structural system.	16
V	**Design Presentation**: Final set of drawings showing significance of space selected and Interior design concept. Sectional elevations showing walls, wall elevations and other elements of interior design in section. Furniture details in plan and section to an appropriate scale. Recommended material color and finishes for furniture and all surfaces. Flooring and inverted ceiling plan showing coordination with other systems.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	T.S.S. for Interior Design and Space Planning; McGraw Hill	2001
2.	Elizabeth Wilhide; The Interior Design Directory; Quadrille	2009
3.	Drew Plunkett; Drawing for Interior Design; Laurence King Publishing	2009
4.	Maureen Mitton; Interior Design Visual Presentation; John Willey & Sons	1999
5.	Henry Wilson; India-Contemporary; Thames & Hudson	2007

10AR2: ELECTIVE-V : Design Elective Related to Thesis

LANDSCAPE DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify outdoor activity spaces for design requiring landscape and site planning intervention in area not less than 1 hectare or the entire site area whichever is lesser. Find out type, size, organization and activity in space. Define scope of work & methodology.	04
II	**Data Collection**: Study theories and concepts of the space, area selected. Study topography, geology & soil, hydrology at site level. Study climate, existing vegetation, views & context of site. Study of similar cases for the issues selected for landscape intervention. Effect of standards and bye laws.	08
III	**Concept & Analysis**: Analysis of identified issues and challenges by comparing various cases. Drawing showing conceptual layout with landscape elements such as land form, plant material, water, pavement, site structures & buildings with their significance & characteristics.	16
IV	**Design Synthesis**: Coordination of various services such as water supply, water collection, sewage, electrical, lighting with the landscape proposal.	12
V	**Design Presentation**: Final set of drawings showing Research & Analysis. Design & Construction drawings such as comprehensive landscape development plan, Grading plan, planting plan, material plan, Drawing & irrigation system layout plan & outdoor lighting system layout plan.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	T.S.S. for Landscape Architecture; McGraw Hills	1998
2.	Sabrina Wilk; Construction and Design Manual Drawing for Landscape Architects; DOM Publishers	2014
3.	Mohd. Shaheen et.al.; Landscape Architecture in India; LA, Journal of Landscape Architecture	2013
4.	Leonard J. Hopper; Landscape Architectural Graphic Standards; John Wiley & Sons	2007
5.	Grant W. Reid; Landscape Graphics; Whitney Library of Design	1987

10AR2: ELECTIVE-V : Design Elective Related to Thesis

URBAN DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify the area for urban design intervention either a linear stretch approx. 1 Km. in length or area approx. 10 Hectare or a campus whichever is applicable to the thesis project. Find out scope of work and methodology.	04
II	**Data Collection**: Study of context of the site location, accessibility, networks, surrounding land use, surrounding activities, views & vistas to and from site. Study of human responses by conducting interviews, survey, cognitive mapping etc. standards & byelaws.	08
III	**Concept & Analysis**: Find out various theories & concepts, study of similar cases of urban design intervention. Analysis of contextual issues.	12
IV	**Design Synthesis**: Study of Green & Communication networks, built fabric and architectural language. Determine issues thereof and suggest strategies or remedial measures.	16
V	**Design Responses**: Drawing showing site context, urban form, urban character, urban networks, urban activities, built fabric, architectural language and its constituents and propose urban design measures & interventions.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	T.S.S. for Urban Design; McGraw Hill	2003
2.	Cliff Moughtin; Urban Design Green Dimensions; Architectural Press	1996
3.	Francese Z. Mola; The Sourcebook of Contemporary Urban Design; Harper Design	2012
4.	Cliff Moughtin; Urban Design Streets & Squares; Routledge	2016
5.	Gordon Cullen; The Concise Townscape; Architectural Press	1977

10AR3: ELECTIVE-VI: Technology Elective Related to Thesis

PLUMBING DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify plumbing services for different spaces and activities. Identify sources of supply & quality of water in an area selected for project. Find out existing physical infrastructure.	04
II	**Design Calculation:** Identify water demand & quality for various spaces & uses. Find out water required for Fire-fighting system for type of building by studying standards & codes.	08
III	**Concept & Analysis**: Conceptual layout showing water supply system to and from OHT / UGT to individual spaces. Conceptual layout of drainage and disposal system conceptual layout of fire fighting system.	16
IV	**Design Synthesis**: Plumbing services design in coordination of various services such as water supply, sewage, electrical, lighting, heating & cooling along with landscape planting plan.	12
V	**Design Presentation**: Final drawing showing distribution of water from OHT / UGT to individual spaces along with specifications. Drawing showing storage of water, water tanks then type, numbers location & capacity. Drawings showing water harvesting / recycling system as per need of individual project. Drawing showing water supply systems, pressure system. Drawings showing drainage system from single toilet, vertical and horizontal drainage line system with their number, location, size, slopes, interval etc. Drawings showing disposal system to municipal drain, or septic tank or soak pit, their details.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	Fred Hall & Rager Greeno; Building Services Handbook; Butterworth-Heinmann	2011
2.	S.J. Arceivala, “Waste Water Treatment for Pollution Control”, Tata McGraw Hills Publication.	2008
3.	K.N. Duggal,”Elements of Environmental Engineering”, Chand & Co.	2010
4.	“Uniform Illustrated Plumbing Code – India (UIPC-I)”, Indian Plumbing Association	2014
5.	Charanjeet S. Shah; Water Supply and Sanitation; Galgotia Publication	2015

10AR3: ELECTIVE-VI : Technology Elective Related to Thesis

ELECTRICAL DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify electrical services for outdoor and indoor spaces. Identify the type of building & electrical supply sources & components and mandatory provisions.	04
II	**Design Calculation**: Evaluate power requirements for all services like lighting, HVAC, Fire, Lifts, Escalators and other building equipments.	08
III	**Concept & Analysis**: Identify Electrical system requirement on the basis of load calculations by studying similar cases. Study of National Electrical Code and ECBC. Identification and provision of alternative energy sources for specific requirement. Determine requirement of lighting as per National lighting code for various activities. Drawings showing light zoning diagrams, single line diagram showing distribution system and its components at site and building level.	12
IV	**Design Synthesis**: Electrical services design in coordination with various services such as water supply, sewage, lighting, heating & cooling along with landscape planting plan.	16
V	**Design Presentation**: Drawing showing electrical layout – Power and LV layouts, Wall electrical layouts, Electrical reflected ceiling layout, IBMS provisions. Drawing showing light fixtures, layout & connections in plan and section with specifications such as Type and Number of lamp / luminaries, their lux level and lighting system.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	S.L. Uppal- G.C. Garg; Electrical Wiring Estimation and Costing; Khanna Publication	2010
2.	Fred Hall & Rager Greeno; Building Services Handbook; Butterworth-Heinmann	2011
3.	Raina K.B. & Bhattacharya S.K.; Electrical Design, Estimation and Costing; New Age International Publishers, New Delhi	2007
4.	Steve Doty & Wayne C. Turner; Energy Management Handbook; The Fourmount Press, USA	2009
5.	B. Mazumdaar; Textbook of Energy Technology; APH Publishing Corporation	2005

10AR3: ELECTIVE-VI : Technology Elective Related to Thesis

MECHANICAL DESIGN

B.ARCH.: 10th Semester **Max. Marks: 100**

4S

UNIT	CONTENTS	CONTACT HOURS
I	**Identification**: Identify Mechanical Services for different spaces and activities. Find out area of conditioned spaces and non conditioned spaces.	04
II	**Design Calculation:** Identify system requirements for various mechanical services (HVAC, Fire, Vertical Circulation) and evaluate the requirement through heat load calculation, waiting time calculation etc.	08
III	**Concept & Analysis**: Identify mechanical system through analysis of similar cases and manuals such as ECBC, NBC and ASHRAE.	16
IV	**Design Synthesis**: Preparing Mechanical System Design in Coordination with interior furniture, water supply, sewage, electrical, lighting & sound reinforcement system.	12
V	**Design Presentation**: Drawing showing concept of minimizing various loads. Design showing HVAC, Fire, Vertical Circulation showing all its components, their capacity, number, location, size, etc in plans & sections with specifications at site & building level.	20
	TOTAL	**60**

REFERENCE BOOKS:

S.No.	NAME OF AUTHORS / BOOKS/ PUBLISHER	YEAR OF PUBLICATION
1.	John W. Mitchell, James E. Braun; Heating, Ventilation, and Air Conditioning in Buildings ; John Wiley &Sons Inc.	2012
2.	Norbert Lencher; Heating Cooling Lighting; John Wiley & sons, London	2014
3.	M.Y.H. Bangash, T. Bangash; Lifts, Elevators, Escalators and Moving Walkways; Travelators/Taylor & Francis/Balkema	2007
4.	Fred Hall & Rager Greeno; Building Services Handbook; Butterworth-Heinmann	2011
5.	William H.Severns and Julian R Fellows; Air conditioning and Refrigeration; John Wiley & sons, London	1987