Curriculum for

Master of Architecture in Sustainable Habitat

Two-year full-time Post Graduate Programme

under the

Faculty of Planning, Architecture, and Design

Goa University

2020

DR ASHISH K REGE

Digitally signed by DR ASHISH K REGE
Date: 2023.02.24 13:25:12 +05'30'

CONTENTS

01. PREAMBLE

The Global perspective on the course:

Our planet, for better or worse, is becoming urbanized. By 2050, according to former United Nations Secretary General Kofi Annan, six billion people representing two-thirds of humanity, will be living in towns and cities. Today, one billion people — or one of every three urbanites — live in slums. The solutions to this and other environmental challenges hinge on ***sustainability***: preserving the earth's resources, inhabitants, and environments for the benefits of present and future generations. The United Nations has predicted that global urban population would far exceed the rural population by 2050, which is fast approaching. Though 25 years ago, the urban population was half the size of the rural population, urbanization is now taking place at a rate far beyond our control.

Already today, urban municipalities are struggling to meet the existing demands of water and energy to sustain urban life and its foundations, and are producing 'waste' in quantities that cannot be dealt with satisfactorily. Further, there is the problem not only of the scarcity of but also of the pollution of natural resources such as air and water. Urban areas are the largest consumers of fossil fuels and the largest emitters of greenhouse gases. Specifically, the buildings in urban areas contribute to over 70% of the global carbon monoxide emissions affecting the eco-system in urban areas.

The past two decades have seen many examples of sustainable building design and urban development, including a range of eco technologies in building construction as well as in the management of infrastructure, such as water, energy, waste and transportation. These projects demonstrate as replicable models which can be used in normal practice.

Thus, designing sustainable habitat both in rural as well as in the urban context is important to provide good quality of life to inhabitants and to protect the earth's environment. Architecture education in India, especially at the undergraduate level, has very little emphasis on integrating environmental aspects to design a sustainable built environment. This Master's programme aims to train Architects to understand issues associated with Sustainable Habitat, including environmental concerns, assessment methods, energy consumption, construction materials, health, economic and social concerns, and management of buildings and other construction projects in a life-cycle perspective.

The Goan Context

Unlike most of the cities in the country, Goa has a special case of urbanism. It is a continuum of Urban into Rural for which a new term for development has been coined called "***Rurban***". As the internationally renowned architect Charles Correa often mentioned that

Goa and the coastal region of Konkan should become a 'Laboratory of Learning,' for its unique urban character, quality of built environment as well as its historical architecture. In order to study and examine the region, we need a new and contemporary theory, so that the learnings can be implemented effectively.

Through the establishment of the PG Programme titled Master of Architecture in Sustainable Habitat a rich group of multidisciplinary courses, projects, and research opportunities will be brought together and students shall be able to customize the program to meet their individual needs.

Through this 2-year programme, several newer ideas for sustainable habitat development could emerge for the city as well as for the State. Goa is very blessed with a varying topography ranging from the 105 km long coastal belt to the mid lands and high slopes called -the Ghats, the rich socio-cultural fabric of varying communities of society have translated into organic settlements and urban precincts some of which are now called heritage due to its existence for over 500 years. These sites will pose as laboratories for learning for the programme hoping to yield design solutions at the urban and micro scales which would in turn aid the making of policies and urban and building guidelines with an emphasis on sustainability.

02. PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

1. To establish a M. Arch. in Sustainable Habitat that is based on the theme of Goa (and the coastal region) as the 'Laboratory for Learning.'
2. To run a research-based PG Programme, which shall teach the students to translate research findings into design and practice
3. To equip students to set their own agenda for Sustainable Habitat Design
4. To establish that Sustainable Habitat is not synonymous to a large architectural project.
5. To show how Sustainable Habitat design is multi-disciplinary and requires close working with professionals of diverse disciplines including the various Government departments.
6. To enable students to acquire skills to assume professional practice responsibilities.

03 PROGRAMME OUTCOME

1. The programme, therefore, will be a vehicle for the center for learning on Goan (ecologically sensitive) models of urban development, wherein the graduates shall be trained to develop principles of resilient sustainable designs which are thoroughly embedded in the given ecological context.
2. By the end of the Programme, the graduates shall be able to demonstrate their ability to investigate and synthesize environmental objectives, design methods, and contextual issues at the given urban scale, and conceptualize contemporary design of sustainable urban built environments.
3. The Programme is geared for graduates who wish to practice as an independent design professional. as much as those that would be a part of larger Government or private organizations.
4. The graduates shall be able to confidently conduct fieldwork, carry out rigorous documentation and analysis, theorize the problem, and provide sensitive design solutions to issues including conservation of heritage and creation of good sustainable urban built environment.
5. The graduates shall be exposed to work with professional and experts.
6. The graduates shall be able to participate in workshops, seminars, and contribute papers to conferences.
7. The graduates shall be exposed to research in Sustainable habitats, essentials of any research/research methodologies, along with developing the skill of technical writing.

04 PROGRAMME STRUCTURE

The programme is structured into four semesters with one summer of internship/research modules.

The **first semester** shall have a **foundation studio course** which emphasizes on understanding concepts of urbanism, urbanity, and urbanisation with an emphasis to sustainability. This studio shall focus on tools of mapping and reading urban precinct/area, in terms of its morphology, urban form determinants, ecological relationships, economic and social activities, and evolution through history, and its preparedness for resilience against climate change.

In **second semester**, the studio course shall address issues of sustainable neighbourhood design. This studio shall equip students with tools and mechanisms needed to understand the issues at the

neighbourhood level and strategise for the same which would lead to the derivation of a master plan and micro planning strategies.

The **summer internship module** between second and third semester shall offer an option between research or a professional internship. This is in recognition that graduates opt for teaching/research positions as much as assume professional practice roles.

In **third semester** the studio course shall focus on integrated building design and the project shall involve selection of areas for study subjected to high risk both natural and man made. The design studio project will result in designing of buildings and building systems based on the study of best practices. The analysis of the built environment will be done using Geo-informatics and simulation tools.

In **final semester,** the students shall undertake Design Thesis. It is expected that the students demonstrate their abilities to investigate, document, analyze, conceptualize, synthesize, and design. Through the thesis the students shall demonstrate their sustainable design agenda, and find strategies to achieve the sustainable habitat design objectives by adopting design methods appropriate for a given context.

05 TABULAR PROGRAMME STRUCTURE

S. NO.	COURSE CODE	COURSE	CREDITS	HRS/ WEEK	EVALUATION (WEIGHTAGE IN %)				COURSE TYPE
					SA	FORM	SEE	FORM	
SEMESTER-I (20 CREDITS)									
1	SH 101	DESIGN STUDIO I - URBAN MORPHOLOGY	10	12	50	Portfolio, Report	50	Viva -Voce	CS
2	SH 102	HISTORY AND THEORY OF URBAN FORM AND SPACE	2	2	50	Assignments	50	Written Exam	CT
3	SH 103	URBAN PLANNING	2	2	50	Assignments	50	Written Exam	CT
4	SH 104	GEO-INFORMATICS FOR URBAN HABITAT	2	4	50	Assignments	50	Written Exam	CT
5	CBC 105 (XX)	CHOICE BASED COURSE 1	2	2	100	Assignments	---	---	CBC
6	CBC 106 (XX)	CHOICE BASED COURSE 2	2	2	100	Assignments	---	---	CBC
SEMESTER-II (20 CREDITS)									
1	SH 201	DESIGN STUDIO II - Neighbourhood Design	10	12	50	Portfolio, Report	50	Viva-Voce	CS
2	SH 202	DESIGN PRINCIPLES SUSTAINABLE HABITAT	2	2	50	Assignments	50	Written Exam	CT
3	SH 203	HABITAT PLANNING AND DEVELOPMENT LEGISLATION	2	2	50	Assignments	50	Written Exam	CT
4	SH 204	INTEGRATED BUILDING SIMULATION	2	2	50	Assignments	50	Written Exam	CT
5	CBC 205 (XX)	CHOICE BASED COURSE 3	2	2	100	Assignments	---	---	CBC
6	CBC 206 (XX)	CHOICE BASED COURSE 4	2	2	100	Assignments	---	---	CBC

SUMMER PROJECT (MANDATORY PREREQUISITE FOR COURSE) SHCT-III/03									
S. NO.	**COURSE CODE**	**COURSE**	**CREDITS**	**HRS/ WEEK**	**EVALUATION (WEIGHTAGE IN %)**				**COURSE TYPE**
					SA	**FORM**	**SEE**	**FORM**	
SEMESTER-III (20 CREDITS)									
1	SH 301	DESIGN STUDIO III - INTEGRATED BUILDINGS	12	15	50	Portfolio, Report	50	Viva-Voce	CS
2	SH 302	QUANTITATIVE RESEARCH METHODS	2	2	50	Assignments	50	Written Exam	CT
3	SH 303	PRE-THESIS SEMINAR	2	2	50	Assignments	50	Viva-Voce	CT
4	SH 304	SUMMER PROJECT BASED SEMINAR	2	2	100	Assignments	---	---	CT
5	CBC 305 (XX)	CHOICE BASED COURSE 5	2	2	100	Assignments	---	---	CBC
SEMESTER-IV (20 CREDITS)									
1	SH 401	SUSTAINABLE HABITAT THESIS/ DISSERTATION	16	12	50	Portfolio, Report	50	Viva - Voce	CS
2	SH 402	SEMINAR COURSE: THEORY & PRACTICE OF SUSTAINABLE DESIGN	4	4	100	Assignments	---	---	CT
GRAND TOTAL OF CREDITS 80									

SEMESTER I

Course: DESIGN STUDIO I: URBAN MORPHOLOGY

Course Code: SH 101 **Course Type: Core Studio**

COURSE OBJECTIVES:

1. To introduce the student to the theory and practice of sustainable urban design.
2. To expose the students with the complexities of sustainable urban design processes.
3. To map various layers of the city, including but not limited to, physiography, ecology, history, culture, built form, socio-economic, land uses, governance and infrastructural aspects.
4. To familiarize the students with urban terminologies, methods of documenting, mapping and reading the city.

COURSE CONTENT:

The studio will be divided to following Units:

Unit-1: Documentation, mapping, and representation techniques of an urban precinct

Unit-2: Identification of problems and issues of the precinct

Unit -3: Sustainable Urban Design Visions and Strategies

Unit-4: Conceptual Master plan and Design Development

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

The students will be assessed based on the rigour and creative methods of mapping, documentation, representation, identifying the problem of urban design in the city, and finally be able to do demonstrate their design solutions which shall conserve/transform the given area of study as a good, ecologically sensitive and people centric place.

Minimum assignment submissions towards sessional work and viva-voce examination shall include:

1. Comprehensive report of documentation and mappings studies and analysis done by students in groups not more than four each

2. Design portfolio showing design decision process and conceptual design done by students in groups not more than four in each.

LEARNING OUTCOME:

Students should be able to do critical reading of the urban precincts in order to appreciate, understand and analyze the urban conditions. They shall also equip themselves with techniques of conducting urban design surveys and documentation techniques and set an urban design agenda for the given area. They shall be involved in the preparation of urban design programme and do a design demonstration to achieve the urban design goals.

RECOMMENDED READING:

Akbar, Jamel. 1988. *Crisis in the Built Environment: The Case of the Muslim City*. A Mimar Book. Leiden: Brill.

Brown, Lance Jay, David Dixon, and Oliver Gillham. 2014. *Urban Design for an Urban Century: Shaping More Livable, Equitable, and Resilient Cities*. Second edition. Hoboken: Wiley.

Calvino, Italo. 2010. Invisible Cities. Random House.

Dovey, Kim. 2016. *Urban Design Thinking: A Conceptual Toolkit*. London ; New York: Bloomsbury Academic, An imprint of Bloomsbury Publishing Plc.

Frederick, Matthew, and Vikas Mehta. 2018. *101 Things I Learned in Urban Design School*. First edition. 101 Things I Learned. New York, NY: Three Rivers Press.

Habraken, N. J., and Jonathan Teicher. 2000. *The Structure of the Ordinary: Form and Control in the Built Environment*. 1. paperback ed. Cambridge, Mass.: MIT Press.

Jacobs, Jane. 1992. *The Death and Life of Great American Cities*. Vintage Books ed. New York: Vintage Books.

Lang, Jon T. 2017. *Urban Design: A Typology of Procedures and Products: Illustrated with over 50 Case Studies*. Second edition. New York: Routledge.

Larice, Michael, and MacDonald, Elizabeth, eds. 2012. The Urban Design Reader. London: Taylor & Francis Group

Lefebvre, Henri, and Donald Nicholson-Smith. 2011. *The Production of Space*. Nachdr. Malden, Mass.: Blackwell.

Lynch, Kevin. 1984. *Good City Form*. Cambridge, Mass: MIT Press.

Lynch, Kevin. 2005. *The Image of the City*. Nachdr. Publication of the Joint Center for Urban Studies. Cambridge, Mass.: MIT PRESS.

McHarg, Ian L. 1992. *Design with Nature*. 25th anniversary ed. New York Chichester Brisbane Toronto Singapore: John Wiley & Sons, Inc.

Phadke, Shilpa, Sameera Khan, and Shilpa Ranade. 2011. *Why Loiter? Women and Risk on Mumbai Streets*. New Delhi: Penguin Books.

Course: HISTORY AND THEORY OF URBAN FORM AND SPACE

Course Code: SH 102 **Course Type: Core Theory**

COURSE OBJECTIVES:

1. To introduce the students to the history of urban form and space
2. To understand the evolution of urbanism
3. To understand the ideas and principles of Urban Design by centering on the relationship between societal change and the formal organization of the urban environment.
4. To introduce students to the theory and criticism of urban public places

COURSE CONTENT:

Unit-1: City in History

Unit-2: History of Urban Form and Space

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

This shall be a seminar-based course where the students shall study variety of public spaces both historical as well as contemporary examples and be able to critically analyzing the origins and influences of these spaces in history.

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Developing a seminar topic

b. Term paper which is based on the seminar topic

c. Paper presentation in terms of Power Point on the given topic.

LEARNING OUTCOME:

Students shall be able to critically study and understand the history of urban spaces in terms of their procession of production as well as their historical/contemporary role in the city.

RECOMMENDED READING:

Calvino, Italo. 2010. Invisible Cities. Random House.

Kostof, Spiro, and Greg Castillo. 2005. *The City Assembled: The Elements of Urban Form through History*. New York, NY: Thames & Hudson.

Kostof, Spiro, and Richard Tobias. 2012. *The City Shaped: Urban Patterns and Meanings through History*. New York; Boston; London: Bulfinch Press.

Larice, Michael, and MacDonald, Elizabeth, eds. 2012. The Urban Design Reader. London: Taylor & Francis Group.

Morris, Anthony E. J. 1994. *History of Urban Form: Before the Industrial Revolutions*. 3. ed., print. Harlow: Longman Scientific [and] Techn.

Mumford, Lewis. 1984. *The City in History: Its Origins, Its Transformations, and Its Prospects*. First publ. 1961. Reprint. A Pelican Book. Hamondsworth, England: Penguin Book [u.a.].

Rossa, Walter. 1997. *Cidades indo-portuguesas: contribuições para o estudo do urbanismo português no Hindustão Ocidental = Indo-Portuguese cities: a contribution to the study of Portuguese urbanism in the Western Hindustan*. Lisboa: Commissão Nacional para as Comemorações dos Descobrimentos Portugueses.

Course: URBAN PLANNING

Course Code: SH 103 **Course Type: Core Theory**

COURSE OBJECTIVES:

1. To expose the student to the principles of planning and critically evaluate different planning processes prevalent in India and abroad.
2. To familiarize the students with Planning terminologies, methods of documentation, mapping and planning the built environment.
3. To familiarise students on the process of Land Acquisition Act, Archaeological Act (Central and local), Transfer of Development rights (TDR), Special Planning Vehicles (SPVs), and other concepts
4. To understand implication of the statutory planning norms/plans such as Regional Plans (RPs), Outline Development Plans (ODPs), Comprehensive Development Plans (CDPs), Coastal Regulation Zone (CRZ), Planning Schemes, among others.
5. To understand Development Plans and Building Construction Regulations including Conservation Regulations as applicable.

COURSE CONTENT:

An overview of planning tools for urban design.

Unit-1: Concepts and theories of planning and their applications as Master Plans, Development Plans, Structure Plans etc. Planning terms and their definitions

Unit-2: Concepts of Regional Plan, Zonal Plans, Area Development Plans, Development Schemes, Urban Renewal, Redevelopment, City Development Plans, Planned Unit Development etc.

Unit-3: Concepts of land use, zoning regulations, UDPFI guidelines, mixed use development, Special Economic Zones, among others

Unit-4: Planning surveys and sampling, evaluation of planning requirements; Planning standards and models

Unit-5: Overview of Legal and statutory aspects of Urban & Regional Planning, Town Planning Acts. Land acquisition Act and process, Land Pooling and other schemes related to green field projects, Transfer of Development Rights

Unit-6: Public and private participation in planning process

Unit-7: Transport Planning

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Seminar presentation in terms of Power Point on a given planning topic.

LEARNING OUTCOME:

Students are equipped with necessary information on planning theories, principles, techniques and methodologies.

RECOMMENDED READINGS:

Davidson, Michael, Fay Dolnick, and American Planning Association, eds. 2004. A Planners Dictionary. Planning Advisory Service Report, no. 521/522. Chicago, IL: American Planning Association, Planning Advisory Service.

Hack, Gary, and International City/County Management Association, eds. 2009. Local Planning: Contemporary Principles and Practice. An ICMA Green Book. Washington, D.C: International City/County Management Association.

Hall, Peter. 1982. Great Planning Disasters. California Series in Urban Development 1. Berkeley: University of California Press.

Parolek, Daniel G., Karen Parolek, and Paul C. Crawford. 2008. Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities, and Developers. Hoboken, N.J: J. Wiley & Sons.

Roberts, Marion, and Clara Greed, eds. 2001. Approaching Urban Design: The Design Process. Exploring Town Planning 5. Harlow: Longman Higher Education.

Talen, Emily. 2018. Urban Design for Planners: Tools, Techniques, and Strategies. 2nd edition. Los Angeles, CA: Planetizen Press.

Course: GEOINFORMATICS FOR URBAN HABITAT

Course Code: SH 104 **Course Type: Core Theory**

COURSE OBJECTIVES:

- To learn the basic concepts of geo-informatics in brief that includes Geographical Information System (GIS), Remote Sensing (RS), and Global Positioning System (GPS).
- To understand these basic concepts in context of habitat and urban neighborhoods
- To learn the data needs and database development for doing sustainability and resiliency analysis of urban habitat in GIS environment
- To understand the concepts of neighborhood indices and algorithms and how they are incorporated into GIS
- To understand how GIS processes can be used for efficient urban habitat modeling and analysis
- To understand various applications of GIS in Urban Habitats (GIS-UH) and learn from some case studies
- To learn the basic concepts of advanced physical surveying of the urban form.

COURSE CONTENT:

Unit 1: Concept of GIS and RS

Unit 2: Land use Land cover and Land form data

Unit 3: Database development

Unit 4: Map generation and analysis

Unit 5: Neighborhood Index development and algorithms

Unit 6: Urban Habitat models and their applications in GIS

Unit 7: GIS-UH applications

Unit 8: Advanced physical mapping

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

This shall be a practical-based course where the students shall collate various datasets for an urban neighbourhood and demonstrate the use of various analytical tools and techniques on the same.

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Creation of various geo referenced data sets using Scanned Maps and Remote Sensing Images

b. Collating and collecting vector data using Total Station, D-GPS, LiDAR etc.

c. Adding attribute fields and populating records using apps and devices.

d. Performing Urban Habitat Study using Raster analysis

e. Performing Urban Habitat Study using Vector analysis

LEARNING OUTCOME:

The students shall apply the capabilities of geo-informatics in urban neighbourhood planning, urban habitat modelling and planning process, and resiliency measures. The course focuses primarily on the application of geo-informatics in urban habitat modelling.

RECOMMENDED READING:

Burrough, P. A., Rachael McDonnell, and Christopher D. Lloyd. 2015. *Principles of Geographical Information Systems*. Third edition. Oxford ; New York: Oxford University Press.

Heywood, D. Ian, Sarah Cornelius, and Steve Carver. 2011. *An Introduction to Geographical Information Systems*. 4th ed. Harlow, England ; Toronto: Prentice Hall.

Lloyd, Christopher D. 2010. *Spatial Data Analysis: An Introduction for GIS Users*. Oxford ; New York: Oxford University Press.

O'Sullivan, David, and D. Unwin. 2003. *Geographic Information Analysis*. Hoboken, N.J: Wiley.

SEMESTER II

Course: DESIGN STUDIO II - NEIGHBOURHOOD

Course Code: SH 201 **Course Type: Core Studio**

COURSE OBJECTIVES:

1. To understand the habitat systems and impact of densities on form of habitat / housing
2. To involve the students in sustainable habitat design projects where they shall be able to apply the theoretical knowledge of environmental & sustainable design to a specific project.
3. To look at sustainable habitat development and evolve an exercise that shall address environmental issues arising in urban areas and search for solutions under sustainable habitat design.

COURSE CONTENT:

The studio will be divided to following Units:

UNIT 1: Urban Environmental Assessments, Environmental Status Reporting and identification of environmental issues in urban areas.

UNIT 2: Sustainable urban habitat development strategies for a neighborhood.

UNIT 3: Conceptual master planning for Sustainable Development of a neighborhood.

UNIT 4: Detailed Micro planning for specific projects under the theme of sustainable habitat design, which may include River front development, ecological restoration projects, sustainable urban blocks, heritage conservation for sustainability.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

The students will be assessed based on the rigor and creative methods of environmental assessments, status reporting and identification of environmental issues in urban areas. This would lead to a sequential mode of development beginning with strategizing at a neighborhood level, conceptual master planning for sustainable development of the neighborhood and detailed micro planning for specific projects under the theme of sustainable habitat design.

Minimum assignment submissions towards sessional work and viva-voce examination shall include:

1. Comprehensive report of documentation and mappings studies and analysis done by students individually.

2. Design portfolio showing design decision process and conceptual design done by students individually.

LEARNING OUTCOME:

Students should be able to utilize the tools and techniques needed to conduct assessment reports. They shall also equip themselves with techniques of conducting urban design surveys and documentation techniques, set an urban design agenda for the given neighborhood area. They shall be equipped with the tools, techniques and processes for deriving master plans and also for detailing out certain projects.

KEYWORDS: sustainable habitat, Masterplan, Micro planning, Neighborhood, Environmental assessment.

RECOMMENDED READING:

Barton, Hugh, ed. 2000. *Sustainable Communities: The Potential for Eco-Neighbourhoods*. London: Earthscan Publications.

Chapin, Ross. 2011. *Pocket Neighborhoods: Creating Small-Scale Community in a Large-Scale World*. Newtown, CT: Taunton Press.

Condon, Patrick M. 2010. *Seven Rules for Sustainable Communities: Design Strategies for the Post-Carbon World*. Washington [D.C.]: Island Press.

Doff, Wenda. 2010. *Puzzling Neighbourhood Effects: Spatial Selection, Ethnic Concentration and Neighbourhood Impacts*. Sustainable Urban Areas 34. Amsterdam: Delft University Press.

Fraker, Harrison. 2013. *The Hidden Potential of Sustainable Neighborhoods: Lessons from Low-Carbon Communities*. Washington: Island Press.

Course: SUSTAINABLE HABITAT THEORIES (Design Principles)

Course Code: SH 202 **Course Type: Core Theory**

COURSE OBJECTIVES:

1. To understand the Habitat Sub-Systems (Housing Typologies): Formal and Informal,
2. To understand the impact of ecological elements including terrain, land-form, climatology in planning at the levels of buildings, settlements and regions.
3. To improve the application of climate knowledge to planning and building design.

COURSE CONTENT:

Unit-1: Habitat / Housing sub-systems: Formal and Non - Formal

Unit-2: Concept of Densities of population and its impacts on Habitat / Housing form

Unit-3: Details of ecological and climatic impact on building design and settlement planning.

Unit-4: Details of ecological and climatic impact on macro level planning.

Unit-5: Explanatory variables in the application of climate knowledge. (Technical, conceptual knowledge based, Policy, Organizational, the market)

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Journal with exercises to elaborate the above-mentioned theories and concepts. The term work in the form of notes/ assignments, as stipulated above will be assessed internally with weight age of marks.

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Developing a seminar topic

b. Term paper which based on seminar topic

c. Paper presentation in terms of Power Point on the given topic.

LEARNING OUTCOME:

Students will be able to apply the concepts and theories of sustainable design into deriving design solutions at the scale of the building, settlement and region.

RECOMMENDED READING:

DeKay, M, and G Z Brown. 2013. *Sun, Wind, and Light: Architectural Design Strategies*. Third. Wiley.

Givoni, B. 1969. *Man, Climate and Architecture*. Van Nostrand Reinhold.

Givoni, B. 1994. *Passive Low Energy Cooling of Buildings*. Architecture Series. Wiley.

Grondzik, W T, A G Kwok, B Stein, and J S Reynolds. 2011. *Mechanical and Electrical Equipment for Buildings*. CourseSmart. Wiley.

Koenigsberger, Otto H., T. G. Ingersoll, Mayhew Alan, and Steven V Szokolay. 1975. *Manual Of Tropical Housing & Building*. Orient Longman Private Limited.

Kreider, J F, P S Curtiss, and A Rabl. 2009. *Heating and Cooling of Buildings: Design for Efficiency, Revised Second Edition*. Mechanical and Aerospace Engineering Series. CRC Press.

Krishan, Arvind, Nick Baker, Simos Yannas, and Steven V Szokolay, eds. 2001. *Climate Responsive Architecture: A Design Handbook for Energy Efficient Buildings*. Tata McGraw-Hill Publishing Company.

Seshadri, T N, M R Sharma, and S Ali. 1969. *Climatological and Solar Data for India: To Design Buildings for Thermal Comfort*. Central Building Research Institute (India).

Walters, David, and Linda Brown. 2004. *Design First: Design-Based Planning for Communities*. Oxford: Architectural.

Wheeler, Stephen M, and Timothy Beatley. 2014. *The Sustainable Urban Development Reader*. London: Routledge.

Course: HABITAT PLANNING AND DEVELOPMENT LEGISLATION

Course Code: SH 203 **Course Type: Core Theory**

COURSE OBJECTIVES:

1. To familiarize the student with legal terminology and legal frameworks that apply in Urban context.
2. To familiarize the student to various codal provisions and standards that need to be factored into design such as NBC 2016, IS Codes, ECBC, etc.,

COURSE CONTENT:

Unit-1: Introduction to Habitat concepts, climate change impact, resilience against natural or manmade calamities and the constitutional provisions of local self-governance and institutional frameworks for the same.

Unit-2: Evolution of Planning and Legislation in India. An overview of legal tools connected with Urban Planning & Development, Town and Country Planning, Improvement Trust and Development Authorities etc. - objectives, contents and procedures for preparation and implementation of Housing / Habitat Strategies, Development plans, Town Planning Schemes, Area Plans.

Unit-3: Legislation related to use and control of land, land acquisition. Significance of land development control – Objectives and legal tools, critical evaluation of zoning, sub division regulations, building regulations and bye-laws, development code. Legislation on Conservation of natural resources including Mining and Forestry Acts, Conservation and Management of Ancient Monuments and Archaeological sites and ruins.

Unit-4: Coastal Zone Regulations, Transfer of Development Rights, RERA – Concepts and related issues. Environment Management Systems (ISO – 14001 and its planning implications, Need of ISO, case studies of ISO certified industries, Environmental and Financial Benefits of ISO)

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Developing a seminar topic

b. Term paper which based on seminar topic

c. Paper presentation in terms of Power Point on the given topic.

LEARNING OUTCOME:

Students will be able to apply the concepts and theories of sustainable habitat planning and legislation in practice and will be in sync with the statutes required by the building industry.

RECOMMENDED READING:

Government of India. *Land Acquisition Act, 1894.* , (1894).

Sheldon, C., & Yoxon, M. (1999). *Environmental Management Systems: A Step-by-Step Guide to Implementati*.

Jaiswal, J. V. N. (2007). *Housing Law in India*.

G. Tyler Miller, J., & Spoolman, S. E. (2009). *Essentials Of Ecology* (Fifth).

Salomone, R., Clasadonte, M. T., Proto, M., & Raggi, A. (2013). *Product-oriented environmental management systems (POEMS): Improving sustainability and competitiveness in the agri-food chain with inno*

Reddy Lokanadha G. (2015). Text Book on Environmental Education.

Reddy, G. B. (2016). LAND LAWS.

Aggarwala, O. P. (2017). Commentary on The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.

Ganatra, J. (2017). RERA, The Real Estate - A Handbook for Every Property Developer and Real Estate Agent (1st ed.).

Mulla. (2018). The Transfer of Property Act.

Dave, P. (2019). The Coastal Regulation Zone (Crz), 2019 & The Island Protection Zone.

Myneni, S. R. (2019). Law of Property: ransfer of Property, Easement & Wills. Asia Law House.

Kumar, A. (2020). City Planning in India, 1947–2017 (1st ed.).

Universal. (2020). Constitution Of India (Bare Act With Short Note).

Mehrotra, S. (2020). Planning in the 20th Century and Beyond. In Planning in the 20th Century and Beyond.

Course Code: SH 204 **Course Type: Core Theory**

Course: INTEGRATED BUILDING SIMULATION

COURSE OBJECTIVES:

1. To introduce environmental simulation for various aspects of comfort like lighting, thermal comfort of spaces, energy calculations along with other parameters like climate, materials selection and shadow analysis.
2. To introduce concepts of climate data modeling like spatial interpolation, temporat interpolation, and physical basis of climate variations.

COURSE CONTENT:

Unit-1: Thermal environment simulation

Unit-2: Visual environment simulation

Unit-3: Sonic environment simulation

Unit-4: Ambient environmental simulation.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Developing a integrated model of a building using simulation and validation tools.

c. Paper presentation in terms of Power Point on the given topic.

LEARNING OUTCOME:

After completion of this course, the students will able to:

- Handle various energy Efficiency compliance approaches for the building as per relevant Code/ standards
- Synthesize various input parameters for software used for building energy performance calculations.
- Gain proficiency in the use of appropriate software for thermal, visual, sonic and ambient environment simulation.

RECOMMENDED READING:

Clarke, Joseph. 2015. *Energy Simulation in Building Design.* Routledge.

Computational Simulation in Architectural and Environmental Acoustics. 2016. SPRINGER.

Hensen, Jan, and Roberto Lamberts, eds. 2011. *Building Performance Simulation for Design and Operation*. London ; New York: Spon Press.

SEMESTER III

Course Code: SH 301 **Course Type: Core Studio**

Course: STUDIO III - INTEGRATED & RESILIENT BUILDING DESIGN

COURSE OBJECTIVES:

1. To understand the impact of ecological elements including terrain, land-form, climatology in planning at the levels of buildings, settlements and regions.
2. To identify urban and building systems best practices appropriate for resilient design in the light of natural and man-made disasters.
3. To optimize the building design and integration with urban systems based on data driven simulation learnt under CTC

COURSE CONTENT:

The studio will be divided to following Units:

UNIT 1: Mapping of zones prone to various natural and man-made disasters by applying geo-informatics tools.

UNIT 2: Design considerations for Integrated Building Design such as systems, technology, etc.,

UNIT 3: Construction (Materials & Techniques)

UNIT 4: Maintenance and Management

UNIT 5: Optimal design solutions through simulation.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

The students will be assessed on the design strategies at the urban/ Rural level and the way they incorporate integrated design strategies into their building interventions and make them efficient and cost effective.

Minimum assignment submissions towards sessional work and oral examination shall include:

1. Comprehensive report of documentation and mappings studies and analysis

2. Design portfolio showing design decision process and conceptual design

LEARNING OUTCOME:

Students should be able to utilize the tools and techniques of geo informatics to map the risk areas. They shall also equip themselves with techniques of conducting urban design surveys and documentation techniques, set an urban design agenda for the given Urban / Rural area. They shall be equipped with the tools, techniques and processes for planning buildings with an integrated approach with simulation as one of the ways.

RECOMMENDED READING:

1. Agarwal, P. and Shrikhande, M. (2009). Earthquake Resistant Design of Structures. New Delhi : PHI Learning.
2. Burby, R. J. (1998). Cooperating with Nature. Confronting Natural Hazards with Land-Use Planning for Sustainable Communities. Washington : Joseph Henry Press.
3. Christopher, A. and Reitherman, R. (1982). Building configuration and Seismic Design. John Wiley & Sons Inc.
4. Dutta, S. C. and Mukhopadhyay, P. (2012). Improving Earthquakes and Cyclone Resistance of Structures: Guidelines for the Indian Subcontinent. TERI.
5. Dyrbye, C. D., Dyrbye, C. and Dyrbye, C. (1997). Wind Loads on Structures. John Wiley.
6. Holmes, J. D. (2007). Wind Loading of Structures. 2nd Ed. Taylor & Francis.
7. Lee, B. Ed. (2008). Hazards and the Built Environment: Attaining Built-In Resilience. Oxon : Taylor and Francis.
8. McDonald, R. (2003). Introduction to Natural and Man-made Disasters and their Effects on Buildings. Burlington : Architectural Press.
9. Smith, B. S. and Coull, A. (2001). Tall Building Structures: Analysis and Design. Willey–Inderscience.
10. Simiu E. and Scanlan R. H. (1996). Wind Effects on Structures-Fundamentals and Applications to Design. 3 rd Edn., John Wiley.
11. Taranath, B. S. (2004). Wind and Earthquake Resistant Buildings: Structural Analysis and Design. CRC Press.
12. Thomas, F. (2013). Designing to avoid disaster: The Nature of Fracture-Critical Design. London : Routledge.
13. Pelling, M. (2003). The Vulnerability of Cities: Social Resilience & Natural Disaster. London : Earthscan.

Course Code: SH 302 **Course Type: Core Theory**

Course: QUANTITATIVE RESEARCH METHODS

COURSE OBJECTIVES:

1. To provide the student with an in-depth examination of various research issues and quantitative research methods, and practical experience in understanding and interpreting quantitative data analysis.

2. To understand the objective measurements and the statistical, mathematical, or numerical analysis of data collected through polls, questionnaires, and surveys, or by manipulating pre-existing statistical data using computational techniques.

COURSE CONTENT:

Unit-1: Fundamentals of Quantitative Research Methods

Unit-2: Tools and techniques to conduct Quantitative Research methods.

Unit-3: Application to a sample area

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall include:

b. Research paper based on quantitative research methods.

c. Paper presentation in terms of Power Point on the given topic.

LEARNING OUTCOME:

Upon completion of the course, the students will have a basic understanding of the processes of conducting quantitative research, different research designs, and the accompanying analyses. They should also be able to evaluate the quality and validity of quantitative research. The course is intended to help the students to understand better the different methodological approaches applied in architectural research and thus strengthen their scientific thinking.

RECOMMENDED READING:

Groat, Linda N, and David Wang. 2013. "Case Studies and Combined Strategies." In *Architectural Research Methods*.

Ahmed, Vian, Alex Opoku, and Zeeshan Aziz, eds. 2016. *Research Methodology in the Built Environment: A Selection of Case Studies*. London ; New York: Routledge, Taylor & Francis Group.

Creswell, John W. 2009. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 3rd ed. Thousand Oaks, Calif: Sage Publications.

Harkiolakis, Nicholas. 2019. *Quantitative Research Methods: From Theory to Publication*.

Lucas, Ray. 2016. *Research Methods for Architecture*. London: Laurence King Publishing.

Niezabitowska, Elżbieta, and Elżbieta Niezabitowska. 2018. *Research Methods and Techniques in Architecture*. New York: Routledge.

Walliman, Nicholas. 2018. *Research Methods: The Basics*. 2nd edition. Abingdon, Oxon ; New York, NY: Routledge.

Course Code: SH 303 **Course Type: Core Theory**

Course: PRE-THESIS SEMINAR

COURSE OBJECTIVES:

- To lay the foundation for successful final semester urban design thesis
- To introduce students to research methods in relation to sustainable habitat design
- To guide students through the process of conducting sustainable habitat design focused research
- To familiarize students to the range of research methodologies that could be applied to various urban design related research projects

COURSE CONTENT:

Unit-1: Sustainable Urban Habitat Design Research Methodologies

Unit-2: Writing Research Proposals

Unit 3: Conducting Literature Review

Unit 4: Technical Writing

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

In this course the student shall write a pre-thesis paper, the purpose of which is to help students frame a question suitable for urban design thesis in the final semester. The students shall also develop a working hypothesis and conduct preliminary research for the final semester thesis project.

Minimum Assignment/s submissions towards Sessional Work shall include:

Pre-thesis research proposal along with a seminar presentation of their proposed thesis project.

LEARNING OUTCOME:

Students shall be able to select and clarify the topic that they want to undertake in their final semester urban design thesis. They shall be able to establish the importance of their thesis project, while also being able to do background study on the topic. By doing a survey of literature the students shall be able to determine the specifics or dimensions of their topics and try to frame the precise problem they hope to address through their work. Finally, the students should be able to write proposal for sustainable urban habitat design research/project.

RECOMMENDED READING:

Brooks, C., & Warren, R. P. (1950). *Fundamentals Of Good Writing - A Handbook Of Modern Rhetoric*. Read Books Limited.

Wiseman, C. (2014). *Writing Architecture: A Practical Guide to Clear Communication about the Built Environment*.

Course Code: SH 304 **Course Type: Core Theory**

Course: SUMMER PROJECT BASED SEMINAR

COURSE OBJECTIVES:

- To provide an opportunity of learning from peer experience.
- To develop the learnings from the summer project into a structured seminar report and presentation

COURSE CONTENT:

This course is focused on developing the 4 week summer project undertaken by the students between Semester II and Semester III.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Submissions scheduled in stages throughout the semester will be in the form of Seminar Presentation and report based on Summer Project.

Minimum Assignment/s submissions towards Sessional Work shall include:

- Power-point Presentation
- Report in appropriate format.

LEARNING OUTCOME:

To gain an insight into multiple project typologies and documentation of good practices learnt during the summer internship undertaken by all students of Semester II.

SEMESTER IV

Course Code: SH 401 **Course Type: Core Studio**

Course: SUSTAINABLE HABITAT THESIS/DISSERTATION

COURSE OBJECTIVES:

1. To develop an in depth understanding, through research or a major design project, of a chosen area of sustainable habitat design theory or achieve a theoretical insight into an issue related to its design policy or practice.
2. To make maximum use of students' academic skills in identifying and defining a research topic, applying appropriate research techniques, and drawing relevant practical and theoretical conclusions.
3. To provide an opportunity to extend students' skills in sustainable habitat practice and knowledge of the urban design process to an advanced level.
4. To display a high level of imagination, originality and academic rigor in carrying out the agreed research programme or project and present the findings.
5. To present a high quality, fully referenced dissertation supported by appropriate qualitative, illustrative and statistical data, OR, to present a high-quality design project presentation using a range of visual presentation techniques, supported by a well-constructed report presenting the project approach and rationale.

COURSE CONTENT:

The studio will be divided to following Units:

Unit-1: Topic approval

Unit-2: Literature review/ background research/ Data collection and analysis

Unit -3: Research analysis or, conceptual urban thesis design with visions and strategies

Unit-4: Final sustainable habitat design demonstration or final dissertation presentation

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Dissertation report: fully referenced and supported by appropriate qualitative, illustrative and statistical data, or Sustainable habitat design project portfolio and report: using a range of visual presentation techniques, supported by a well-constructed report presenting the project approach and rationale.

LEARNING OUTCOME:

On completion of the Dissertation/Design Thesis, the student should be able to:

1. Design and execute a programme of research addressing a particular hypothesis or structure and sustainable habitat design project with specified design objectives.

2. Develop a research or design methodology and undertake a rigorous study of an Sustainable habitat-related topic through in-depth research or design.

3. Prepare a written dissertation which presents the research findings and elaborates the argument in an appropriate format or

4. Where this takes the form of a design thesis, to present a fully developed design proposal, together with a report, which includes a statement of the design methodology and its theoretical sources, related to the exploration of particular issues set out in the report, and a properly argued evaluation of the proposal.

Course Code: SH 402 **Course Type: Core Theory**

Course: SEMINAR: THEORY & PRACTICE OF SUSTAINABLE DESIGN

COURSE OBJECTIVES:

- To address issues and concerns of sustainable habitat design developed through previous semesters
- To critically develop and set the agenda of sustainable habitat design.

COURSE CONTENT:

Agenda for Sustainable Habitat Design Theory and Practice

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

The students are to engage with theory and practice of their sustainable habitat design practice.

Minimum Assignment/s submissions towards Sessional Work shall include:

Critical paper and Seminar presentation in terms of Power Point on their chosen topics.

LEARNING OUTCOME:

Students shall be able to select and clarify their agenda for Sustainable habitats. They shall be able to establish the importance of their approach by doing a review of literature, develop specific dimensions of their topics and try to frame the precise problem they hope to address through their work.

RECCOMMENDED CHOICE BASED COURSES (CBC):

The selected courses from the following pool of Choice Based Courses shall be selected by the students in consultation with the Programme Coordinator/ Principal of the Institute in the first 3 semesters and intimated against CBC XX series of courses to the exam section. Apart from these courses, those offered by other constituent & affiliated Departments or Institutes of Goa University/ MOOC Courses could also be selected.

CBC CODE (XX)	CBC NAME
01	Urban Economic and Governance
02	Heritage Conservation and Management
03	Urban Governance and Management
04	Disaster Management
05	Climate Change
06	Disaster Resilient Buildings
07	Energy and Sustainability
08	Universal Design
09	Landscape Urbanism and Site Planning
10	Cultural Landscape
11	Urban Finance
12	Housing Finance
13	Rural Housing
14	Non-formal Housing
15	Post-colonial Urban Theory
16	Urban History: Goa

CBC: URBAN ECONOMICS AND GOVERNANCE

Course Code: CBC 01 **Course Type: Choice Based Course**

COURSE OBJECTIVE -

- To introduce students with the idea of economy as the vital dimension of urban processes and its various processes.
- To introduce students to various models of urban governance and its impact on urban design and project formulations
- To understand the co-relation between urban governance and finance.

COURSE CONTENT -

The course will be divided into the following units:

Unit - 1: Understanding of Urban economics and its relation with urban design projects. Mechanisms of Urban Financing. Taxation Systems

Unit - 2: Theories of development, debates on development vs growth. Relation between market dynamics in terms of land values and infrastructure development. Project planning & financial management of urban projects. Structure of city governance.

Unit - 3: Role of urban design in the economic growth of the city. Trade Patterns and Urban Structures and Urban Form

MINIMUM ASSIGNMENT/S SUBMISSIONS TOWARDS SESSIONAL WORK SHALL INCLUDE:

- Weekly reading and writing an essay on understanding of each units.
- A written paper on any one specific aspect of urban governance and finance.

OUTCOME:

Students will appreciate and understand relation between Urban Design projects and Urban governance systems and economic processes at three scales – global, national and local.

RECOMMENDED READINGS

Aims, objectives, success stories and failures of various Urban missions like JNNURM, AMRUT, Smart City, HRIDAY etc.

Brooks, Nancy; Donaghy, Kieran; Knaap, Gerrit-Jan, (2011). The Oxford Handbook of Urban Economics and Planning. Oxford University Press.

Chandra, Prasanna, (2009). Projetcs: Planning, Analysis, Selection, Financing, Implementation and Review, McGraw Hill Education.

Infrastructure in Brazil, China, India, Poland and South Africa. SAGE Publications India.

Peterson, George E.; Annez Patricia C., (2007) Financing Cities: Fiscal Responsibility and Urban

Various project reports for project formulation like Techno economic feasibility reports, Detail project reports etc,

CBC: HERITAGE CONSERVATION AND MANAGEMENT

Course Code: CBC 02 **Course Type: Choice Based Course**

With many heritage sites and monuments under threat of various nature, it paramount in today's time plan for Conservation and Management of Heritage. This course will help students understand the importance of Heritage Conservation and Management. Cultural and Natural Resources are crucial assets and needs to be considered for successful implementation of Conservation and Management plans. Special emphasis will be made in understanding the Indian scenario and its policy making for the want of Heritage Conservation. This will also include understanding the statute Laws and jurisprudence needed to manage Heritage Sites. For this, various Acts, Laws, Policies and schemes enforced by the Government will be analysed critically. Involvement of other National level Non-Government agencies (like INTACH, JNNURM) and International Intergovernmental Organizations (like UNESCO, ICCROM, ICOMOS, ICO-FORT), in Managing Heritage will also be dealt with. The course will deal with the diverse range of Heritage from singular buildings, monuments to precinct and sites. Also understanding the complexity in dealing with structures of various typological nature, living sites and ruined sites, structures of national and state level importance, heritage spanning trans-national boundaries, and others, will be taken up.

COURSE OBJECTIVES:

1. To introduce the fundamentals of Heritage Conservation and Management, and understand the importance of Cultural and natural resources in a set context.
2. To expose the students to the step-by-step process of Heritage Management, including preparation of Conservation Management Plans and design proposals, rate analysis of traditional materials, preparation of project tender documents, Identifying stake holders, funding
3. To explore various models/systems of Heritage Conservation and Management (International and National level)

COURSE CONTENT:

Unit-1: Conservation Management and Fundamentals

Unit-2: Conservation Management and Heritage toolkits

Unit-3: Emerging approaches/trends (International and National level)

Unit-4: Conservation Management Proposals in Practice

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

The assessment will be done on the basis of sensitivity and understanding of the importance of conserving and managing heritage (Structure and Site). Also the display of level of comprehensiveness in making the proposals (Conservation Management plans) prescribing policies and strategies for the conservation and management of heritage will be expected.

Minimum assignment submission towards sessional work:

1. Theory based: Article or essay writing on Heritage Conservation and Management issues. The focus of the article to be decided by the students.

2. Practical based: Conservation Management Plan for a Heritage precinct or Heritage building or cluster of building or Streetscape, etc. The choice of Project to be decided by the students giving valid justification for the selection.

COURSE OUTCOME

By the end of the course the students should be able to propose a Conservation Management plan for any given issue-based context or alike. Students should also be able to identify issues and potentials of the Heritage Sites and be able to address those issues in their Proposals.

Recommended reading list:

Bernard M Feilden, Jukka Jokilehto. (1998). *Management Guidelines for World Cultural Heritage Sites* (2nd Edition ed.). Rome: ICCROM.

Dobby, A. (1978). *Conservation Planning.* London: Hutchinson.

Fielden, S. B. (n.d.). *World Heritage Site Management.*

Kain, R. (1981). *Planning for Conservation.* New York: St. Martins Press.

Kerr, J. S. (2013). *The Conservation Plan: A guide to the preparation of conservation plans for places of European cultural significance* (7th Edition ed.). Sydney: National Trust New South Wales.

Nora Mitchell, Mechtild Rössler, Pierre-Marie Tricaud. (2009, December). *World Heritage Cultural Landscape - A Handbook for Conservation and Management.* UNESCO. Retrieved from whc.unesco.org: https://whc.unesco.org/documents/publi_wh_papers_26_en.pdf

CBC: URBAN GOVERNANCE AND MANAGEMENT

Course Code: CBC 03 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To understand the theories, concepts and issues at the urban level of governance and management.
2. To be able to relate to the various forces legal, political, social, economic and environmental that either affect or contribute to urban governance and management.

COURSE CONTENT:

Urban governance comprises the various forces, institutions, and movements that guide economic and physical development, the distribution of resources, social interactions, and other aspects of daily life in urban areas. This course examines governance from legal, political, social, economic and environmental perspectives. In addition, we will discuss how these structures constrain collective decision making about particular urban issues**.**

Unit-1: LEGAL & POLITICAL - This course starts with the legal & political literature, because the law provides the rules through which political, social, and economic decisions are made. Local government law has critically shaped the governmental responsibilities and options of cities; social relationships and cultural perceptions of the role of municipalities; and the economic needs of and relationships among cities. In this unit, we discuss:

- The legal definition of Indian cities over time, and their relationship with the state and central governments.
- Public and private conceptions of the city,
- Urbanisation and its impact; Urban Government, Origin, Patterns, Structure, Functions; Deliberative vs. Executive Wing; Urban Local Institutions/ Parastatal Agencies; Constitutional Framework; Urban Laws; Decentralisation and Autonomy - Wards Committee.
- Urban and Town Planning – Decentralized Planning; District Planning Committee, Metropolitan Planning Committee; Master Plans
- Urban Laws and Policies– Urban Law and the Indian Constitution; Government Plans and Schemes for Urbanisation; Urban Development Policies in India.
- Urban Property and Land Use Management - Country and Town Planning; Land Use Policy Unit; Land Consumption and Community Development.
- Other Urban Regulatory Frameworks- Urban Population Management; Urban Health & Sanitation; Urban Poverty Management.

- Infrastructure and Resource Management Unit –Green zones, Landscaping and Green Buildings; Urban Transportation system; Conservation of Heritage buildings

Unit-2: - SOCIAL - Law and politics are not how most residents experience their cities and regions on a daily basis. Instead, they identify with a variety of social groups and participate in a wide variety of formal and informal communal organizations. These organizations have their own significance as places of collective action as well as serving as a link between individuals and politics. In this unit, we discuss:

- The variety of social identities we possess, and how these aspects of social identity and interaction change in their salience to each of us over time,
- Differences between urban and rural social interaction, specifically whether density and heterogeneity are likely to foster one-dimensional and transactional relationships. In addition, we examine how this has changed over time and with new forms of communication such as the internet,
- The cyclical reinforcement of group identity and political involvement as valued in the social movement literature. Also, we debate whether social identities should be represented just as interests and opinions are.
- Urban Poverty – Incidence, Status, Alleviation; Government Interventions; Community Organization and Development; Role of NGOs/VOs etc.

Unit-3: **ECONOMIC -** Economics play a major role in politics at all levels of government, but are often most dominant at the local level. Because jurisdictions require revenue to provide all of their services while businesses maintain mobility, popular and political opinion often favour private development. However, communities pursue economic development options quite differently across cities and suburbs, regions of the country, and internationally. In this unit, we discuss:

- Whether economic development is a "common good" or its redistributive aspects make it a factional interest like any other,
- The growth machine model of governance that describes a coalition of political and business elites bolstering an economic development agenda as value-free,
- How legal, political, and social structures (as defined in the previous seminars) shape the economic decision making of localities, and how these different forces are manifest in international comparisons.

Unit-4: ENVIRONMENT:

Urban Environment, Pollution – water, air, noise, soil, Environment Protection Acts, Rules; Pollution Control Agencies.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall be term paper or workshop based and shall include:

- Presentation
- Term Paper

LEARNING OUTCOME:

The student shall gain a comprehensive understanding on theories which have an impact on urban governance and management leading them to an altogether new paradigm of thought and reasoning in the area of urban studies. This course is especially for those students who in the future wish to join Governmental Organisations to oversee works at the scale of cities, towns and regions.

READING MATERIAL:

1. V.V. Rao and Niru Hazarika, 1983, Local Government in India, Delhi, S. Chand & Co.
2. Mohit Bhattacharya, State-Municipal Relations, IIPA, New Delhi
3. U.B. Singh (ed), 2004, Urban Administration in India, Serials Pub., New Delhi.
4. A. Ghosh (ed), 2003, Urban Environment Management, ISS, Concept, New Delhi. 5. K.C. Sivaramakrishnan and L. Green, 1986, Metropolitan Management, The Asian Experience, OUP, New Delhi.
5. U.B. Singh, 1997, Urban Local Government, Rawat, Jaipur

CBC: DISASTER MANAGEMENT

Course Code: CBC 04 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To identify and examine the essential and fundamental elements of disaster prevention, response and recovery within an inclusive management policy framework.

COURSE CONTENT:

Unit 1. Introduction to Disaster Management: Understand disaster hazards and how they pose disaster threats. Categories & characteristics of disaster threats. Identification, description & management of all potential hazards that may occur in the area of responsibility. Forecasting of disaster threats and measures relating to prevention of disaster threats.

Unit 2. Disaster Management Principles and Practices: Consider most important factors that need attention for the implementation of disaster mitigation and management programmes, legislation, key factors, principles and ethics, consideration for effective planning, controlling, co-coordinating, monitoring and implementing disaster mitigation and management programmes.

Unit 3. Disaster Mitigation: Warning and evacuation, do's and don't about disaster, damage survey for designing aid package and detailed survey for reconstruction, repair and retrofitting, post-disaster surveys, survey proformas, long term measures- Disaster resistant construction, codal practices, retrofitting cost-benefit analysis.

Unit 4. Post Disaster Issues: Post Disaster Reconstruction and recovery for sustainable development, issues and policies

Unit 5. Disaster Management Act : Disaster management policy; Techno legal aspect: Techno-Legal and Techno-Financial work; Model Town and country planning legislation land use zoning regulation, development control regulations and building bye-laws registration, qualification and duties of professionals, disaster response policy.

READING MATERAL:

1. Disaster Management: A Disaster Managers Handbook, Carter, W.N., Manila, ADB. 2006

2. Disaster Management Handbook for Bangladesh, Parts I-IV. Dhaka, BDPC and PACT, Rahman, M.S 2005

3. Mileti D.S., Disasters by Design: A Reassessment of Natural Hazards in United States, The National Academic Press 1999

4. Bryant E., Natural Hazards, Cambridge University Press 2005

CBC: CLIMATE CHANGE

Course Code: CBC 05 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

To impart knowledge on climate change and its impact.

COURSE CONTENT:

Unit 1. Climate and Climate Change: Components, Phenomena, raditive forces, Energy budget and transport, atmospheric circulation, ocean circulation, land-surface process, carbon cycle

Unit 2. Atmospheric Thermodynamics: Equation of state, Dalton's of partial pressure, Poisson's law, equivalent potential temperature, concept of air parcel, virtual temperature, dry adiabatic lapse rate and saturated adiabatic lapse rate, hydrostatic equilibrium equation, dispersion of air pollutants

Unit 3. Physical processes: Conservation of momentum, equation of state, temperature equation, continuity equation, conservation of mass

Unit 4. Climate Models: Introduction to GCM and RCM simulations, SRES, downscaling GCM outputs

Unit 5. ENSO: El Niño basic, Tropical pacific climatology, El Niño mechanism, ENSO indices, predictions and teleconnections

Unit 6. Greenhouse effects and climate feedbacks: Global energy model, greenhouse effect and global warming, climate feedback

Unit 7. Climate Model scenarios for global warming: Greenhouse gases, aerosols forcing, global-average response to GhG warming scenarios on temperature, rainfall, sea, ice/snow, extreme events

Unit 8. Extreme Events analysis of climatic parameters, Climate Change Impact Assessment on floods, droughts,

Unit 9. Climate Change induced disaster – Case Studies 4

Minimum Assignment/s submissions towards Sessional Work shall be project or workshop based and shall include:

- Lectures + workshops
- Group project
- Presentation

LEARNING OUTCOME:

The students shall have knowledge on climate change and its impact.

RECOMMENDED READINGS:

- Speth, James Gustave. 2008. The Bridge at the Edge of the World: Capitalism, the Environment, and Crossing from Crisis to Sustainability
- Oke, T R. 1987. Boundary Layer Climates, Second Edition. Inc.
- Berry, Pam. 2003. "Ecological Climatology. Concepts and Applications BY GORDON BONAN Xi + 678 Pp., 24.5 × 17.5 × 3 Cm, ISBN 0 521 80476 0 Paperback, US$ 150.00/GB£ 100.00, Cambridge, UK: Cambridge University Press, 2002." Environmental Conservation. https://doi.org/10.1017/s0376892903270314.
- Deb, S. K., and M. K. Shukla. 2011. "A Review of Dissolved Organic Matter Transport Processes Affecting Soil and Environmental Quality." Journal of Environmental & Analytical Toxicology. https://doi.org/10.4172/2161-0525.1000106.

CBC: DISASTER RESILIENT BUILDINGS

Course Code: CBC 06 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

In the face of climate change, occurrence of natural disaster has become more frequent, influencing livelihoods and existence of human civilization. In this context, this course is designed to provide an overview of the occurrence, causes and consequences of disaster and understanding of fundamental concepts and application of disaster resilient design. The first module introduces the scenario of hazards caused due to natural disaster and provides a brief insight to disaster mitigation and management. Two modules cover the causes, impact and performance of structures, retrofitting and strengthening of existing structures both for cyclone and earthquake exclusively. The other two modules deal with basic principles, simulation techniques, design considerations, adaptable building construction techniques, codes and practices separately for cyclone and earthquake resilient buildings.

COURSE CONTENT:

Unit-I Brief introduction to different types of natural disaster, Occurrence of disaster in different climatic and geographical regions, hazard (earthquake and cyclone) map of the world and India, Regulations for disaster risk reduction, Post disaster recovery and rehabilitation (socioeconomic consequences) - case studies.

Unit-II Climate change and its impact on tropical cyclone, Nature of cyclonic wind, velocities and pressure, Cyclone effects, Storm surge, Floods, Landslides. Behaviour of structures in past cyclones and wind storms, case studies. Cyclonic retrofitting, strengthening of structures and adaptive sustainable reconstruction. Life–line structures such as temporary cyclone shelter.

Unit-III Basic wind engineering, aerodynamics of bluff bodies, vortex shedding and associated unsteadiness along and across wind forces. Lab: Wind tunnel testing, its salient features. Introduction to Computational fluid dynamics. General planning/design considerations under wind storms & cyclones; Wind effects on buildings, towers, glass panels etc, & wind resistant features in design. Codal Provisions, design wind speed, pressure coefficients; Coastal zoning regulation for construction & reconstruction phase in the coastal areas, innovative construction material & techniques, traditional construction techniques in coastal areas.

Unit-IV Causes of earthquake, plate tectonics, faults, seismic waves; magnitude, intensity, epicenter, energy release and ground motions. Earthquake effects – On ground, soil rupture, liquefaction, landslides. Performance of ground and building in past earthquakes: Behaviour of various types of buildings, structures, and collapse patterns; Behaviour of Non-structural

elements like services, fixtures, mountings- case studies. Seismic retrofitting- Weakness in existing buildings, aging, concepts in repair, restoration and seismic strengthening.

Unit-V General Planning and design consideration; Building forms, horizontal and vertical eccentricities, mass and stiffness distribution, soft storey etc.; Seismic effects related to building configuration. Plan and vertical irregularities, redundancy and setbacks. Various Types and Construction details of: Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, under-ground - overhead tanks, staircases and isolation of structures; innovative construction material and techniques; Local practices: traditional regional responses; Computational investigation techniques.

RECOMMENDED READINGS:

1. Abbott, L. P. (2013). Natural disasters. 9th Ed. McGraw-Hill.
2. Aga Khan Award for Architecture. Ed. Shelter. (1996). The Access to Hope. AKDN, Istanbul and Geneva.
3. Agarwal, P. and Shrikhande, M. (2009). Earthquake Resistant Design of Structures. New Delhi : PHI Learning.
4. Alcantara, A. I. and Goudie, A. (2010). Geomorphological Hazards and Disaster Prevention. Cambridge : CUP.
5. Bankoff, G., Frerks, G. and Hilhorst, D. (2004). Mapping Vulnerability: Disasters, Development and People. London : Earthscan.
6. Burby, R. J. (1998). Cooperating with Nature. Confronting Natural Hazards with Land-Use Planning for Sustainable Communities. Washington : Joseph Henry Press.
7. Christopher, A. and Reitherman, R. (1982). Building configuration and Seismic Design. John Wiley & Sons Inc.
8. Dutta, S. C. and Mukhopadhyay, P. (2012). Improving Earthquakes and Cyclone Resistance of Structures: Guidelines for the Indian Subcontinent. TERI.
9. Dyrbye, C. D., Dyrbye, C. and Dyrbye, C. (1997). Wind Loads on Structures. John Wiley.
10. Foote, K. (2003). Shadowed Ground: How Americans deal with Places of Tragedy. Austin : University of Texas Press.
11. Holmes, J. D. (2007). Wind Loading of Structures. 2nd Ed. Taylor & Francis.

12. ICIMOD. (2007). Disaster Preparedness for Natural Hazards: Current Status in India. Kathmandu : ICIMOD.

13. Judy, L. B. (2012). Climate change, Disaster Risk and the urban poor – cities building resilience for a changing World. Washington DC : The World Bank.

14. Lee, B. Ed. (2008). Hazards and the Built Environment: Attaining Built-In Resilience. Oxon : Taylor and Francis.

15. McDonald, R. (2003). Introduction to Natural and Man-made Disasters and their Effects on Buildings. Burlington : Architectural Press.

16. Oxford University Press. (2000). Confronting Catastrophe: New Perspectives on Natural Disasters. London : OUP.

17. Singh, P. P. and Sharma, S. (2006). Modern dictionary of natural disaster. Deep & Deep Publications.

18. Smith, B. S. and Coull, A. (2001). Tall Building Structures: Analysis and Design. Willey– Inderscience.

19. Simiu E. and Scanlan R. H. (1996). Wind Effects on Structures-Fundamentals and Applications to Design. 3 rd Edn., John Wiley.

20. Sinha, P. C. (2006). Disaster Mitigation, preparedness, recovery and Response. New Delhi : SBS Publishers.

21. Talwar, A. K. and Juneja, S. (2009). Cyclone Disaster Management. Commonwealth Publishers.

22. Taranath, B. S. (2004). Wind and Earthquake Resistant Buildings: Structural Analysis and Design. CRC Press.

23. Thomas, F. (2013). Designing to avoid disaster: The Nature of Fracture-Critical Design. London : Routledge.

24. Pelling, M. (2003). The Vulnerability of Cities: Social Resilience & Natural Disaster. London : Earthscan.

25. U.N.D.P. (2004). Reducing Disaster Risk: A Challenge for Development. New York : UNDP.

26. World Bank. (2009). Handbook for Reconstructing after Natural Disasters.

CBC: ENERGY AND SUSTAINABILITY

Course Code: CBC 07 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To impart knowledge regarding role of energy for sustainable architecture.
2. To provide the students with the fundamental principles, skills and guidelines needed to carry out effective energy audits in accordance with the Building Energy Efficiency Ordinance.
3. To appreciate the approach to identify energy saving measures and perform quantitative analysis to predict the energy savings, environmental and economic benefits.
4. To be able to measure and verify the performance of implemented energy saving measures.
5. To provide students with an overall view of energy use patterns in buildings, taking into account of environmental and economic factors.
6. To enable students to understand the processes of energy audit and survey, including the use of appropriate instrumentation, in order to identify opportunities for energy conservation and management in buildings.
7. To enable students to master various building performance assessment methods, taking into consideration of pros and cons of each method.
8. To introduce students with the knowledge of building energy management with respect to its process and organization.
9. To enable students to efficiently carry out building energy performance upgrading programmes.

COURSE CONTENT:

Unit -01: Sustainable Architecture: Definition, parameters and resources of sustainable architecture- land, energy, water, materials and environment; Introduction to rating schemes for sustainable architecture (LEED, GRIHA etc.)

Unit -02: Energy: Energy cycle in built environment; Importance of energy; Sources of energy- grid and off grid (thermal, hydro, solar, gas, biomass) and uses of energy in buildings and settlements- lighting, ventilation, air conditioning, cooking, miscellaneous etc.

Unit 3. Technologies and Systems: Energy consumption in luminaries, HVAC, plumbing, transportation, miscellaneous systems; Comparison of different technologies and systems for efficiency and performance.

Unit 4. Measurement and Verification – Energy audit of buildings- tools and techniques; Measurement and verification techniques; Benchmarking.

Unit 5. Codes and Standards- ECBC, ASHRAE 90.1, ASHRAE fundamentals, Energy credits under rating schemes, techniques to achieve credits.

Unit 6. Whole Building Simulation – Simulation tools for Whole Building Simulation as per ASHRAE 90.1 and ECBC.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall be project or workshop based and shall include:

- Lectures + workshops
- Presentation
- Group project

LEARNING OUTCOME:

Upon completion of the subject, students will be able to:

a. understand the energy use patterns in various types of buildings and the major energy end-uses, and the impacts to environment of building energy uses;

b. carry out energy audits and surveys based on established guideline, identifying and implementing energy management opportunities (EMO) and effectively use suitable instrumentations;

c. apply building energy management principle to achieving the highest possible building energy use performance;

d. use an appropriate method for building energy performance assessment in various buildings so as to establish energy performance benchmarks

e. carry out energy performance upgrading projects with respect to project planning, organizations and management.

READING MATERIAL:

- ASHRAE. 2002. “Measurement of Energy and Demand Savings.” ASHARE Guidelines 14-2002.
- Scheer, Hermann. 2012. Energy Autonomy: The Economic, Social and Technological Case for Renewable Energy. Energy Autonomy: The Economic, Social and Technological Case for Renewable Energy. https://doi.org/10.4324/9781849771122.
- ASHRAE. 2013. “ASHRAE Handbook 2013 Fundamentals.” www. Ansi. Org American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. https://doi.org/10.1017/CBO9781107415324.004.
- Turner, Wayne. 2001. Energy Management Handbook, Fourth Edition. Energy Management Handbook, Fourth Edition. https://doi.org/10.1201/9780824756079.
- Friedman, Thomas L. 2008. “Hot, Flat, and Crowded: Why the World Needs a Green Revolution - and How We Can Renew Our Global Future.” Environment Collection.
- ASHRAE. 2016. “Standard 90.1-2016. Energy Standard for Buildings Except Low-Rise Residential Buildings.” American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. https://doi.org/http://dx.doi.org/10.1108/17506200710779521.
- “Energy Standard for Buildings except Low-Rise Residential Buildings.” 2013. ASHRAE Standard.
- McDonough, William, and Michael Braungart. 2007. “Remaking the Way We Make Things: Creating a New Definition of Quality with Cradle-to-Cradle Design.” In the International Handbook on Environmental Technology Management.

CBC: UNIVERSAL DESIGN

Course Code: CBC 08 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To create awareness about 'Universal Design' amongst budding students to support social sustenance.
2. To provide hands-on experience to understand practical application of Universal Design to design inclusive built-environment for everyone including people with functional limitations.
3. To develop contextual design examples through intense Universal Design Education.
4. To be familiar with, and have a theoretical understanding of Universal Design as it is applied in architecture.
5. To have a complete understanding of the legislative requirements for Universal Design.
6. To have a complete understanding of the business and social benefits of Universal Design.
7. To be aware of the development and application of new research concepts and advances in the field.
8. To be able to appreciate the benefit of consulting with end users.

COURSE CONTENT:

Unit-1: Universal Design Introduction – Background, Legislative Requirements, Business case - benefits for designer or design firm, Economic case - benefits in the Indian context, Social case - e.g. aging society, ability as a continuum, human rights and equality, Relationship to the Sustainability agenda.

Unit-2: Universal Design Approaches - Human Diversity, User engagement, User-centred design tools and techniques – personas, focus groups, user consultation, task analysis, simulation, post design evaluation, expanding from designing for a sample of representative users toward truly designing for all people, Design for cognitive, sensory and physical human factors

Unit-3: **Application of Universal Design in Architecture** - Stages of design (how Universal Design fits into design steps), The architect, the end user, and the design stakeholders.

Unit-4: **Design Research** - Understanding research publications, Evidence-based design research, Related guidelines and standards.

Unit-5: Case-studies - Built Environment, Products, Services, Information and Communication Technologies (ICT)

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall be project or workshop based and shall include:

- **Workshop based assessment - Universal Design Tools and Techniques (apply in project)**

1. Use of Personas
2. Simulation techniques
3. Universal Design Toolkits
4. Human factors in design (age, size, abilities, disabilities)
5. Using demographic data, population statistics and research to inform design
6. Direct user engagement techniques
7. Design evaluation techniques

Industry collaboration project based

Individuals or teams of students work in partnership with industry on a project. The aim of the project is for design professionals to demonstrate how Universal Design works in the real world, to maintain strong links between academia and professional designers and for the projects to encourage continued application of Universal Design in design firms.

LEARNING OUTCOME:

In a growing and aging society, where the need for sustainable (both social and environmental) design solutions is critical, Universal Design has been accepted globally as a means of meeting existing and future needs. More than a set of practical design rules or prescriptive design guidelines, Universal Design is a way of thinking, requiring the designer to consider the consequences of design, and placing the needs of all people at the very heart of the process.

The theoretical part of the course will reintroduce students to the Universal Design philosophy including social, economic, legislative and business cases and providing an update on more recent developments in these areas. Recent advancements and developments taken from related fields (including ergonomics, usability engineering, user centred design, health and safety research, software engineering, etc.) will provide a more practical understanding of the evolving design approach.

Practical aspects of this Universal Design course and its outcomes will include learning how to engage with users, learning how to apply lessons learned from previous design projects, learning how to use inclusive design tools and techniques, and practice applying these in projects and industry collaborations.

RECOMMENDED READINGS:

Null, Roberta. 2013. “What Is Universal Design?” In Universal Design. https://doi.org/10.1201/b15580-3.

Keates, Simeon, P. John Clarkson, Lee Anne Harrison, and Peter Robinson. 2000. “Towards a Practical Inclusive Design Approach.” In Proceedings of the Conference on Universal Usability.

Ostroff, Elaine. 2011. “Universal Design: An Evolving Paradigm.” Preiser, W., Smith, HK, Universal Design Handbook, McGraw-Hill.

Preiser, Wolfgang F E, and Elaine Ostroff. 2001. Universal Design Handbook. McGraw-Hill Handbooks.

Ministry of Urban Development- Govt. Of India. 2016. *Harmonised Guidelines and Space Standards for Barrier Free Built Environment for Persons with Disability and Elderly Persons.* Guidelines and Space Standards, MOUD-Govt. Of India.

CBC: LANDSCAPE URBANISM AND SITE PLANNING

Course Code: CBC 09 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

To develop skills that enables an urban designer to deal with large sites in a comprehensive manner from ecological considerations to the conceptual understandings of support systems like services and related infrastructure.

COURSE CONTENT:

Unit-1: Introduction to site planning and ecology, Site Planning Philosophy

Unit-2: Ecological planning processes, theories and approaches

Unit-3: Site Resource Systems: Physiography, Geology and Soil, Hydrology, Micro-climate, Vegetation, Wild life, terrestrial and Aquatic

Unit-4: Urban Landscape, planning and maintenance

Unit-5: Site grading, road networks and drainage; Services and related infrastructure with respect to natural resources

Unit-6: Surveys and Overlays; Site Planning goals and objectives, programme development, etc.

The studio will choose a suitable site where the students will map, evaluate and analyse the site from the knowledge imparted in the theory classes and will produce a site plan for an appropriate design programme having multiple activity/functional zones.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

For this subject, students will be assessed based on their process/es of documentation, methods of analysis and the judicious understanding of the site planning process along with the content.

Minimum Assignment/s submissions towards Sessional Work shall include:

 Comprehensive report of appropriate data collection, documentation, studies and analysis done by students in groups not more than three

 Site planning portfolio showing planning & design decision process and conceptual design done by students in groups not more than three

LEARNING OUTCOME:

Students will be enabled to deal with varying site-based natural and ecological systems with reference to urban design projects and the city at large.

RECOMMENDED READINGS:

Lynch, K., Hack, G., (1984). *Site Planning.* Cambridge, Mass: MIT Press.

McHarg,I.L., (1969). *Design with Nature*. New York: the Natural History Press.

Robinette, G., (1983). *Landscape Planning for Energy Conservation*. Van Nostrand Reinhold

CBC: CULTURAL LANDSCAPE

Course Code: CBC 10 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To introduce the student to the theory of cultural landscapes and its application in studying urban landscapes.
2. To familiarize the students with Cultural landscape terminologies, methods of documentation, and mapping.
3. To guide students on the process preparing a Cultural landscape map.
4. To understand implication of the Cultural landscapes on the development of cities and towns.
5. To understand Cultural landscapes as a historic landscape.

COURSE CONTENT:

An overview of planning tools for urban design.

Unit-1: Concepts and theories of Cultural landscapes

Unit-2: Identification of types of cultural landscapes and regions.

Unit-3: Overview of Cultural landscapes across the world: Case studies

Unit-4: Identifying the components of cultural landscapes

Unit-5: Preparation of a Cultural landscape map

Unit-6: Cultural landscapes as historic landscapes

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Seminar presentation in terms of Power Point on a given planning topic.

LEARNING OUTCOME:

Students are equipped with necessary information on cultural landscapes theory, techniques of mapping, documentation and methodologies.

RECOMMENDED READINGS:

Sauer Carl Ortwin. (1925). *The morphology of landscape*. Berkeley, California, USA: University of California press.

Taylor Ken, Lennon Jane (2012). *Managing Cultural Landscapes* (Key Issues in Cultural Heritage). Routledge

Roe Maggie, Taylor Ken (2014). *New Cultural Landscapes*. Routledge.

Whelan Yvonne (2007). *Heritage, memory and the Identity of Politics*. Ashgate Publishing

Calcatinge Alexandru(2012). *The Need for Cultural Landscape Theory: An Architects Approach*. LIT Verlang Munster

Longstreth Richard (2008*). Cultural Landscapes: Balancing Nature and Heritage in Preservation Practice*. University of Minnesota press

Silva Kapila D, Sinha Amita (2016). *Cultural Landscapes of South Asia: Studies in Heritage Conservation and Management*. Routledge

Bharucha Erach (2017). *Changing Landscapes: The Cultural Ecology of India*. Harpercollins

CBC: URBAN FINANCE

Course Code: CBC 11 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To understand the concept of Fiscal decentralisation at a Global and at the national levels.
2. To understand the budgetary process of a local jurisdiction;
3. To identify linkages (or lack thereof) between a local jurisdiction's budgeting and planning processes;
4. To understand the role of short- and long-term debt in financing public infrastructure and services;
5. To critically evaluate the impact of various public finance tools on urban development; and
6. To use program evaluation tools like fiscal impact analysis and cost-benefit analysis.

COURSE CONTENT:

Unit-1: Fiscal Decentralisation – A Global Overview

1. Introduction
2. Fiscal Decentralisation: Exigencies and dimensions
3. Municipal Finance
4. Fiscal Decentralisation in developed countries
5. Fiscal Decentralisation in developing countries.

Unit-2: Fiscal Decentralisation in India – An Overview

1. Fiscal Decentralisation: Meaning and Importance
2. Fiscal decentralization in India
3. Sources of local Government revenue
4. Sources of revenue of Urban Local bodies in India

5. Sources of revenue of Panchayati Raj institutions in India
6. Criteria for Fiscal devolution
7. Measures for strengthening fiscal decentralisation.

Unit-3: **Municipal Finance in India –**

1. Importance of Municipal Finance in Urban Development.
2. Overview of Municipal Finance in India
3. Estimated Investment requirements: Norms and Standards
4. Mechanism to improve Municipal Revenue.
5. New Areas for improving municipal resources.

Unit-4: Urban Land economics, Development management & Finance

1. **Urban land market and real estate market** characteristics, Socio-economic and political factors influencing urban land markets, Urban land supply and demand conditions, Land pricing and transactions.
2. **Techniques of land assembly**: acquisition, readjustment, pooling, sharing, plot reconstitution, land lease, cooperative of landowners.
3. **Local financial system in India:** Taxation and fees, state and local fiscal relations, financing local fiscal services, local expenditure, capital budgeting, performance budgeting, Financial resource mobilization, Policies and programs of related institutions.
4. **Systems of local governments in India**, Development administration at National, state, district, local level, Functions, powers, Organizational structure and resource of local governments.
5. **Non-government development organizations** and their relationship with local government, Citizen Participation.
6. **Personnel management:** Manpower planning, performance appraisal, motivational aspects. Behavior organization theory: authority and conflict, administration communication, leadership in administration, organizational changes.

7. **Techniques of Monitoring**: Integrated reporting system, works standard oriented cost control, turnkey system, inventory cost control technique, unified status index technique.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Minimum Assignment/s submissions towards Sessional Work shall be term paper or workshop based and shall include:

- Lectures + workshops
- Presentation
- Term Paper

LEARNING OUTCOME:

Students shall be able to understand the concept of Fiscal decentralisation at a Global and at the national levels, to understand the budgetary process of a local jurisdiction, to identify linkages (or lack thereof) between a local jurisdiction's budgeting and planning processes; to understand the role of short- and long-term debt in financing public infrastructure and services; to critically evaluate the impact of various public finance tools on urban development; and to use program evaluation tools like fiscal impact analysis and cost-benefit analysis.

Students shall be equipped with necessary procedures to propose, evaluate and manage urban design projects at various scales including finance options and partnership models for implementation.

READING MATERIAL:

1. Urban land Economics / RATCHIFF, RICHARD U.
2. Urban Law Economics: Principle and Policy / HALLETT, GRAHAM
3. Planning for Profit / HOLDEN I & MALLORY K. PETER
4. I.M. Pandey, Financial Management, Vikas, New Delhi
5. B.P. Tyagi, 1997, Public Finance, Jai Prakash Nath, Meerut
6. M.J.K. Thavaraj, 1996, Financial Administration in India, S.Chand & Sons, Delhi
7. M.Y. Khan and P.K. Jain, 1982, Financial Management, Tata McGraw Hill, New Delhi
8. G.S. Lall, 1987, Public Finance and Financial Administration in India, H.P.J. Kapoor, New Delhi
9. S.L. Goel, 1995, Financial Administration and Management, Sterling, New Delhi
10. M.J.K. Thavaraj and K.L. Handa, 1973, Financial Control and Delegation, IIPA, New Delhi
11. R.G. Saxena, Principles of Auditing: Theory and Practice, Himalaya Pub. House, Mumbai
12. S.N. Mishra and S.S. Singh, 1993, Revenue Administration in India, Mittal, Delhi
13. U.B. Singh, 2003, Fiscal Federalism in Indian Union, Concept, New Delhi.
14. M.M. Sury, 1998, Fiscal Federalism in India, Indian Tax Institute, Delhi.

CBC: HOUSING FINANCE

Course Code: CBC 12 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

1. To understand Housing Finance Systems in India and how they aid to sustain the ever-increasing housing demand.
2. To build up basic understanding of vocabulary used by project analysts.
3. To develop an in depth understanding of project formulation and financial feasibility.

COURSE CONTENT:

Unit-1: Housing Finance Systems in India

Evolution of Housing and Policies for Housing Finance in India; Public-private sector investment in housing; Housing Finance for Economically weaker sections; Fiscal aspects of subsidizing public and private housing; Methods of Financing Housing – Institutional & Non-Institutional, PPP Models in housing, Innovative Financing Instruments; Specialized Housing Finance Institutions; Mortgage Financing system; Rental Housing; Micro Housing Finance.

Unit-2: Financial Feasibility & Appraisal of the project

Basic aspects of project finance - Methods of capital budgeting, what is debt and equity, features of debt and equity, Concept of time value of money, Concept of Inflation, Net present value, Internal rate of return, Concept of Company as business entity, What is financial statements of company, Cash flow analysis, Concepts of compound interest, Prevailing interest rates, Concepts of Asset Creation and Investment etc.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Based on the syllabus taught in the course each student is required to prepare a term paper on current status, schemes, changing housing policies and strategies in the Housing finance system for any country other than India or any state housing finance policy and analyze financial feasibility of any given project.

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Term paper / Paper presentation in terms of Power Point which is based on given topic

b. Analyze financial feasibility of any given project.

LEARNING OUTCOME:

Students shall be able to learn about the various factors involved in the housing finance systems in India. At the same time it will widen their views and give them knowledge about estimating financial feasibility of any project before the implementation.

KEYWORDS: Housing Finance Policies, Public Private Partnership, Financial Feasibility, Aspects of Project Finance, Inflation, Net present value, Internal Rate of Return, Cash Flow, Company.

REFERENCE READING MATERIAL:

Reports and policies by Housing and Urban Development Corporation (HUDCO), Human Settlement Management Institute (HSMI), National Housing Bank (NHB), Union Budget and Fiscal Incentives for Housing in India from 1951-52 till date, National and State Housing Policies over the years. Project formulation and feasibility reports of various projects should be discussed.

CBC: NON-FORMAL HOUSING

Course Code: CBC 13 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

The thrust of the course is to present the parallel demand and supply of typologies of Housing, which are below the present levels of formal standards and norms.

1. To expose the students to the concept of Non-Formal Housing as a parallel economy

2. To sensitise the students about the various typologies of the Non Formal Housing in details

3. To make them understand the issues involved in each of these typologies to help in policy formulation regarding each to make the habitats more sustainable and resilient.

COURSE CONTENTS:

Unit-1: REASONS for proliferation of **Non Formal Housing**

Unit-2: DEFINITION of Slums or the Non-Formal Housing

Unit-3: EFFECTS of Slums from Socio-economic aspects

Unit-4: CRITERIA for Classification:

Unit-5: TYPES of Non Formal Housing (with Examples)

a. INNER-CITY HOUSING

b. INDUSTRIAL TENEMENTS/ CHAWLS

c. SQUATTER SETTLEMENTS

d UN-AUTHORISED OR ILLEGAL COLONIES

e. URBAN VILLAGES

COURSE OUTCOME:

The students shall be able to arrive at policy implications for achieving better sustainable and resilient Habitats.

RECOMMENDED READINGS:

1. Koenigsberger, Otto, *Manual of tropical housing and building*, 1975.
2. Krishan, Arvind et. al., *Study and analysis of slum house construction*, 2011
3. Krishan, Arvind et. al., *Manual to reduce vulnerability through safer housing*, 2011

CBC: RURAL HOUSING

Course Code: CBC 14 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

As per the records of Census 2011, Rural population still constitute 68.84% of total population of India. Thus, it becomes important to study Rural Settlement as a separate domain.

1. To understand Rural India with respect to its uniqueness in terms of different communities, Socio-economic Structure, Settlement Patterns, Housing, Livelihood Options and their contribution to the national economy.
2. To extensively study various programmes and policies undertaken by Government of India at Central and State level.
3. To develop an understanding of feasible planning and designing strategies required for rural sector in India.

COURSE CONTENT:

Unit-1: Introduction to Rural India

Socio-cultural groups in rural India and their livelihoods, Symbiosis of Rural and Urban India, efficiency or natural resource management, rural living trends and development opportunities, infrastructure development, agriculture development, allied activities communication and marketing facilities, community development, co-operative initiatives, instructions and delivery of social services.

Unit-2: Policies and programmes under taken in Rural Areas by Government of India at Central and State level.

Government policies for rural development, Models and theories of rural planning, practices at global level, national and state five year plans (Pradhan Mantri Gramin Awas Yojana Policy, Land Policy, Agricultural Policy, Forest Rights Act) etc. Action programme initiated at national and global level, various issues in rural development, policies and implementation.

Unit-3: Rural Settlement and Housing Planning

Area, District and Block level development scheme and implementation, public participation in rural development process, role of voluntary and nonprofit organizations. Provision of Land as resource, provision of infrastructure such as sanitation, water supply, hygiene, drainage and technologies. Feasible rural construction materials and techniques. Existing issues in rural energy, renewable and alternative resources of energy, ecological and environment considerations in rural development and village planning.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Based on the syllabus taught in the course each student is required to analyse implementation of policies by government of India in any particular region / *Gram Panchayat* and check the success rate and suggest alternative solutions. Prepare a term paper in the domain of 'Rural Housing' by studying indigenous and worldwide innovative construction techniques, materials, systems to achieve the sustainability and resilience in development of rural infrastructure including housing.

Minimum Assignment/s submissions towards Sessional Work shall include:

a. Power Point presentation to analyse implementation of policies in any given *Gram Panchayat*

b. Term paper stating innovative systems to achieve the sustainability and resilience in Rural housing.

LEARNING OUTCOME:

Students will be able to learn about the importance of giving equal attention to Rural development including Housing, as it's one of the essential part of their livelihood. They will be able to learn and implement sustainable and resilient strategies for the rural development.

KEYWORDS: Rural Communities, Construction Materials, Rural Policies and Programmes, Rural Infrastructure, Land and Tenure, Co-operative and Community Initiatives.

RECOMMENDED READINGS:

Adams, Thomas (2012), *Rural planning and development*

Mishra, RP. (1990) *Micro level rural planning: principal, methods and case study*

CBC: POST-COLONIAL URBAN THEORY

Course Code: CBC 15 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

- To provoke a critical awareness of how contemporary architectural and urbanistic assumptions and practices have been shaped by the historical experience of colonialism.

COURSE CONTENT:

1. Introduction to post-colonial knowledge and colonial space
2. Understanding a post-colonial cities/ modern cities
3. Understanding the essential of the colonial makings: When was/is the end of empire?
4. The primary settings will be cities in North Africa and the Indian Sub-continent as they developed during the nineteenth and twentieth centuries under French and/or British colonial rule, as well as on postcolonial developments in these settings.

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

Summary Cards: Graphically designed hand cards which will contain a summary of the days reading that incorporates a representative image, short reflection written in paragraph form and bullet points.

Paper: Term paper that allow each student an opportunity to investigate one topic/idea from the post-colonial urban theory course that relates to his/her personal interests.

LEARNING OUTCOME:

The students shall be conversant in postcolonial urban design theory.

RECOMMENDED READINGS

Kajri Jain, *Gods in the Bazaar: The Economies of Indian Calendar Art* (Durham: Duke University

Press, 2007).
Mark Crinson, *Modern Architecture and the End of Empire* (London: Ashgate, 2003).

Timothy Mitchell, *Colonizing Egypt* (Berkeley: University of California Press, 1988).
George Orwell, *Burmese Days* [novel] (New York: Harcourt Brace, 1974).

Paul Rabinow, *French Modern: Norms and Forms of the Social Environment* (Cambridge, MA: MIT Press, 1989).

CBC: URBAN HISTORY: GOA

Course Code: CBC 16 **Course Type: Choice Based Course**

COURSE OBJECTIVES:

- To study the urban history of the *Cidade de Goa* (City of Old Goa), former capital (1530-1854) of *Estado da Índia*.
- To study the rise and fall of *Cidade de Goa*
- To study the urban history of Panjim, the new capital of *Estado da Índia* from 1843 to 1961.

COURSE CONTENT:

Unit 1: Introduction to history of Portuguese overseas empire
Unit 2: Context of Old Goa in the sixteenth century
Unit 3: Mapping the urban boundaries of Old Goa as in 1600s with the aid of historical maps
Unit 4: Mapping the ruination of the city in 1800s with the aid of historical maps
Uni 5: Evolution of Panjim by the study of Old Maps
Unit 6: Comparing the present context of these cities with their urban historical form

SUBMISSION REQUIREMENT FOR SESSIONAL WORK:

- Historical Map making, locating architectural buildings in present day city.

- **Paper**: Term paper with mapping that allow each student an opportunity to investigate one topic/idea about the urban history of the cities in Goa.

LEARNING OUTCOME:

The students shall be learn to read historical maps and contextualize them to the present conditions of the city. They will also be equipped with archival methods to conduct research. The students shall have a grip of urban history of Old Goa and Panjim.

RECOMMENDED READINGS

Disney, Anthony R. 2009. *A History of Portugal and the Portuguese Empire, from Beginnings to 1807, Volme 2: The Portuguese Empire*. Vol. 2. Cambridge: Cambridge Univ. Press.

Gomes, Paulo Varela. 2011. *Whitewash, Red Stone: A History of Church Architecture in Goa*. New Delhi: Yoda Press.

Malekandathil, P. 2009. "City in Space and Metaphor: A Study on the Port-City of Goa, 1510-1700." *Studies in History* 25 (1): 13–38.

Pearson, M. N. 2006. *The Portuguese in India*. The New Cambridge History of India, I, 1. New York: Cambridge University Press.

Pereira, António Nunes. 2011. “Renaissance in Goa: Proportional Systems in Two Churches of the Sixteenth Century.” *Nexus Network Journal* 13 (2): 373–96.

Rossa, Walter. 1997. *Cidades indo-portuguesas: contribuições para o estudo do urbanismo português no Hindustão Ocidental = Indo-Portuguese cities: a contribution to the study of Portuguese urbanism in the Western Hindustan*. Lisboa: Commissão Nacional para as Comemorações dos Descobrimentos Portugueses.