

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

COURSE TITLE: ARCHITECTURAL DESIGN – IV (HOUSING)

(Code: 3345001)

Diploma Programme in which this course is offered	Semester in which offered
Architectural Assistantship	4 th Semester

1. RATIONALE

Housing design is a multi-layered process which requires recall and application of knowledge of previously covered parameters of architectural design like form and space, spatial organization and relationships. It enables the students to independently design large projects and to handle a large site for designing e.g. dividing it into sectors. It also enables them to design a functional housing layout by simultaneously designing residential units on a given site with respect to climate, site topography, building bye-laws, hierarchy of spaces, etc. Knowledge of structure, building construction and building services is imparted in this semester which is applied by students while preparing individual housing unit designs as well as housing layout designs. During the entire design process, knowledge of different types of openings and their locations in a building with respect to interiors and climatology is also gained by the student which helps them design suitable architectural elements. Knowledge of design parameters, spatial order, structure as order and space–structure-form co-relation is also gained by continuous interaction with concerned faculty during the study of this course. Thus, designing a given housing project enables the students to learn and apply basic architectural designing skills related to residential unit designs as well as to site layout. This course is designed in view of above outlook and for developing the competency mentioned below, accordingly.

2. COMPETENCY

The course content should be taught and curriculum should be implemented with the aim to develop required skills in students so that they are able to acquire following competencies:

- Prepare schematic housing design layout for locating and orienting the designed housing units with regard to site topography, site surroundings and climatic conditions with functional integration of landscaping
- Prepare housing unit designs with complete set of presentation drawings based on given requirements considering integration of interior spaces, lighting, ventilation, structure, materials of construction, building services, building byelaws and finishes.

3. COURSE OUTCOMES

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

- i. Incorporate the knowledge of qualities of architectural spaces both built and open
- ii. Interlock areas linked by common spaces, appropriate grids, radial spaces and clustered spaces
- iii. Design different residential typologies
- iv. Design multi-volume buildings in relation to given site

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	S/T	P	C	ESE	PA	ESE	PA	300
0	0	12	12	00	00	100	200	

Legends: L-Lecture; S/T- Tutorial/Teacher guided theory Practice – Studio; P - Practical; C – Credit; ESE - End Semester Examination; PA - Progressive Assessment

5. COURSE DETAILS

NOTE: There are no separate classes for theory and this theory should be discussed in the studio before relevant practical exercise.

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Unit – I Data Collection	1a. Understand the of existing group housing schemes/mass housing schemes of both private entrepreneurs/builders as well as company housing 1a.1 Analyze the design of housing unit in group housing 1a.2 List Primary & Secondary data collection points 1a.3 Describe data collection Primary & Secondary 1b. Formulate design requirements for the given housing design project 1c. Analyze the form, functional clarity, circulation within the building	1.1 Introduction to and study of existing group housing schemes/mass housing schemes of both private entrepreneurs/builders as well as company housing <ul style="list-style-type: none"> • Primary data collection : On Site • Secondary data collection : From Books, Magazines, Internet, etc. Data collection by study of 'Housing' design works of students of Architecture degree & diploma colleges through students visits and/or presentations by experts from both industry and other institutes
Unit– II Development of Concept and locating the housing units on site	2a. Prepare conceptual alternatives and ideas considering various design parameters for further design development of housing units 2b. Prepare a functional land-building relationship diagram based on requirements for housing units 2c. Prepare a functional land-building relationship diagram based on given layout requirements	Various design development of housing parameters 2.1 Housing unit designs and their location and orientation on site with regard to, <ul style="list-style-type: none"> • Category e.g. twin houses, row houses, apartments or any other type • Margins as per GDCR (building byelaws) 2.2 Housing unit layout with a functional land-building relationship – principles for creating a hierarchy of spaces <ul style="list-style-type: none"> • Site topography • Site surroundings • Climatic considerations
Unit – II Preparing	3a. Produce improved sketch design for housing units with regard to functional	3.1 Housing unit design with respect to, <ul style="list-style-type: none"> • Lighting and ventilation

Unit	Major Learning Outcomes (in cognitive domain)	Topics and Sub-topics
Sketch Design	<p>integration of interior spaces and other design parameters</p> <p>3b. Produce improved sketch design for housing layout with respect to spatial ordering principles for the housing units and their layout on site</p>	<ul style="list-style-type: none"> • Space • Form • Structure • Materials of construction <p>3.2 Housing layout design with respect to,</p> <ul style="list-style-type: none"> • Hierarchy of spaces • Spatial organization • Pedestrian & vehicular movements
Unit – IV Design and Development of Drawings	<p>4a. Develop the sketches of both housing units and site layout to an appropriate scale as per specific requirements of various categories</p> <p>4b. Develop the sketches showing both unit and site elevations with massing and sectional relationships</p> <p>4c. Visualize and draw the necessary building drawings and site layout to scale in 3D</p> <p>4d. Prepare a block study model of the designed housing unit as well as the site layout</p>	<p>Design and Development of Drawings</p> <p>4.1 Development of floor plans, sections, elevations and spatial relationships at appropriate scale</p> <p>4.2 Development of site layout with road network and landscaping</p> <p>4.3 Development of elevations and sections with respect to building finishes fenestrations and levels</p> <p>4.4 Axonometric/isometric view of the designed buildings as well as of the site layout</p>
Unit – V Space – Activity Relationship	<p>5a. Prepare furniture layout drawings for the designed housing units of each individual category</p> <p>5b. Prepare category-wise cluster plans for various categories of housing units</p> <p>5c. Prepare complete Housing site layout drawings with housing unit locations, roads, common spaces and amenities, parking and landscaping</p>	<p>5.1 Furniture Layout drawings for various activities / functions of the housing units based on given requirements</p> <p>5.2 Cluster plans for various categories of housing units</p> <p>5.3 Housing site layout drawing for various activities/functions based on given requirements</p>
Unit – VI Final Presentation of Drawings and Models	<p>6a. Prepare a set of final presentation drawings including all of the above to a suitable scale</p> <p>6b. Prepare models of the designed housing project to a suitable scale with surrounding</p>	<p>6.1 Final presentation drawings with the application of knowledge of architectural rendering techniques gained in previous semester</p> <p>6.2 Preparation of models of individual housing units, clusters and of the entire site</p>

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Not applicable

7. SUGGESTED LIST OF EXERCISES/PRACTICALS/STUDIO WORK

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able

to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

*Note: Here only outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.*

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.

S. No.	Unit No.	Practical/ Exercises (outcomes in psychomotor domain)	Approx Hours Required
1	I	Collect data of various housing projects (as mentioned above) & analyze the same	24
2	II	Prepare conceptual sketches housing units and site layout of various categories of given housing project, based on given requirements	24
3	III	Prepare sketch designs of housing units and of site layout with road network, parking, landscaping and other site features	12
4	IV	Develop the unit and site layout designs further and prepare drawings of all floor plans, sections, elevations as well as detailed site layout with road network and landscaping. Also draw all necessary drawings in 3D and prepare block study models.	24
5	V	Prepare housing unit plans with furniture layouts, detailed elevations and sections, cluster plans and complete detailed site layout drawings with housing unit locations, roads, common spaces and amenities, parking and landscaping	24
6	VI	Produce final presentation drawings; all floor plans, elevations, sections, 3d view of the building and model to suitable scale	60
TOTAL			168

8. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed student activities like: interactive group discussions, course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based Mini-Projects, etc. These could be individual or group-based.

Suggested individual activities are,

- i. Time problem on 'Housing' design, complete with layout and units
- ii. Time problem on design of a residence

Suggested group-based activities which can be conducted within the state are,

- i. Visits to Architecture degree/diploma institutes for studying and knowledge-sharing on documented/on-going students' 'Housing' design works
- ii. Visits to practicing architects' offices and residential building townships, sites, etc. to study 'Housing' designs as well as for data collection
- iii. Visits for studying '**Vernacular Architecture**' existing in old city areas e.g. 'Pols' of Ahmedabad, Vohra Houses of Patan or that of any other city within the state. Also suggested is undertaking the 'Heritage Walk' organized by Ahmedabad Municipal Corporation to study and understand

vernacular housing typologies

9. SPECIAL INSTRUCTIONAL STRATEGIES (if any)

- i. This subject has theory component that is taught during practical classes so as to develop and encourage subject related skills. For this each student needs to be attended to, by the concerned faculty individually and hence this subject should be treated as a “studio” subject.
- ii. Remain close to students while they are working on their drawings and continuously give support and feedback to them whenever required.

10. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Title of Book/Journals	Author	Publication
1.	Architecture – Form, Space & Order	Francis D.K.Ching	John Wiley & Sons
2.	Visual Dictionary of Architecture	Francis D.K.Ching	John Wiley & Sons
3	Neufert Data Standards	Ernst Neufert	Archon Books
4	Contemporary Indian Architecture- After the Masters	Bhatt Vikram, Peter Scriver	Mapin Publication
5	Modern Architecture in India - Footprints in the sands of Indian architecture	Bagha Sarbajeet, Bagha Surinder,	Galgotia Publication
6	100 Of The Worlds Best Houses	Slessor	Images Publication
7	200 houses	Cleary	Images Publication
8	21st Century Houses 150 Of The World's Best	Robyn Beaver	Images Publication
9	21ST CENTURY SUSTAINABLE HOME	Cleary	Images Publication
10	Architecture in India since 1990	Mehrotra	Pictor
11	Architecture of the Home	Nylander	Wiley
12	Bio Architecture	Senosian	Architectural Press
13	Design First	Walters	Architectural Press
14	Housing I	Archiworld	Archiworld
15	Letters to a Young Architect	Benninger	CCBA
16	Time Saver Standards for Housing and Residential Buildings	Panero	BPB
17	Time Saver Standards for Landscape Design	Dines	BPB
18	Collective Housing - A Manual	Lapuerta	Actar
19	Global Housing Projects since 1980	Mateo	Actar
20	Guide to the Architecture of the Indian Subcontinent	Kamiya	Atsushi Sato
21	21st Century Architecture - Apartment Living	Browne	Images Publication

B. List of Major Equipment/Instrument

- i. Measuring Tape,
- ii. Digital Camera,
- iii. Architectural Drafting instruments,

- iv. Computers
- v. CAD software

C. List of Software/Learning Websites

- i. www.archnet.org
- ii. www.greatbuildings.com

11. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. Bhaskar J. Iyer**, H.O.D Architecture, Govt. Polytechnic, Vadnagar
- **Prof. Sangita Vaghasia**, Lecturer in Architecture, Govt. Polytechnic for Girls, Surat
- **Prof. Vishal K. Mashruwala**, Lecturer in Architecture, Govt. Polytechnic for Girls, Surat
- **Prof. N.M. Chhatwani**, Lecturer in Architecture, Govt. Girls Polytechnic, Ahmedabad

Co-ordinator and Faculty Members from NITTTR Bhopal

- **Prof. Dr. J.P.Tegar**, Professor & Head, Department of Civil & Environment Engineering
- **Prof. M. C. Paliwal**, Associate Professor, Department of Civil & Environment Engineering