FACULTY OF PHYSICAL PLANNING & ARCHITECTURE

SYLLABUS

FOR

Master of Architecture (M.Arch.) (URBAN DESIGN)
(Credit Based Evaluation and Grading System)
(SEMESTER: I - IV)

Examinations: 2019-20

GURU NANAK DEV UNIVERSITY,
AMRITSAR.

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      (ii) Subject to change in the syllabi at any time.
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Master of Architecture (M.Arch.) (Urban Design) (Semester System)
(Credit Based Evaluation and Grading System)

**Scheme of Course**

**Semester – I (Autumn Semester)**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Type</th>
<th>Credits</th>
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<th>U</th>
<th>Duration of Exams</th>
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<tbody>
<tr>
<td>1</td>
<td>ARL-601</td>
<td>History and Evolution of Urban Form</td>
<td>DC</td>
<td>3</td>
<td>2</td>
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<td>2</td>
<td>ARL-602</td>
<td>Theory of Urban Design</td>
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<td>ARL-603</td>
<td>Urban Planning Process, Practice and Legislation</td>
<td>DC</td>
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<td>4</td>
<td>ARU-604</td>
<td>Urban Design Studio-I</td>
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**Elective Subjects (Any One of the Following)**

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<tr>
<th>Sr. No.</th>
<th>Course Code</th>
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<tr>
<td>5</td>
<td>ARL-605</td>
<td>Public Space Infrastructure and Landscape Design</td>
<td>DE</td>
<td>3</td>
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<tr>
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<td>ARL-606</td>
<td>Computer Programming and Information Systems</td>
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Total **20 10 4 6**

**2nd Semester (Spring Semester)**

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<tr>
<td>1</td>
<td>ARL-651</td>
<td>Socio-Economic- Cultural Aspects of Urban Realm</td>
<td>DC</td>
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<td>ARL-652</td>
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<td>Urban Housing</td>
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<td>Urban Design Studio-II</td>
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**Elective Subjects (Any One of the Following)**

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<th>Sr. No.</th>
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<td>Real Estate Development</td>
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<td>ARL-656</td>
<td>Urban Design and Sustainable Development</td>
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<td>2</td>
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<td>0</td>
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Total **20 10 4 6**

**Interdisciplinary Course**

Students can opt. this paper in any Semester except Ist. Semester. This ID Paper is one of the total ID Papers of this course.
### Master of Architecture (M.Arch.) (Urban Design) (Semester System)
(Credit Based Evaluation and Grading System)

#### M. Arch. Semester 3rd (Autumn Semester)

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<tr>
<th>Sr. No.</th>
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<td>ARL-703</td>
<td>Research Methodology and Planning Techniques</td>
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<td>00</td>
<td>04</td>
<td>Presentation &amp; Report Submission</td>
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| 6.      | -           | Inter – Disciplinary Course                           | ID          | -       | - | - | - | -                |

#### M. Arch. Semester 4 (Spring Semester)

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| Inter Disciplinary Course | - | - | - | - | - | - |


Master of Architecture (M.Arch.) (Urban Design) (1st Semester)
(Credit Based Evaluation and Grading System)

ARL 601: History and Evolution of Urban Form

Time: 03 Hrs
Credits: 03 (L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
Emergence and evolution of early human settlements; Changing pattern and form of human settlements. Historic overview of urban form of early cities Greek and Roman cities

SECTION-B
Historic overview of urban form from medieval period to colonial period

SECTION-C
Impact of industrial revolution on urban form. Urban form of modern cities.

SECTION-D
The study of physical form of a typical city, understanding the on-going transformation process. Urban design case studies of various typologies, inner city areas, redevelopments, civil lines and new townships.

Suggested Readings:
Master of Architecture (M.Arch.) (Urban Design) (1st Semester)
(Credit Based Evaluation and Grading System)

**ARL 602: Theory of Urban Design**

Time: 3 Hrs.
(L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

**Instructions for the Paper Setters:**
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**
Explanations of Urban Design terminologies, definitions and methodologies for shaping and understanding of urban form; derived from both theory and empirical evidence. Scope and objectives of urban design; its relation with architecture and urban planning. A critical analysis of urban design and planning in showing increasing complexity of factors and forms of built environment; built architectural forms to urban architecture.

**SECTION-B**
Urban spaces - Concepts of place and space, Hierarchy and nature, geometrics and Typologies, sense of enclosure, detail design aspects; Building typology and its impact on urban form; Urban Massing in Built form – pattern, texture, grain and density. The integration of movement, activity and urban form. The various tangible and intangible factors which as basis for urban design theories and principles.

**SECTION-C**
This part shall cover city forms both in their entirety and as component parts. Focuses on the physical components of cities and their design. Cognitive mapping –Image ability and Elements of urban design. Urban scale; Intimate, Urbane and Monumental. Human scale and Generic scale in Urban Design. The impact of climate and land form on urban form. The size, shape and structure of cities. Methods of urban design surveys, documentation and representation.

**SECTION-D**
Role of key Architects and Planners and their influence in the production of ideas and the evolution of urban design theories. Introduction and examination of established Urban design concepts and principles by experts such as Camillo Sitte, Christopher Alexander, Daniel Burnham, Clearance Perry, Ebenezer Howard, C. Doxidiadis, Mumford, Venturi, Rossi, F.L. Wright, Le Corbusier, Colin Rowe, Jane Jacobs, Rob Krier, Patrick Geddes, Kevin Lynch, Ben Hillier etc. will be examined. Post modern urban design as a product and process in the era of globalization.
Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) ( Semester-I)  
(Credit Based Evaluation and Grading System)

Course Code: ARL 603  
Urban Planning Process, Practice and Legislation

Duration of Examination: 03 Hrs  
Credits: 03 (L=02, T=1, U=0)  
Minor Test: 20%  
Assignment/Seminar/Case Study/Minor Project: 20%  
Quiz/Group Discussion: 10%  
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
Urbanization process and its implications; categories of planning (economic, social and physical) and their integration; urban planning related terms and concepts; urban planning process; various planning tools such as master plan, development plan, zonal plan, project plans/schemes; interface between architecture and urban planning; general principles and forms of control for urban development; impact of planning regulations such as ground coverage, FAR, zoning, density norms, architectural controls, physical and social infrastructure provisions on emerging urban form.

SECTION-B
Various planning surveys; primary and secondary data; surveys process; sampling techniques, interview schedules and questionnaire design for primary surveys, secondary data format; data processing: designing performa for computers, classification, coding & tabulation, editing and control of error; data presentation techniques; norms and standards for planning of urban areas.

SECTION-C
Need and importance of planning legislation; legal framework in which development takes place in India; Town Planning Act, Land Acquisition Act, 74th Constitutional Amendment Act, Urban Arts Commission Act, etc; Innovative land assembly techniques such as Transfer of Development Rights, Accommodation Reservation, etc.

SECTION-D
Objectives and functions of various organizational setups like urban development authorities, municipalities and improvement trusts; public and private participation in planning and development process.
Readings:
5. Relevant Acts.
Course Code: ARU 604
Course Title: Urban Design Studio-I

Duration of Examination: Viva Voce
Credits: 08 (L=02, T=0, U=06)
Internal Assessment: 50%
End Semester Viva voce: 50%

The urban design studio is where the synthesis of theoretical and practical aspects of urban analysis and design takes place. The course introduces the students to standards in urban/built environment design; and experiences through field surveys. The students will understand various issues, approaches, precedents and alternative design solutions for architectural/urban design problems for urban design analysis, problem solving and conceptual development.

1. Study and Design of Precinct/Campus level Area of a city by exploring the dynamics of built form-open space relationship, land use and movement integration. Collection of data on land use, activity pattern, traffic characteristics and volume, social infrastructure, density etc. followed by analysis and synthesis resulting in design solution.

2. Design layout and three dimensional modelling of unifunctional or mixed use development such as neighbourhood, commercial centre, socio cultural centre, educational campus etc. with emphasis on programme interpretation, preparation of design brief and optimization of area programme with respect to bye laws.

Suggested Readings:

1. Alexander, Christopher; “The Timeless way of Building”, Oxford University Press, 1979
Master of Architecture (M.Arch.) (Urban Design) (Semester-I)
(Under Credit Based Continuous Evaluation Grading System)

Course Code: ARL 605
Course Title: Public Space Infrastructure and Landscape Design

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
Introduction: public space- its role, types and hierarchy, importance of outdoor spaces urban life, social activities and their types, green infrastructure -role of landscape design and planning, role of public space in creating active communities. Landscape and urban ecology, Planting design and ecological considerations, its application in design of natural and Urban landscapes/ ecosystems; to promote interdisciplinary collaboration in landscape and urban design.

SECTION-B
Study of landscape architecture through historical examples; open space and its urban design and planning context, early industrial towns and the garden city movement; importance of landscape design in urban areas by referring to contemporary examples from India and abroad.

SECTION-C
Public space infrastructure, Street furniture, lighting, graphics, signage, public art – their types, function and role in place making. Study of open space- built form relationship; various typologies of open space systems at macro and micro level;

SECTION-D
Elements and Principles of landscape design criteria for plantation of trees in neighbourhoods, market places, road sides, leisure areas etc. Visual, aesthetic and functional considerations in planting design; The role of plant material in environmental improvement. Expand design skills to address problems involving the creation of outdoor public spaces, the use of landscape typologies to create diverse public spaces, the basic design of street typologies and transportation networks.
Master of Architecture (M.Arch.) (Urban Design) (Semester-I)
(Credit Based Evaluation and Grading System)

Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) (Semester-I)  
(Credit Based Evaluation and Grading System)

Course Title: Computer Programming and Information Systems  
Course Code: ARL 606

Duration of Examination: Viva Voce  
Credits: 03 (L=02, T=1, U=0)  
Internal Assessment: 50%  
End Semester Viva voce: 50%

SECTION-A
This course provides an introduction to computer software, such as Geographical Information Systems (GIS), Space Syntax for urban designers.

SECTION-B
Teaching the basic skills, techniques, and interpretive capabilities to make effective maps, analyze data within an urban context.

SECTION-C
Understand the pros and cons of different GIS techniques, databases, and software applications.

SECTION-D
Practice and hands-on training on the studio problem or other assignments.

Suggested Readings:
Master of Architecture (M.Arch.) (Urban Design) (Semester–II)
(Credit Based Evaluation and Grading System)

Course Title: Socio-Economic-Cultural Aspects of Urban Realm

Course Code: ARL 651
Duration of Examination: 03 Hrs

Credits: 03 (L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
Concepts of place and space – social construction of space, an overview. Inter-relationship and influence of social and economic aspects on contemporary development issues which define an artificial environment in terms of fair/just urban form. The effects of colonialism, industrialization and globalization on the fabric of cities the quality of built environment and the quality of life.

SECTION-B
Overview of cross-cultural influences in city development, Contemporary culture – the metropolitan experience Introduction to the exploration of the interface between the built environment and human behavior, Physical and psychological design determinants. Changing attitudes towards urban space at global level and special emphasis on urban Space as contested domain – public private, concept and production of everyday space

SECTION-C
City as a human network – social structure and urban form. Social access – territoriality, safety, exclusion and inclusion, minority groups and the disadvantaged, children and the geographies of disability- various norms and standards of barrier free environment and their applicability in built environment. Attitudes towards deviancy, accessible environments and persons with disabilities with emphasis on legal, ethical, human factors. The accessibility and use of an urban area for differently abled persons.

SECTION-D
Relationship between major socio-economic issues like urban poverty, urban violence and breaking up of family structure as a result of urbanization and several other issues relating to urban design. Discoveries and implications of the post-metropolis, globalization and transnational urbanism. Contemporary trends in the Indian city, conflicts, contestations and hybridization within the multilayered urbanities of Indian cities.
Reading, analysis and investigation of urban areas and critical appraisal of the developments in form and space from the human perspective through discussion and case studies.
Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

Course Code: ARL 652
Course Title: Urban Infrastructure

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Infrastructure will include public works such as site evaluation, road geometrics and parking standards, drainage, sewerage, solid waste disposal, fire fighting, electricity. Introduction to the concepts of rain water harvesting.

SECTION-B

Social facilities such as housing, healthcare, education, security, public spaces and economic facilities. The various aspects of pressures of urban growth, city limits/boundaries viz a viz new extensions will be studied.

SECTION-C

The critical role that transportation plays in structuring the city will be examined with respect to transport systems and their types;

SECTION-D

Travel and Traffic Characteristics including modal choice, journey lengths, purpose, trip distribution in time, traffic surveys, capacity factors etc. Introduction to transportation planning process, Comprehensive mobility plan.
Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

Suggested Readings:


3. UDPFI Guidelines; “Centre for research, documentation & training”, 1996.


Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

Course Code: ARL 653
Course Title: Urban Housing

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A
Concept of shelter, evolution of housing, suitable housing for the society, Indigenous and vernacular housing. House form and its determinants: physical, cultural, behavioral, environmental considerations in housing design. (Theory of Amos Rapoport, John FC Turner and John Habraken). Housing Scenario in India and other developing nations, effect of urbanization and industrialization on housing.

SECTION-B
Traditional housing stock, its layout and design, social and economic considerations, environmental features, present condition, transformations issues and remedies. Relevance of traditional neighborhood and housing design in present context. Slums and low income settlements, policies, upgradation and improvement programmes, incremental housing, and social housing programmes, cost effective housing.

SECTION-C
Housing policies and programmes in India: National Urban Housing and Habitat Policy (NUHHP) 2007, existing housing policies and programmes, role of the Government & NGOs. housing layout and standards, affordable housing, sustainable housing, upcoming theories and efforts in the field of housing.

SECTION-D
Housing as an economic good: housing demand and supply, housing market, housing finance system, role of various housing finance institutions like NHB, HUDCO, LIC etc. Role of real estate developers and private builders in the housing sector, housing as an investment, private public partnership and foreign direct investment their impact on the housing market.
Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

Course Code: ARU 654
Course Title: Urban Design Studio – II
Duration of Examination: Viva Voce
Credits: 08 (L=02, T=0, U=6)
Internal Assessment: 50%
End Semester viva voce: 50%

The course introduces the students to the complexity of a typical Indian city in terms of pressing issues such as conflict between old and new areas, fragmentation, transformations, lack of character and image. Students will be required to understand the tools and mechanism of development, the global versus local concerns, the importance of public participation in effecting the urban design process in an existing city.

Study of a town/city with respect to understanding of evolution of urban morphology in historic context, change and continuity, present issues and conflicts by analyzing the land use, movement pattern, socioeconomic and demographic patterns, visual environment, spatial structure and typology. Identification and design of action areas and implementation in light of prevailing government policies and programmes including socio-economic indices of development.

Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

Course Title: Real Estate Development
Course Code: ARL 655

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

SECTION-B
Key drivers of the metropolitan real estate market. Concepts of real estate analysis. Mapping supply to understand markets. Property grading, factors affecting grading and the relevance of such grading, relevance of design in grading. Demand factors affecting real estate development.

SECTION-C
Real estate development and planning. Planning process abroad and in India, Overview of laws and regulations affecting real estate.

SECTION-D
Urban Land Ceiling, Rent Acts, DCR’s etc. FDI policy in Townships and SEZ’s. Short review of office markets in Delhi, NCR, Chandigarh and Punjab.

Suggested Readings:
3. CREDAI : The Confederation of Real Estate Developers Association of India
Master of Architecture (M.Arch.) (Urban Design) (Semester-II)
(Credit Based Evaluation and Grading System)

**Course Title: Urban Design and Sustainable Development**

**Course Code: ARL 656**

**Duration of Examination: 03 Hrs**

**Credits: 03 (L=02, T=1, U=0)**

**Minor Test: 20%**

**Assignment/Seminar/Case Study/Minor Project: 20%**

**Quiz/Group Discussion: 10%**

**End Semester Examination: 50%**

**Instructions for the Paper Setters:**
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

**SECTION-A**
Definitions of environmental planning terms. Strategies and concepts of sustainable development for resource conservation as relevant to settlement planning & design. Basic principles of sustainable development and the physical planning instruments that can be employed to achieve sustainable development.

**SECTION-B**
Identification of desired developments and intensities, site selection, planning, design and construction management, mitigation and augmentation of environmental impacts. Environmental Planning techniques – analysis of carrying capacity, ecological footprint and land suitability, vulnerability assessment and microzonation, pollution modeling, eco city development etc.

**SECTION-C**
Statutory Acts, regulations and Notifications (coastal zone regulations, pollution control Act etc.). Definition of Environmental Impact assessment, methods of EIA, procedures – formats, important clearances, time frame, legal framework of EIA. Case studies of EIA as relevant to urban design projects.

**SECTION-D**
Climate change and city form. International agreements agendas and protocol. Case studies of application of concepts at various scales – regional, settlement and buildings (emphasis on urban eco systems green buildings, pollution control, energy use, water harvesting, waste treatment, solid waste management etc.).
Suggested Readings:

5. Tolley, Rudney (Ed),” Sustainable Transport,” Woodhead Publishing Ltd., 2003
Course Title: Urban Renewal and Conservation
Course Code: ARL 701

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/ Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION -A
Introduction to conservation, heritage, Historic cities and areas - their values, present condition and context. Architectural and urban conservation. Conservation-planning, procedures, evaluation criteria, means, mechanisms, agencies and financing. Principles of conservation, Concepts and approaches to urban conservation in India, UK and Europe, successful practices in conservation in India and abroad.

SECTION -B

SECTION -C
Historic overview of urban renewal, Concepts of urban renewal, Development strategies for regeneration of inner city areas, recycling, renewal, etc. Case studies of urban renewal. Adaptive reuse and Brown Field projects in India and abroad, Infrastructure up gradation, economic regeneration, financing and management of urban renewal schemes.

SECTION -D
Integrated approach to conservation, urban renewal incorporating socio economic and cultural context, landscape, planning process and tourism. Discussion on JNNURM, HRIDAY, AMRUT, Smart cities etc. and recent conservation practices by various agencies, Case study of an Urban renewal and conservation scheme of an urban area.
Suggested Readings:

3. Latham, Derek; “Creative Re-use of Buildings”, *Donhead, edition 2007*
Master of Architecture (M.Arch.) (Urban Design) (Semester-III)  
(Credit Based Evaluation and Grading System)

Course Title: Project Planning & Finance for Urban Design  
Course Code: ARL 702

Duration of Examination: 03 Hrs  
Credits: 03 (L=02, T=1, U=0)  
Minor Test: 20 %  
Assignment/Seminar/Case Study/Minor Project: 20 %  
Quiz/ Group Discussion: 10 %  
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION - A
Financing urban development; tax and non-tax revenue of urban planning and development agencies; cost recovery of services; subsidy and cross-subsidy; loans and grants from financial institutions; remunerative projects; making urban development self-financing.

SECTION - B
Municipal finances; various sources of finance i.e. taxes, fees & charges, etc.; various items of expenditure for development and maintenance of infrastructure; resource mobilization from government and other external sources; public-private partnership in urban development. Urban financial institutions such as HUDCO, NHB, LIC, etc their structure, sources of funds and priorities of allocation.

SECTION - C
Introduction to project planning, theories, concepts and management Life cycle of a project; Stages of project formulation and their significance - identification of a project, techno- economic analysis, feasibility analysis, design and network analysis, Norms, standards, aspects and methods of project appraisal and report, cost-benefit analysis, discounted cash-flow analysis; costs of conducting such analysis. Project funding, economic feasibility and methods of recovery.

SECTION - D
Network techniques of project formulation - network logic, rules, forms of network, critical path method (CPM) & project evaluation and review technique (PERT); Time estimates and uncertainty; Work schedule- concepts & techniques. Implementation strategies, scheduling, activities, progress reviews, corrective actions etc. Special projects such as Special economic zones, export processing zones, townships etc. Mandatory legal and environmental approvals Case studies of successful projects and planning schemes are encouraged to be used as examples.
Suggested Readings:

Master of Architecture (M.Arch.) (Urban Design) (Semester-III)
(Credit Based Evaluation and Grading System)

Course Title: Research Methodology and Planning Techniques
Course Code: ARL 703

Duration of Examination: 03 Hrs
Credits: 03 (L=02, T=1, U=0)
Minor Test: 20 %
Assignment/Seminar/Case Study/Minor Project: 20 %
Quiz/ Group Discussion: 10 %
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION - A
Definition and needs of Research in urban design, Scientific research and methods, Levels of research: micro and macro. Major steps in the conduct of scientific research, induction, deduction and verification. Selection and formulation of research problems - reviewing of literature, designing a research in urban design, pre test and pilot study. Synopsis & components of Synopsis. Theory and Facts. Process of Theorization. Theory and facts.

SECTION - B
Research compilation and report - contents and style, factors in the organization of a research report, writing of foot notes, quoting styles, references, cross referencing and bibliography.

SECTION - C
Data Collection & processing: Questionnaire, Sampling, Scaling, coding, classification & tabulation, editing; Analysis and interpretation. Hypothesis, formulation and testing of hypothesis; Tests of Hypothesis – meaning, importance and methods such as z-test, t-test, F-test. Analysis of data with respect to age, sex, religion, literacy, occupation and other socio-economic aspects; population projections.

SECTION - D
Administration of field surveys; Preparation of Base Map, Drawing size and format, Map types, Map Scales and their applications, Data Base management. Aerial photography; Basic principles and techniques of photogrammetric, photo interpretation and remote sensing; Collection of data by photo interpretation and remote sensing techniques. Introduction to GIS and its application in urban design process.
Suggested Readings:-

Master of Architecture (M.Arch.) (Urban Design) (Semester-III)  
(Credit Based Evaluation and Grading System)  

Course Title: Urban Design Studio-III  
Course Code: ARU 704  

Duration of Examination: Viva Voce  
Credits: 08 (L=02, T=0, U=06)  
Internal Assessment: 50%  
End Semester viva voce: 50%  

The studio focuses on training the students with the capacity to implement theory, concept and principles of urban design taught in previous courses into an Urban Design Program and exercise. Students will carry out rational design process and review for a selected site and present to public for feedback in the final design. Students will be required to understand principles of site development as part of an urban design process. Students will be required to develop selected sites through observation and secondary data, problem solving through field observation, interviews with stakeholders, feasibility study based on facility, financial and pre-design capacities. Study and design of special large scale areas such as satellite towns, suburbs, fringe areas, river front development, hilly areas etc. SWOT analysis with respect to physical, environmental, socio economic aspects of development with help of primary and secondary surveys, documentation, mapping etc. The design programme should include methodology of site selection, demographic characteristics, socio-economic viability, environmental impact etc. The design solution will include layout plan, zoning plan, layout of urban services, architectural controls and detailed three dimensional modeling of important zones.

Suggested Readings: -


Discussons on specific topics on urban design. Collection of information and substantive studies on urban design. The seminar would focus on relevant urban issues and shall include social, economic, cultural, aesthetical & environmental and other related design aspects besides the physical aspects of urban realm. The candidate is expected to do in-depth primary and literature study to put forth relevant current or uses preferably in Indian contest. The Seminar work would be evaluated on the basis of periodical presentations at different stages followed by the final presentation and submission at the end of the semester.

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<tr>
<th>Course Code: ARS 705</th>
<th>Duration of Examination: Presentation &amp; Report Submission</th>
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<tr>
<td>Course Title: Thesis Seminar on Urban Design</td>
<td>Credits: 02 (L=0, T=0, U=04)</td>
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</table>
Master of Architecture (M.Arch.) (Urban Design) (Semester-IV)
(Credit Based Evaluation and Grading System)

Course Title: Thesis Project
Course Code: ARD 751

Duration of Examination: Viva Voce
Credits: 20 (L=0, T=0, U=20)
Internal Assessment: 50%
End Semester viva- voce: 50%

Independent study to write academic work based on research results. The Master’s thesis project provides students with the opportunity to investigate a problem in depth under the supervision of experienced practitioners and researchers. The thesis accounts for one semester of full-time study. Two types of thesis projects will be available. The first group relates to practice (applied urban design) with the goal of developing student ability to analyze, sketch, formulate and present urban design proposals. The second group relates to theory (urban design theory) with the goal of enhanced understanding of specific features in the urban planning and design process – as a preparation for an academic or commercial research career. A topic may be chosen from one of the following Course Types: Design Technologies; History Theory & Criticism; Urban Studies.

1. Reviews and Internal Evaluations: Each student will be assigned to a panel of thesis supervisors (hereafter referred to as panel). The panel will be responsible for monitoring the progress as well as evaluating various stages of the thesis project as mentioned below:

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<thead>
<tr>
<th>Sr. No.</th>
<th>Submission/Viva Voce</th>
<th>% weightage</th>
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<tbody>
<tr>
<td>1.</td>
<td>Data Collection</td>
<td>10</td>
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<tr>
<td>2.</td>
<td>Data Analysis &amp; Literature Review</td>
<td>20</td>
</tr>
<tr>
<td>3.</td>
<td>Pre Final Evaluation</td>
<td>20</td>
</tr>
</tbody>
</table>

2. Final Submission: Each student shall submit the final report, presentation drawings and model/s as part of the final submission which shall eventually be returned after the final evaluation process is over. In addition, each student shall also submit two identical copies of the final report along with a soft copy, complete in all respects along with one hard copy for each member of the panel. The copies of the final report must also include A-3 size copies of all final drawings and at least two photographs of the final model/s.

3. External Evaluation: The Final Jury shall comprise of the Head of Department or his nominee and the external examiner/s. All jury members shall be Urban Designers only. Weightage of marks assigned for external evaluation shall be 50% of the total marks. The final grades will be awarded by the Board of Control with all supervisors to be invited as special invitee, if they are not members of the Board of Control.