

BACHELOR OF ARCHITECTURE

OBJECTIVES, EXAMINATION SCHEME

AND

SYLLABUS



BACHELOR OF ARCHITECTURE

(5th to 10th Sem)

HIMACHAL PRADESH TECHNICAL UNIVERSITY,

HAMIRPUR 177 001 (H.P.)

BACHELOR OF ARCHITECTURE

Himachal Pradesh Technical University, Hamirpur (HP) - 177 001

OBJECTIVE OF B. ARCH. FIVE YEAR PROGRAM

The Bachelor of Architecture (Five Year Degree Program) has a broad scope, not only of self-employment but creating job opportunities for a large number of people who will be working with the Architects. There are ample opportunities for employment in Central, State and Private Sector organizations, where the positions of Architects and Town Planners remain vacant due to less number of qualified persons. Program is intended to prepare students for professional practice in the field of Architecture. Today, there is an increasing recognition of Architecture as an intellectual discipline, both as an Art and as a Profession. In India, there are complexities of different social, cultural, geographical, economical and technical domains. These complexities are unique and typical for every region of our country. Therefore the architects make a vital role in solving these complexities and thereby contribute towards shaping our environment and society.

This program has been started with an idea to provide qualified professionals in the field of Architecture, to the country and to the Himachal region in particular. The emphasis will be on the development personality of students with the aid of both the objective information and subjective attitude based on reasons.

An Architect supposed to act as a team leader and coordinator of the inputs of the various specific disciplines. The need to possess a sound knowledge of all aspects (modern building technology, technological and engineering) has been incorporated in the curriculum. The program aims at attaining a high level of excellence in Architectural Education and program is intended to reinforce intellectual capabilities and develop proficiency in professional scheme to enable graduates to completely pursue alternative career with-in the broad spectrum of Architecture.

COURSE STRUCTURE

The course consists of five years out of which 4.5 years will be of formal contact instructions and six months will be devoted to professional training in a recognized professional office/ industry. Basic course areas are scheduled as:

- Architectural Design
- Building Construction & Materials
- Building, Structures- Analysis & Designs
- Hill Architecture

In addition to these the other courses such as Building Sciences, Services, Architectural Drawing and Presentation, Computers, Humanities, History & Management have been suitably incorporated in the curriculum. Some elective courses have been introduced to impart specialized training for some of the subjects from 3rd year onwards.

The weightier of credits as per Energy Conservation Building Code guidelines of Council of Architecture, New Delhi is as under

1. 01 Lecture hour shall have 1 credit.
2. 02 Labs/workshops/seminar hours shall have 1 credit.
3. 01 Design studio/construction studio/project/thesis period hour shall have 1.5 credits.
4. Credits for internship/Practical training can vary from 12-15 and the architecture design thesis can vary from 15-18.
5. Lecture (L)/Tutorial (T)/Studio(S)/Practical (P) are expressed in hours.

SEMESTER – V

S. N	Category	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESE	Subject Total
									CT	TA	Total		
Theory:													
1	MC	AR- 311	Architectural Design-V	1	0	6	0	10	-	60	60	40	100
2	MC	AR- 312	Building Material & Construction -V	1	0	2	2	5	-	60	60	40	100
3	MC	AR-313	Site Planning and Landscape Design	3	0	0	0	3	20	20	40	60	100
4	MC	AR- 314	Building Services-II	3	0	0	0	3	20	20	40	60	100
5	MC	AR- 315	Structural Design-IV	2	1	0	0	3	20	20	40	60	100
6	MC	AR- 316	Disaster Mitigation and Management	3	0	0	0	3	20	20	40	60	100
Labs:									FW	LP	Total	ESVE	Sub. Total
7	MC	AR-317	Computer Applications in Architecture-I	0	0	0	4	2	10	20	30	20	50
			Total	13	1	8	6	29					

Note:-

- The 50% of TA component will be evaluated by subject teacher and 50 % by external examiner in respect of subject AR-311 and AR-312.
- Site Visits/Tours may be conducted within the semester as per requirement of the subjects.

Legend:

L - Lecture	ESE - End Semester Examination
T - Tutorial	FW - Documentation/ File work and presentation
P - Practical	TA- Teacher Assessment
S- Studio	LP - Lab performance
CT - Class Test	ESVE - End Semester Exam/viva-voce Exam.
IA - Internal Assessment	MC- Mandatory Course
FC- Foundation Course	

SEMESTER – VI

S. N	Category	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESE	Subject Total
									CT	TA	Total		
Theory:													
1	MC	AR- 321	Architectural Design-VI	1	0	6	0	10	-	60	60	40	100
2	MC	AR- 322	Building Material & Construction -VI	1	0	2	2	5	-	60	60	40	100
3	MC	AR-323	Ekistics	3	0	0	0	3	20	20	40	60	100
4	MC	AR-324	Earthquake Resistant Design	3	0	0	0	3	20	20	40	60	100
5	MC	AR- 325	Hill Architecture	3	0	0	0	3	20	20	40	60	100
6	EC	AR- 326*	Elective-I	3	0	0	0	3	20	20	40	60	100
Labs:									FW	LP	Total	ESVE	Sub. Total
7	MC	AR-327	Computer Applications in Architecture-II	0	0	0	4	2	10	20	30	20	50
Total				14	0	8	6	29					

*ELECTIVE – I

S. N.	Cat.	Subject Code	Title	Teaching Hours Per Week			Credits	Examination		
				L	T	P/D		IA Marks	ESE Marks	Total Marks
1	EC	AR-326A	Art and Architecture	3	0	0	3	40	60	100
2	EC	AR-326B	Building Economics and Sociology	3	0	0	3	40	60	100
3	EC	AR-326C	Sustainable Architecture	3	0	0	3	40	60	100
4	EC	AR-326D**	Online course	3	0	0	3	40	60	100

Note:-

1. The 50% of TA component will be evaluated by subject teacher and 50 % by external examiner in respect of subject AR-321 and AR-322.
2. Site Visits/Tours may be conducted within the semester as per requirement of the subjects.
3. “*” Students have to select at least one elective subject from the list of Elective-I.
4. “**” – Student may enrol for any one online course from the list approved by DUGC.

Legend:

L - Lecture	ESE - End Semester Examination
T - Tutorial	FW - Documentation/ File work and presentation
P - Practical	TA- Teacher Assessment
S- Studio	LP - Lab performance
CT - Class Test	ESVE - End Semester Exam/viva-voce Exam.
IA - Internal Assessment	MC- Mandatory Course
FC- Foundation Course	EC- Elective Course

SEMESTER – VII

S. N	Category	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESVE	Sub. Total
									FW	TP	Total		
Lab:													
1	MC	AR-411	Internship/Practical Training	0	0	0	26	13	20	30	50	50	100
			Total					13					

Note:-

- The internal assessment component will be evaluated by Training firm/organisation and ESVE/viva-voce will be conducted by the department at the end of internship. The student will undergo Office Training with COA Registered/Affiliated Architect.
- Training of one semester duration shall start after end of 6th semester examination.
- Head School of architecture will formulate the necessary guidelines for Internship/Training.

Legend:	L - Lecture	ESE - End Semester Examination
	T - Tutorial	FW - Documentation/ File work and presentation
	P - Practical	TA- Teacher Assessment
	S- Studio	LP - Lab performance
	CT - Class Test	ESVE - End Semester Exam/viva-voce Exam.
	IA - Internal Assessment	MC- Mandatory Course
	FC- Foundation Course	TP – Training Performance

SEMESTER – VIII

S. N.	Cat.	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESE	Subject Total
									CT	TA	Total		
Theory:													
1	MC	AR- 421	Architectural Design-VII	0	0	8	0	12	-	60	60	40	100
2	MC	AR- 422	Advance Construction Techniques	1	0	2	2	5	-	60	60	40	100
3	MC	AR-423	Housing	3	0	0	0	3	20	20	40	60	100
4	MC	AR-424	Energy Efficient Architecture	3	0	0	0	3	20	20	40	60	100
5	MC	AR- 425	Geographic Information Systems (GIS) in Architecture	1	0	0	4	3	20	20	40	60	100
6	EC	AR-426*	Elective-II	3	0	0	0	3	20	20	40	60	100
Total				11	0	10	6	29					

*ELECTIVE – II												
S. N.	Cat.	Subject Code	Title	Teaching Hours Per Week				Credits	Examination			
				L	T	S	P		IA Marks	ESE Marks	Total Marks	
1	EC	AR-426A	Vastushastra	3	0	0	0	3	40	60	100	
2	EC	AR-426B	Building Bye-Laws	3	0	0	0	3	40	60	100	
3	EC	AR-426C	Intelligent Building	3	0	0	0	3	40	60	100	
4	EC	AR-426D**	Online course	3	0	0	0	3	40	60	100	

Note:-

1. The 50% of TA component will be evaluated by subject teacher and 50 % by external examiner in respect of subject AR-421 and AR-422.
2. Site Visits/Tours may be conducted within the semester as per requirement of the subjects.
3. “*” Students have to select at least one elective subject from the list of Elective-II.
4. “**” – Student may enrol for any one online course from the list approved by DUGC.

Legend:

L - Lecture	ESE - End Semester Examination
T - Tutorial	FW - Documentation/ File work and presentation
P - Practical	TA- Teacher Assessment
S- Studio	LP - Lab performance
CT - Class Test	ESVE - End Semester Exam/viva-voce Exam.
IA - Internal Assessment	MC- Mandatory Course
FC- Foundation Course	EC-Elective Course

SEMESTER – IX

S. N	Category	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESE	Subject Total
									CT	TA	Total		
Theory:													
1	MC	AR- 511	Architectural Design-VIII	0	0	8	0	12	-	60	60	40	100
2	MC	AR-512	Research Methodology	3	0	0	0	3	20	20	40	60	100
3	MC	AR-513	Urban Design	3	0	0	0	3	20	20	40	60	100
4	MC	AR- 514	Project Management	3	0	0	0	3	20	20	40	60	100
5	MC	AR-515	Building Information Modelling (BIM)	1	0	0	4	3	20	20	40	60	100
6	EC	AR-516*	Elective- III	3	0	0	0	3	20	20	40	60	100
			Total	13	0	8	4	27					

*ELECTIVE – III											
S. N.	Cat.	Subject Code	Title	Teaching Hours Per Week				Credits	Examination		
				L	T	S	P		IA Marks	ESE Marks	Total Marks
1	EC	AR-516A	Architectural Conservation	3	0	0	0	3	40	60	100
2	EC	AR-516B	Appropriate Building Technologies	3	0	0	0	3	40	60	100
3	EC	AR-516C	Building Maintenance	3	0	0	0	3	40	60	100
4	EC	AR-516D	Architecture Journalism	3	0	0	0	3	40	60	100

Note:-

1. The 50% of TA component will be evaluated by subject teacher and 50 % by internal and external examiner in respect of subject AR-511.
2. Site Visits/Tours may be conducted within the semester as per requirement of the subjects.

Legend:	L - Lecture	ESE - End Semester Examination
	T - Tutorial	FW - Documentation/ File work and presentation
	P - Practical	TA- Teacher Assessment
	S- Studio	LP - Lab performance
	CT - Class Test	ESVE - End Semester Exam/viva-voce Exam.
	IA - Internal Assessment	MC- Mandatory Course
	FC- Foundation Course	

SEMESTER – X

S. N	Category	Paper Code	Subject	L	T	S	P	Credits	Evaluation Scheme (Marks)				
									Internal Assessment (IA)			ESE	Subject Total
									CT	TA	Total		
Theory:													
1	MC	AR-521	Architectural Design Thesis	0	0	8	6	15	40	20	60	40	100
2	MC	AR-522	Professional Practice & Ethics	3	0	0	0	03	20	20	40	60	100
			Total	3	0	8	6	18					

Note:- Head School of architecture will formulate the necessary guidelines for AR-521.

AR-311: ARCHITECTURAL DESIGN - V

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
1	0	6	0	10	60	40	100	12hrs

Course Objective:

- To understand the functional /planning aspects of institutional buildings.
- To explore and learn the design intricacies of buildings of specific functions.
- To explore and use the various building codes (National Building Code, Energy conservation building code etc.)

COURSE CONTENT:

UNIT	CONTENT
I	Design of an institute campus such as Architecture, Medical, Law, Business, Music and Dance colleges, vocational training institutions etc. with detailed design of academic and library block. Emphasis on design with Barrier Free Environment can be explored during this exercise.
II	Design of Auditorium with emphasis on integration of services like fire fighting, acoustics, sitting layouts, visual connections and structural systems.
III	Time Problem: Adaptive reuse of any building by introducing new program to an existing structure.

Note:

Two design problems and one time problem of 01 week is to be completed in the semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem with reference to the above contents.

Course Outcomes:

1. Students will be able to identify the various elements of institutional design and campus planning aspects.
2. Students would come to know about applicability of various building codes.
3. They will also learn about adaptive reuse of old structures.

References:

1. Stone, G. L. Institutional Buildings Architecture of Controlled Environment.
2. Tergsone, W. R. Practical Laboratory Planning.
3. Wild, F. (1972) Libraries for Schools and Universities. Van Nostrand Reinhold, New York.

AR-312: BUILDING MATERIAL AND CONSTRUCTION - V

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
1	0	2	2	5	60	40	100	4hrs

Course Objective:

- To inculcate awareness of the constructional aspects of structural steel.
- To know various usage of steel sections in different building components.
- To familiarize the student with steel as a building material and understand its use in buildings.

COURSE CONTENT:

UNIT	CONTENT
I	Types of industrialized doors and windows, sliding, revolving, collapsible, rolling shutters, steel sections. Detailed drawings and construction details of various types of doors and windows in steel.
II	Detailed drawings and construction details of steel stairs such as straight flight and spiral. Introduction to the concept of mezzanine floor.
III	Introduction to structural steel trusses. Detailed drawings and construction details of north light truss, tubular truss, lattice girder along with roof coverings, valleys, gutters etc.
IV	Introduction to various materials, products and hardware for false ceiling. Detailed drawings and construction details of the same.

Note: Site Visits to ongoing related construction projects.

Course Outcomes:

1. Students will learn various construction details related to structural steel.
2. Students will appreciate various design intent and materials used for false ceilings.

References:

1. "Architectural Graphic Standards", Charles George Ramsey, Harold Reeve Sleeper, Bruce Bassler John Wiley & Sons, 2008.
2. "Interior Design", Ahmed A Kasu, Om Books, 2005.
3. "Time Saver Standards for Interior Design and Space Planning", Joseph De Chiara, Julius Panero & Martin Zelnik, Mcgraw-Hill, 1991.
4. "The Construction of Buildings", Vol. 3 4/e PB, R Barry, Wiley, 2001.
5. "Building Construction Metric" Vol. 4, W.B.Mckay, Orient Longman Private Limited, Mumbai, 2006.
6. "Building Construction Illustrated", Francis D.K. Ching, John Wiley & Sons, 2011.
7. "Construction Technology" Vol. 2-3-4 Roy Chudley, Roger Greeno, Prentice Hall (UK), 2005.

AR-313: SITE PLANNING AND LANDSCAPE DESIGN

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

- To familiarize students with relationship of built and open spaces.
- To appreciate the importance of elements of landscape and site analysis.
- To sensitize students about the impact of human activities and the need for environmental protection.
- To make students aware about the aspects of outdoor design and site planning for enhancing the quality of built environment.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction to Landscape Design. Introduction to the elements of landscape such as Earth form, Water and Vegetation and their effect in relation to the built environment. Plant types, characteristics and structure.
II	Introduction to ecology and its importance to landscape designers. History, nature and scope of designed open spaces. Studying historical landscapes (English, French, Italian, Chinese, Japanese, Mughal, Ancient India) and their relevance in their time, context and social needs.
III	Site analysis and site structure unity. Advanced knowledge of basic elements of landscape design and their effects in context to the environmental concerns. Basic knowledge of contour/mapping and various methods of documentation of physical features, topography and landscape elements.
IV	Case studies of varied urban situations with typical different landscape characters in urban scenarios to analyze and assess their present landscape status by applying knowledge and techniques acquired as above. Landscape design proposal based on above mentioned analysis as a studio exercise.

Course Outcomes:

1. Students will learn various construction details related to structural steel.
2. Students will appreciate various design intent and materials used for false ceilings.

References:

1. "Time-saver standards for landscape architecture: design and construction data", Nicholas T. Dines, Kyle D. Brown; McGraw-Hill, 1998.
2. "Landscape design: a practical approach", Leroy G. Hannebaum; Reston Pub. Co., 1981
3. "Landscape design: an international survey", Ken Fieldhouse; Overlook Press, 1993
4. Landscape Detailing, Micheal Littlewood; Routledge, 2001
5. "Planting Design", Theodore D. Walker; John Wiley & Sons, 1991
6. "Landscape Architecture Construction", Harlow C. Landphair, Fred Klatt; Prentice Hall PTR, 1999.
7. "Landscape As Inspiration", Hans Dieter Schaal; Academy Editions, 1994.
8. "Introduction to Landscape Design", John L. Motloch; John Wiley & Sons, 2000
9. "Landscape Architecture: A Manual of Site Planning and Design", John Ormsbee Simonds; McGraw Hill Professional, 1998

10. "Trees of Chandigarh", Chhatar Singh, Rajnish Wattas, Harjit Singh Dhillon; B.R. Publishing Corporation, 1998
11. "Trees of Delhi: A field guide", Pradeep Krishan, Penguin India; 2006
12. Landscape architecture in India, Mohammad Shaheer, LA journals of landscape architecture, 2013.

AR-314: BUILDING SERVICES: -II

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

To familiarize the students with fundamentals of acoustics, ventilation, vertical elevation and fire safety in building services & their integration with architectural design.

COURSE CONTENT:

UNIT	CONTENT
I	<p>Acoustics</p> <ul style="list-style-type: none"> • Introduction to terms and vocabulary of sound such as reverberation, absorption, reflection, resonance, noise control etc. • Design considerations in building interior. Introduction to building acoustics with reference to various building types such as studios, auditoriums etc. • Characteristics and classifications of sound absorbing/ acoustical materials and their applications.
II	<p>Mechanical Ventilation</p> <ul style="list-style-type: none"> • Human comfort conditions; need for mechanical ventilation in buildings; introduction to natural and artificial ventilation; • Terms and vocabulary: heat load, latent heat, relative humidity, refrigeration cycle, indoor air quality, fresh air, stack effect; • Air conditioning: ducted and non-ducted system (window, split, central systems etc.), their working and components, summer and winter air-conditioning, calculation of air-conditioning loads, zoning: purpose and advantages. • Variations in residential and commercial air-conditioning; need for basement ventilation; introduction to the concept of 'clean room'.
III	<p>Building Elevators</p> <ul style="list-style-type: none"> • Lifts- types, parts, dimensions and design of lift system in a building • Escalators- types, parts, dimensions and design of lift system in a building • Provision to be made in buildings for installation: location, systems, sizes, equipment, spatial requirement.
IV	<p>Fire Safety</p> <ul style="list-style-type: none"> • Introduction to fire fighting systems, fire detection, fire sprinklers: dry pipe and wet pipe systems, fire extinguishers and fire hydrants system, their system of working ; types: mechanical and electrical; classification of fire; • Terminology; classification of building types based on occupancy; fire resistance ratings(hours) of structural and non-structural elements, various norms for fire exit ways, building heights, materials, concept of fire zoning, doorways, stairways, passages and corridors, fire escapes etc. • rules for fire protection and fire fighting requirements for high-rise buildings in India.

Note: Each unit shall include a brief introduction to the components of National Building Code.

Course Outcomes:

1. Students will understand the importance of services as an integral part of building design.

References:

- "Heating, Ventilating and Air Conditioning: Analysis and Design, 6th Edition", Faye C. McQuiston, Jerald D. Parker and Jeffrey D. Spitler, John Wiley & Sons, 2004.

- “National Building Code of India” -2016
- IS 3534: 1976 “Outline dimensions of electric lifts”
- IS1860: 1980 “Code of Practice for Installation, Operation and Maintenance of Electric Passenger and Goods Lifts.

AR-315: STRUCTURAL DESIGN IV

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
2	1	0	0	3	40	60	100	3hrs

Course Objective:

- To inculcate awareness of the constructional aspects of structural steel and its application in various building components of an industrial building.

COURSE CONTENT:

UNIT	CONTENT
I	General Consideration : Introduction, Loads, Structural steels and their specifications, Structural elements, Steel vs. Concrete and Timber, Design specifications as per IS: 800, Structural layout Plastic Analysis and Design : Introduction to plastic analysis, Concept of Limit load analysis, Plastic analysis of beams using mechanism method, Plastic Design of Beams
II	Introduction to steel Design : Introduction, Bolted Connection & their types, Failure of Bolted Joints, Specification for bolted joints, Bearing Type Connections, Tensile Strength of plate, Strength and efficiency of the joint, Advantages and Disadvantages of bolted connections Introduction of Welded Connection : Introduction, Types of welded joints, Design of welded joint subjected to axial loads, Weld Symbols, Welding Process, Weld Defects
III	Tension Members : Net area, Net effective area for angles, Tees, Design of tension member Flexural Members: Design criteria, Permissible stresses, Laterally supported beams and their design, Web buckling, Web crippling.
IV	Compression Members : Axially loaded columns, Effective length, Slenderness ratio, Allowable stresses, General specifications, Design of axially loaded members Laced and battened columns : Laced and battened columns and their design, Built up compression members, Column splice and its design, Encased columns Column Bases : Introduction, Slab Base, Gusseted base, Column base subjected to moment, Column Cap

Course Outcomes:

1. Students will understand the importance of steel in structural design.
2. Students will learn methodologies related to load calculation in structural design.

References:

1. LIMIT STATE DESIGN OF STEEL STRUCTURES by S.K.DUGGAL, MCGRAW HILL EDUCATION
1. DESIGN OF STEEL STRUCTURES by N SUBRAMANIAN, OXFORD UNIVERSITY PRESS
2. IS:800 (2007) by INDIAN STANDARD CODE FOR GENERAL CONSTRUCTION IN STEEL, BIS NEW DELHI,2008
3. IS:875 : CODE OF PRACTICE FOR DESIGN LOADS FOR BUILDINGS AND STRUCTURES : PART-II : IMPOSED LOADS by BUREAU OF INDIAN STANDARD, BUREAU OF INDIAN STANDARDS (BIS), GOVT. OF INDIA.

AR-316: DISASTER MITIGATION AND MANAGEMENT

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		C	Sessional	End Semester Exam	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

- To let the students understand the type of natural disasters and its effects on structural and non-structural elements.
- To understand the mechanism involved in the management of disasters.
- To create awareness about various issues and challenges pertaining to disasters that impacts the built environment.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction to basic definitions: hazard, risk, vulnerability, disaster, coping capacity factors causing disasters, classification of disasters – natural, manmade, low, medium and high impact overview of disaster management scenario in India.
II	Overview of the impact of various types of disasters on the built environment behaviour of structural and non-structural building components in case of disaster, simulation studies design guidelines and norms for risk reduction for various disaster scenarios site planning, building geometry and form, structural engineering, landscape building repair and retrofitting measures.
III	Earthquake resistant and cyclone resistance measures in design and planning of buildings local practices: traditional regional responses, provisions of national building code earthquake resistant construction details for foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, underground and overhead tanks, staircases and base isolation of structures; introduction to IS codes. Cyclone-resistant buildings: general guidelines.
IV	Disaster management - strategies, policy, framework risk assessment, vulnerability mapping, risk prevention, mitigation emergency preparedness and response, recovery case studies to illustrate the above.

Course outcome:

Students will get aware towards disaster management and risk reduction strategies.

References:

- “Disaster Management in the Hills”, Dr. Satendra, Concept Publishing Company, 2003.
- “Disaster Management”, Harsh K. Gupta, Universities Press, 2003.
- “Natural Hazards and Disaster Management: Vulnerability and Mitigation”, R. B. Singh, Rawat; Reprint edition, 2006.
- "Proceedings of the National Conference on Disaster & Technology, 1998, Manipal, India", Nirmita Mehrotra, 1998.
- “Disaster Risk Reduction in South Asia”, Sahni, Pardeep, Ariyabandu and Madhavi Malalgoda, PHI Learning, 2003.

AR-317: COMPUTER APPLICATIONS IN ARCHITECTURE -1

Teaching Scheme				Credits	Marks			End Semester Viva
L	T	S	P		Sessional	End Semester Exam	Total	
0	0	0	4	2	30	20	50	3hrs

Course Objective:

- Students shall be introduced to various softwares used in architecture for drafting, documentation and representation.

COURSE CONTENT:

UNIT	CONTENT
I	Software application for: <ul style="list-style-type: none"> • Creating a document file, viewing editing and formatting a document, using graphics in a text document, etc. • Report writing • Computation • Presentations
II	Introduction to CAD and related software for <ul style="list-style-type: none"> • 2D tools • Creating Drawings & Using text • Use of Drawing and modify toolbar • Grouping of Objects
III	Introduction to Photos editing
IV	Introduction to 3D Rendering. 3D Rendering, Simulating the Sunlight angle, Adding shadows, Adding Materials and adjusting its appearance, Adding a background scene, Effects with light, Adding Reflections and details with Ray Tracing, Creating and adjusting Texture maps, Adding Landscape and people and Improving your images and editing.

Course outcomes:

- The students shall be able to create two and three dimensional drawings/images using computer aided applications for the purpose of presentation as well as visualization.

References:

- Relevant software manuals, tutorials.

AR-321: ARCHITECTURAL DESIGN - VI

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		C	Sessional	End Semester Exam	
1	0	6	0	10	60	40	100	12hrs

Course Objective:

- The students shall get exposed towards creating ecological sensitive built environment.
- To study design considerations under the broad heading of Barrier Free Environment along with inculcation of various building services.
- The objective of the course is to understand the traditional construction techniques.

COURSE CONTENT:

UNIT	CONTENT
I	Design of recreational buildings: Eco-Resort/Hotel with emphasis on structure and services. (Water supply, Electrification, Acoustics, Air conditioning, Fire-fighting etc.)
II	Design of a multi-storied office-cum-commercial complex.
III	Time Problem : Design spaces of large spans i.e., exhibition halls, pavilions.

Note:

Two design problems and one time problem of 01 week is to be completed in the semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem with reference to the above contents.

Course Outcomes:

1. The students will develop a sensitive approach towards ecology/environment aspects.
2. The students shall learn the implication of various services involving hospitality and retail sectors.

References:

1. Timesavers standards for Building Types.
2. Timesaver standards for Architectural design.
3. Metric Handbook Planning and Design Data.
4. 101 Hotel rooms by Corinna.
5. Hotel Design by Instituto Monsa.
6. Asian resorts by Tan Hock Beng.

AR-322: BUILDING MATERIAL AND CONSTRUCTION - VI

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
1	0	2	2	5	60	40	100	4hrs

Course Objective:

- To train students for preparing construction drawings, detailed drawings, schedules with appropriate linework, dimensioning, formats and presentation.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction to methodology of preparing working drawings, systems of dimensioning, writing specifications, etc. Demonstration of professional working drawings of architects. Preparation of detailed working drawings demarcation plan, foundation plan, grid plan, floor plans, schedules of doors, windows, finishes, levels, Roof plans.
II	All exterior elevations, interior elevations, relevant sections, joinery details.
III	Kitchen detail, toilet detail, staircase detail and wardrobe detail.
IV	Electrical drawings, water supply and sanitary drawings, rain water disposal drawings and its detailing.

Note:

- The students shall bring one of their previous semester's major projects for preparation of working drawing.
- Site Visits to ongoing related construction projects.

Course Outcomes:

- Students will be able to prepare detail drawings of various building components.
- Students will learn to translate the working drawings on site.

References:

- "Construction Planning and Management", U.K. Shrivastava, Galgotia Publications, 2009.
- "Building drawing with an integrated approach to Built Environment", M. G. Shah, C. M. Kale, S. Y. Patki, Tata McGraw-Hill Education, 2002.
- "Building Construction Drafting and Design", John Molnar, Van Nostrand Reinhold, 1986.
- "Building Construction Details", Hans Banz, Van Nostrand Reinhold Co., 1983.
- "Building Construction", Sushil Kumar, Standard Publishers Distributors, New Delhi, 2006.

AR-323: EKISTICS

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

This course intends to develop an understanding the evolution of settlement planning.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Introduction: Meaning and Scope in Relation to town planning and architecture. • Settlement patterns in later periods of history; Changing form and pattern of human settlements in ancient, medieval, colonial and modern India.
II	<ul style="list-style-type: none"> • Planning theories – Neighbourhood theory, central place theory etc. • Role and contribution of the following towards contemporary town planning thought- Ebenezer Howard, CA Doxiadis, Le Corbusier, Frank Lloyd Wright etc.
III	<ul style="list-style-type: none"> • Scope and Content of Master plan , Regional plan and Land-use plan. • Urban Renewal Plan–Meaning, Redevelopment, Rehabilitation and Conservation – Latest government schemes.
IV	<ul style="list-style-type: none"> • Emergence of the metropolitan phenomenon; planning problems of cities and Solutions. • Rural and regional Systems: The rural-urban relationships; Problems of rural systems.

Course Outcomes:

1. Students will learn the development of settlement pattern and current scenario of planning.
2. Students will get acquainted with various planning theories.

References:

1. “Ekistics - An Introduction to the Science of Human Settlements”, C.L.Doxiadis, Hutchinson, London, 1968.
2. “Housing and Urban Renewal”, Andrew D. Thomas, George Allen and Unwin, Sydney, 1986.
3. “Ministry of Urban Affairs and Employment”, Government of India, New Delhi, 1999.
4. “Town and Country Planning”,Patrick Abercrombie, 3rd Edition, Oxford University Press.
5. “Design of Cities”,Edmund N. Bacon, Penguin Books; Revised edition, 1976.
6. “An Introduction to Town & Country Planning”,A.J. Brown andH.H. Sherrard, Angus and Robertson, Sydney, 1969.
7. Town Planning by M Pratap Rao.

AR-324: EARTHQUAKE RESISTANT BUILDING DESIGN

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

To teach the students various terminologies related to Earthquake resistant design, various considerations for structural and non-structural elements, measures and provisions while designing in an earthquake prone zone.

COURSE CONTENT:

UNIT	CONTENT
I	Elementary Seismology: Earthquake occurrence in the world, plate tectonics, faults, earthquake hazard map of India and the states. Causes of earthquake, seismic waves, magnitude, and intensity, and epicentre and energy release, characteristics of strong earthquake ground motion.
II	Introduction to Earthquake Resistant Design of Buildings: Behavior of concrete and steel structures under earthquake loads, terminology used, general principles of earthquake resistant design - ductility, requirements and advantages of ductility, factors affecting ductility, design lateral forces, distribution of design forces along the height of building, seismic coefficient method.
III	Ductility considerations in earthquake resistant design of RCC buildings : Impact of ductility; Requirements for ductility; Assessment of ductility Member/element ductility, Structural ductility; Factor affecting ductility; Ductility factors, Detailing of reinforcement for ductility as per IS: 13920 in beams, columns and beam-column connections; Special confining reinforcement.
IV	Confined masonry: Masonry units, seismic evaluation and retrofit of confined masonry, building model, Structural analysis and design of confined masonry, Design example Introduction to IS: 4326

Course Outcomes:

1. Students will learn the basic knowledge of seismic activity and it's after effects.
2. Students will learn basic design philosophy for earthquake resistant building construction.

References:

1. Earthquake resistant design of structures by Pankaj Agarwal and Manish Shrikhande, Prentice-Hall of India, 2006.
2. Seismic design of reinforced concrete and masonry buildings by T. Paulay and M.J.N. Priestley, John Wiley & Sons, 1991.
3. Elements of Earthquake Engineering by Jai Krishana and AR Chandrasekaran; Sarita Parkashan, Meerut.
4. Manual Published by Earthquake Engineering department, IIT Roorkee / IIT Kanpur
5. IS 13920, IS: 13827, IS: 13828, IS 1893, IS 4326, IS 13920 (latest edition).
6. Good Construction Practice book CBRI 2017.

AR-325: HILL ARCHITECTURE

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

- The objective of this course is to impart a comprehensive knowledge of the vernacular architecture, historical and environmental aspects for building on the hills.
- To understand and appreciate the influence of culture, climate and context on hill architecture.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Historical perspective of hill architecture and its unique attributes and concerns.• Major hill settlements in various regions of the world.• A broad view of traditional hill architecture of medieval European settlements and other places.
II	<ul style="list-style-type: none">• Traditional hill settlements in India.• An overview of vernacular hill architecture of Himachal Pradesh.• Building Types, techniques and materials of vernacular architecture of Himachal Pradesh.• Lessons from vernacular architecture and their time tested indigenous technology.
III	<ul style="list-style-type: none">• Modern buildings on hills in India.• Constraints of climate, topography and availability of materials.• Design factors such as access, circulation, gradients, slope analysis, grading and interpolation of contours.
IV	<ul style="list-style-type: none">• Structural aspects of modern buildings and necessary safeguards.• Environmental and ecological concerns and safeguards.

Course Outcomes:

1. Students will learn the terminology of hill architecture.
2. Students will learn the basic techniques of designing buildings in hilly areas.

References:

- “The Architectural Heritage of Himachal Pradesh: Origin and Development of Temple Styles”, Laxman S. Thakur, Munshiram Manoharlal Publishers, 1996.
- “Environment Protection of Himalaya: A Mountaineer's View”, Aamir Ali, Indus Publishing Company, 1998.
- “The Survival of the Himalaya, Eco-systems- A scenario of Unsustainability”, Sunder LalBahuguna, Tej Vir Singh and M.L.Sharma
- “Himalayan Ecology, Transhumance and Social Organization Gaddis of Himachal Pradesh”, Veena Bhasin, Kamla-Raj Enterprises, 1988.
- “Ecological Hazards in the Himalayas”, S.K. Chadha, Pointer Publishers, 1989.
- “Himachal Pradesh:A perspective”, Ramesh Chauhan, Menerava Book, 1998.

AR-326A: ART AND ARCHITECTURE

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		C	Sessional	End Semester Exam	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

- To introduce the students to art and architectural expressions from prehistoric to modern times, in different cultures around the world.
- To make students aware about importance of art and its appreciation in architecture.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Introduction to application of art in Architecture, purpose of Applied Art, Principles and nature.
II	<ul style="list-style-type: none"> • Paintings, Murals and Sculptures; Materials and techniques study of styles and changing trends in India from ancient times • Decorative elements such as Jali Design; Inlay work; Relief art work; Study of changing needs in different periods- Dravidian, Gandhara, Gupta, Mughal, Rajput; Materials and techniques.
III	<ul style="list-style-type: none"> • Art expression, appreciation and symbolism; two and three dimensional forms; Aesthetic order; functional Importance • Interior and exterior space organization, graphic techniques of communication, form-space relation.
IV	<ul style="list-style-type: none"> • Modern trends in applied art, contribution of science and technology in terms of new materials. • Styles and techniques of modern masters. • Application of colors and textures in sculptures, murals, paintings, fountains etc., psychological effects of colors and textures.

Course Outcomes:

- Students will learn about various art and craft movements influencing architecture.
- Students will appreciate the integration of art in architecture.

REFERENCE BOOKS

- Architecture/ art/ parallels/ connections- barry a. Berkus aia, the image publication group pvt. Ltd.
- “Design fundamentals”, scott r.g.; mcgraw hill, 1951
- “Prebles' artforms: an introduction to the visual arts”, patrick frank, duane preble, sarah preble; pearson college division, 2013
- Architecture: form, space, and order, francis d. K. Ching; john wiley & sons, 2014

AR-326B : BUILDING ECONOMICS & SOCIOLOGY

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

To create awareness among the students regarding management of physical and human resources pertaining to a business organization in general and specific to construction industry.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Nature Of Economics: Introduction, Evolution of Economics, Definition – wealth, welfare, scarcity, Nature and scope of economics, Division of economics, Economics in relation to engineering and other Social Sciences . • Demand and Law Of Demand: Meaning of demand, Kinds of demand, Law of demand, Demand schedule and curve, Limitations of law of demand, Shape of demand curve, Extension Contraction Increase and decrease in demand, Factors affecting demand, Goods and kinds of goods.
II	<ul style="list-style-type: none"> • Economics Related To Building Construction Industry And Real Estate: Need for economic tools, concept of economic efficiency, economic analysis process, construction industry, nature of construction industry in india, problems of changes in demand (sellers’ market to buyers’ market), existing scenario of construction industry/real estate and land market in the metro cities of india, influence of the government policies on the land market and the construction industry, methods of controlling the inadequacies in construction industry/real estate.
III	<ul style="list-style-type: none"> • Indian social structure: Introduction – Varied religion/cultures –varied languages — Rural Urban conflict.
IV	<ul style="list-style-type: none"> • The Indian Village: Introduction – Village types according to their structure --Village forms With respect to Order/Cluster – Caste Hierarchy -Caste and Habitation area in a village – Social structure of a village community – Planning of a typical village house. • The Indian City: Introduction – Emergence of small family pattern -Urban and Suburban life – Disintegration of Joint family –Emergence of Urban societies City life style – Characteristics Of urban population – Social Psychology of urban life – Varied life styles – Planning of a typical urban dwelling.

Course Outcomes:

- Students will learn about role of economics and sociology in architecture.
- Students will appreciate the various aspects of socio-economic structure of society.

References:

- “Modern Economic Theory”, K.K. Dewett and K.K. Bahl, S Chand; Reprint Edition, 2006.
- “Economics for Engineers”, M.L. Gupta, Abhishek Publications, 2000.
- “Microeconomic Theory”, Larry Samuelson, Springer Science & Business Media, 1986.
- “Rural Sociology in India”, A.R.Desai, Popular Prakashan Ltd.; New edition, 2011.
- “The Urban World”, J. John Palen, Oxford University Press; 9thedition, 2011.
- “Models of Urban and Regional Systems in Developing Countries”, George F. Chadwick, Pergamon Press, 1987.
- Indian Economy by Ramesh Singh.

AR-326C: SUSTAINABLE ARCHITECTURE

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

To appreciate the role of natural resources in building construction and maintenance.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> Sustainability Issues Need for sustainable development: population growth, carbon emissions, global warming, climate change, ecological balance, ecological foot prints, Historical background, philosophical basis, social implications Manifestoes: Brundtland report, Agenda 21, Kyoto Protocol, Geneva Convention, Paris agreement, IPCC, Forum for Future, complex rating systems.
II	<ul style="list-style-type: none"> Role of architects: sustainable site, energy (operational and embodied), materials, water and wastes Green, eco, ecological, sustainable, bio-climatic, cradle-to-cradle, biomimicry, restorative, regenerative design Systems Approach: definition of system, types, characteristics, components, behavior, integrated design
III	<ul style="list-style-type: none"> Sustainable Site Planning Site assessment and selection: topography, vegetation, built form, water, access to natural light, local wind patterns and micro climate; Site planning: layout, shape, spacing, orientation, mutual relationship, solar studies, pollution prevention and ecology, heat island effect.
IV	<ul style="list-style-type: none"> Design for environment: Greenfield development, smart growth, brownfield redevelopment strategies and infill development, sustainable urbanism Socially responsible design: user-centered design, design education/ethics and sustainability Case study national and international example.

Course Outcomes:

- Students will learn about role of environment, economy and social aspects in architecture.
- Students will get familiarize with various global issues of sustainability.

References:

- Edwards, B. (2010) Green: Rough Guide to Sustainability, RIBA Publications.
- Kwok, AG & Grondzik, WT (2007) The green studio handbook: environmental strategies for schematic design, Architectural Press, Oxford.
- Owen Lewis, J (1999) A Green Vitruvius - Principles and Practice of Sustainable Architectural Design, James & James.
- Szokolay, S. V. (2008) Introduction to Architectural Science, Architectural Press.
- TERI (2005) Sustainable design manual, Vols 1 & 2, The Energy and Resource Institute (TERI), New Delhi.

AR-326D: ONLINE COURSE

Teaching Scheme				Credits	Marks*			Duration of End Semester Examination*
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	-	-	100	-

Course Objective:

To encourage students to undergo relevant online courses available on recognised platforms.

Note:

- Students shall opt the course from the list approved by the Departmental Undergraduate Committee (DUGC).
- Marks and duration shall be as per the list of courses approved by (DUGC).

AR-327: COMPUTER APPLICATIONS IN ARCHITECTURE -II

Teaching Scheme				Credits C	Marks			End Semester Viva
L	T	S	P		Sessional	End Semester Exam	Total	
0	0	0	4	2	30	20	50	3hrs

Course Objective:

To enable the students for making working drawings .

COURSE CONTENT:

UNIT	CONTENT
I	Preparation of working drawings.
II	Preparation of detail drawings.
III	Rendering of drawings.
IV	3D Modelling.

Outcome:

- Student shall be able to prepare the detail working drawings of various types of buildings,
- Student shall learn 3D modelling and rendering techniques.

References:

- Relevant software manuals

SEMESTER-VII

AR-411: INTERNSHIP/PRACTICAL TRAINING

Teaching Scheme				Credits	Marks			End Semester Viva
L	T	S	P	C	Sessional	End Semester Exam	Total	
0	0	0	26	13	50	50	100	

COURSE OBJECTIVE:

To offer students an opportunity to work in an architect's office and get acquainted with practical aspects of profession.

COURSE CONTENT:

UNIT	CONTENT
I	The professional training shall be for duration of minimum sixteen weeks. During this period, the student shall prepare a report comprising of four section viz., training report, building study/ site supervision, building material study/ critical appraisal and documentation of innovative details.

Note:

- This entire semester will be used for Practical Training which is to be undertaken with an architect registered with the Council of Architecture and should have a minimum professional experience of five years.
- Trainees are required to send a monthly progress report of the work done duly signed by the employer to the college. These reports will be monitored by a faculty member designated as the Practical Training Coordinator.
- A Practical Training Examination/viva-voce will be conducted at the end of the training period, in which the work done by the trainee will be assessed by the jury duly constituted by the School of Architecture.
- Students can also pursue for training outside the Country, under any Architect whose degree is approved by Architect Act 1972 under Schedule (11) Section-14.
- Despite of above guidelines, the Head School of Architecture shall issue necessary guidelines before the commencement of the training semester.

	Evaluation	Weightage
1.	Sessional evaluation (by training office)	
	Training report	50%
2.	End semester evaluation (portfolio)	
	Viva Voice	50%

SEMESTER-VIII

AR-421: ARCHITECTURAL DESIGN-VIII

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
0	0	8	0	12	60	40	100	12hrs

COURSE OBJECTIVE:

To make the students aware of design issues related to problems of Housing complex in context to Site Planning.

COURSE CONTENT:

UNIT	CONTENT
I	Designing & planning of Neighbourhood Unit in urban area or suburbs with respect to: <ul style="list-style-type: none">• Unit orientation and planning.• Cluster formation.• Open space: size, hierarchy & ownership.• Circulation• Integrating building services in a unit cluster and at site level.
II	Designing & planning of Hospital with integration of building services.
III	Time Problem

Note: Two design problems and one time problem of 01 week is to be completed in the semester. The concerned faculty is required to frame a detailed program for each of the above design problems and time problem with reference to the above contents.

REFERENCE BOOKS

- URDPFI norms.
- NBC-2016.

AR-422: ADVANCE CONSTRUCTION TECHNIQUES

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P/D		Sessional	End Semester Exam	Total	
1	0	2	2	5	60	40	100	4 hrs.

COURSE OBJECTIVE:

To introduce students with contemporary advance construction techniques

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Slabs: Introduction to types of special slabs like Filler slab, waffle, coffer and flat slabs. • Shell Structure: Introduction; Dome, thin shell, various materials and techniques involved for the construction like Shotcrete(gunite); ferrocement, • Folded Plate Structure: Introduction, types, applications.
II	<ul style="list-style-type: none"> • Space frames: Introduction, classifications by curvature like space plane covers, barrel vaults, spherical dome and by arrangement like single, double, tripple layered grid, Components like connectors, tubes, Materials used like steel and timber, Advantages and Disadvantages, applications with examples. • Tensile Structure: Understanding the working principles, Various Types Mast Supported, Saddle Roof, Arch Supported, Combinations; Components like special hardware, cable clamps, etc; Advantages and Disadvantages; applications with examples.
III	<ul style="list-style-type: none"> • Curtain walls and Partition walls: • Vertical circulation.
IV	<ul style="list-style-type: none"> • Prefabrication: Applications in various building typologies; Advantages and Disadvantages; Comparison with in-situ construction; examples • Mechanised Construction Systems: Brief introduction and types. Advantages and Disadvantages; examples.

Course Outcome:

- Students shall develop enhanced knowledge in prevalent advance construction techniques.
- Students shall have knowledge of advance mode of circulation with special emphasis on vertical circulation.

Reference Books:

1. Steel Structure and Architecture”, Arne Petter Eggen, Bjørn Normann Sandaker, Whitney Library of Design, 1995.
2. “Structural Analysis and Design of Tall buildings”,Bungale S. Taranath, CRC Press, Florida, 2012.
3. “Handbook of Designing and Installation of services in Building complex”, Highrise Buildings, V.K.Jain, Khanna Tech., 1990.
4. “Building Structures”, James Ambrose, Patrick Tripeny, John Wiley & Sons, 2011.
5. “Handbook of Building Construction” Vol-1&2, MM Goyal, Thomson Press, 2006.

AR-423: HOUSING

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3 hrs.

COURSE OBJECTIVE:

To introduce housing as the prominent building typology for the masses and various aspects to be considered while fulfilling the needs for the same

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Role of Housing in social and economic development of the nation.• Impacts of industrialization and urbanization on housing.• Slums: Introduction; issues Various Government Housing Initiatives: Slum Rehabilitation Act 1995; Slum Upgradation Scheme based on Public Private Partnership(PPP) Model, Rajiv Awas Yojna etc.
II	<ul style="list-style-type: none">• Brief introduction to various Housing Policies over the years• Factors influencing housing sector like land value, economic policy, managing and financing housing projects;• Various Housing Agencies and their Role in housing development.
III	<ul style="list-style-type: none">• Types of Housing, ownership types.• Housing Standards and Regulations: for Urban and Rural Area.• Five Year Plans.
IV	<ul style="list-style-type: none">• Mass Housing and Affordable Housing.• Examples of Low-Cost Housing like Aranya Housing, Indore, etc;

Course Outcome:

- Students shall have developed a wide understanding of housing as a need.
- They shall be better equipped to deal with the requirements for future housing with comprehensive knowledge of prevalent schemes and agencies involved.

Reference Books:

1. Alexander, C. (1977) Pattern language: Towns, Buildings, Construction. Oxford University Press, New York.
2. Chiara, De Joseph et al (1995) Timesavers standard for Housing and Residential development, McGraw Hill Inc, NY.
3. "Mane" A New Initiative in Public Housing, Hudco Publication, New Delhi.
4. Thomas Sowell (2009), "The Housing Boom and Bust"
5. "Housing and Urbanization", Charles Correa, Thames & Hudson, 2000.
6. "Time saver standards for Housing and Residential development", De Chiara, Panero & Zelnik, Tata McGraw-Hill Education, 2009.
7. "Low Cost Housing in Developing Countries", Guru Charan Mathur; For Centre for Science & Technology of the Non-Aligned and Other Developing Countries, Oxford & IBH Publishing Company, 1993
8. Affordable Housing and Public Policy : Strategies for Metropolitan Chicago (Assembly Book); Lawrence B. Joseph (Editor).

AR-424: ENERGY EFFICIENT ARCHITECTURE

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

- To familiarize the students with role of energy in built environment and its efficient use.
- To sensitize students about various energy related codes and guidelines.

COURSE CONTENT:

UNIT	CONTENT
I	Definition of energy and related terms, units of measurements, environmental meters, Standard effective temperature, Adaptive thermal comfort, psychometric process, comfort zone-summer and winter.
II	Energy Efficient Strategies: (i) building layout (shape), (ii) orientation (iii) resistive thermal insulation (iv) capacity thermal insulation (v) reflective thermal insulation (vi) size of windows (WWR), internal and external shading devices, high performance glasses- SC, SHGC, VLT (vii) Minimize infiltration (viii) Mass effect, phase changing material (ix) Direct solar gain-glazed walls, bay windows, sun spaces etc (x) Minimize external air flow, (xi) Promote ventilation-solar chimney, night flush cooling, induced ventilation, (xii) colour of envelope, (xiii) landscaping around building, cool roof.
III	Energy Conservation, Indian Energy Conservation Act 2001 Features, Energy Star Rating of buildings and Equipments, Bureau of Energy Efficiency, Energy Conservation Building Code (ECBC), Energy Building Code, Guidelines: Thermal Insulation, Heating, Ventilation and Air , Conditioning System, Building Lighting Design: Lighting levels, light efficient options, CFL, LEDs, Fixtures, Day lighting timers, Building Energy Management.
IV	Introduction to Building rating systems in India. Detailed study on National Building Code 2016, LEED and GRIHA (Green Rating for Integrated Habitat Assessment), Case study national and international examples. Energy modelling software's overview.

Course Outcome:

- Students shall have knowledge of various forms of energy and there optimum usage
- Students shall get familiarised with energy codes and guidelines.

REFERENCE BOOKS

- “Renewable Energy Sources and Their Environmental Impact”, Shahid A. Abbasi, Naseema Abbasi; PHI Learning Pvt. Ltd., 2004
- “Energy efficient buildings: architecture, engineering and environment”, Dean Hawkes, Wayne Forster; W.W. Norton & Company, 2002 • Indian Energy Conservation Act 2001, GoI
- Energy Conservation Building Code Manual, GoI
- “GRIHA Manuals”, The Energy and Resources Institute (TERI), 2011
- “Energy-efficient Buildings in India”; The Energy and Resources Institute (TERI), 2001 BEE (2007).

AR-425: GEOGRAPHIC INFORMATION SYSTEMS

Teaching Scheme				Credits	Marks			End Semester VIVA
L	T	S	P	C	Sessional	End Semester Exam	Total	
1	0	0	4	3	40	60	100	

COURSE OBJECTIVE:

To make the students aware of design issues related to problems of Housing/ Institutional complex in context to Site Planning.

COURSE CONTENT:

UNIT	CONTENT
I	Basics of remote sensing : Introduction to Remote Sensing, data acquisition and processing, sensor systems, Electromagnetic Radiation (EMR) and its characteristics, Radiation principles, properties of solar radiant energy, atmospheric windows. Interaction in the atmosphere, nature of atmospheric interaction, atmospheric effects of visible, near infra-red thermal and microwave wavelengths, interaction at ground surface, interaction with soils and rocks, effects of soil moisture, organic matter, particles, size and texture, interaction with vegetation, spectral characteristics of individual leaf, vegetation canopies, effect of leaf pigments, radiation geometry.
II	Introduction with GIS: Def. of GIS, essential components of a GIS, difference between GIS and CAD worlds, various GIS packages and their salient features, geographic grid, map projection, coordinate systems.
III	<p>a. Vector data models and Analysis: Vector data and its representation, topological and non-topological vector data, TIN, region, vector data editing and analysis.</p> <p>b. Raster data models and Analysis: Acquiring and handling of raster data storage, function of raster based GIS data analysis.</p>
IV	Engineering applications of GIS: applications of GIS in architecture and planning.

Course Outcome:

- Students shall have knowledge of remote sensing.
- Students shall learn various tools in GIS.

REFERENCE BOOKS

- Remote Sensing and Image Interpretation : T.M. Lillensand and R.W. Keifer
- Principles of Remote Sensing : P.J. Curren
- Concept and Techniques of Geographical Information systems : C.P. Lo
- Introduction to Geographical Information systems : Kang-tsung Chang.
- Geographical Information systems □ A Management Perspective : Stan Aromoff.

AR-426A: VASTU SHASTRA

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

Course Objective:

The subject will prove a major step towards building professional awareness about ancient cultures, traditions, knowledge and implementing these to bring harmony, peace and prosperity for individuals and human society as a whole.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction of Vastushastra: Definition of Vastu Shastra, its importance, scientific Explanation about Vastushastra and Role of Vastushastra in today's life Development of vastu from mythological age to modern age. Vastu purush and his importance in Vastushastra
II	Principles of Vastushastra : Five elements: earth (geomagnetic energy), water (gravitational energy), fire (solar energy), air (wind energy) and space(cosmic energy and its)influence on environment and people.
III	Site selection : Importance of Vastu in selection of size and shapes of open plots, residential, commercial and industrial places. Landscape design with placement of specific plants that affect our lives.
IV	Implementation of Vastu concepts in building design: Positive and negative effects of placements according to the energy field. Review of various proposal applying Vastu-Shastra concepts and submission of drawings.

Course Outcomes:

- Students will be able to design according to Vastu considerations for particular site.
- Students shall appreciate Vedic influence of Vastu in Indian architecture.

References:

1. Vastu : To create Harmonious homes by Ashwini Kumar Bansal.
2. Vastu Shastra: for a Healthy, Prosperous and Happy life by [Ashish Jain Nidhi Jain](#).
3. Introduction to Architecture and Town Planning with Vastu Shastra by Er. R.P. Kushwah.

AR-426B: BUILDING BYE-LAWS

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

To familiarize the student with the regulatory system of construction on site.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction to building bye laws and related terminologies to regulations, Importance and benefits of building regulations.
II	Standards for buildings: Residential, Commercial, Industrial, Public and institutional buildings. Building by-laws of local authority, Local/regional and global case studies on planning and implementation mechanism- building bye laws, development controls and zoning regulations, Provisions of regulations as per National Building Code 2005
III	Regulatory types and their advantages and disadvantages, Role of Regulatory structure and Legislative process Enforcement criteria and detailed Technical requirements in development of effective regulations, Regulatory assessment and revision schedule.
IV	Various national standards, guidelines and regulations in India.

Course Outcomes:

- Students will be conversant with various terminologies of building bye laws and regulations
- Students shall have knowledge of various code provisions for planning of infrastructure.

REFERENCE BOOKS

- “Town and Country Planning”, Abercombie P, 3rd Edition, Oxford University Press, 2004
- “Urban and Regional Planning in India: A Handbook for Professional Practice”, SK Kulshrestha
- “The Urban Sociology Reader”, Jan Lin, Christopher Mele, 2003
- “National Building Code 2005”, BIS India
- “UDPF Guidelines”, Ministry of Urban Affairs and Employment, GoI.

AR-426C: INTELLIGENT BUILDINGS

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

To familiarize the student with the concept of intelligent buildings.

COURSE CONTENT:

UNIT	CONTENT
I	Introduction to Intelligent Buildings ; Terminologies and definitions. Defining intelligent buildings for Asia. Understanding how intelligent building works. Interfacing with intelligent buildings.
II	Understanding the concept of Energy efficient buildings; Green Buildings; Smart buildings and Intelligent buildings. Need and demand for intelligent buildings. Introduction to energy management in building.
III	Understanding building material and automation. Factors and evaluation criteria for Intelligent buildings.
IV	Future of intelligent buildings. Case study and examples.

Course Outcomes:

- Students will understand the concept of intelligent buildings, need and importance.
- Students will be able to evaluate parameters for selection of smart buildings.

REFERENCE BOOKS

- 21st Century House- Bell ,J, Laurence King Publishing
- Materials for Architectural Design- Bell, Victoria Ballard, Laurence King Publishing
- Building a New Milleneum- Jodidio, P, Vol.1, Taschen
- Architecture Now- Jodidio, P.Vol. 2, Taschen
- Future city Experiments and Utopia in Architecture.

AR-426D: ONLINE COURSE

Teaching Scheme				Credits	Marks*			Duration of End Semester Examination*
L	T	S	P		Sessional	End Semester Exam	Total	
3	0	0	0	3	-	-	100	-

Course Objective:

To encourage students to undergo relevant online courses available on recognised platforms.

Note:

- Students shall opt the course from the list approved by the Departmental Undergraduate Committee (DUGC).
- Marks and duration shall be as per the list of courses approved by (DUGC).

SEMESTER-IX
AR-511: ARCHITECTURE DESIGN VIII

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
0	0	8	0	12	60	40	100	18hrs

COURSE OBJECTIVE:

To introduce Urban Design as a tool or language to understand or develop a public space

COURSE CONTENT:

UNIT	CONTENT
I	Design an urban design scheme for any urban problem with emphasis to contextual issues. Design & plan of Urban agglomeration, Urban Haat etc.
II	Design of a Transport Terminal, Convention centre etc.
III	Time Problem: Design of Public open space/streetscape.

Course Outcome:

Upon completion of the course, the student shall have achieved a comprehensive understanding of various aspects in the field of urban design. The course shall prepare the students to gain understanding of the prevalent issues and develop skills to design a better public space.

Reference Books:

- Urban Development and Housing in India 1947-2007 by Rishi Muni Diwedi.
- Urban Shock by Yuresh Sinha
- Urban Planning Problems by Cherry.
- Urban Pattern city planning and design by Galliaon.
- “Urban Design: Street and Square, J. C. Moughtin, Architectural Press ,Third Edition”, 2003.

AR-512: RESEARCH METHODOLOGY

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

To appreciate the process of research and make the students aware of its potential in the field of architecture.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Research area identification.• Research aim, objective and various terminologies.• Formulation of synopsis.• Formulation of methodologies.
II	<ul style="list-style-type: none">• Literature sourcing and research, literature study, referencing.• Field study planning, surveys, data collections.• Data types and structure.
III	<ul style="list-style-type: none">• Data analysis, results and discussion• Interpretation of research results• Presentation of research results
IV	<ul style="list-style-type: none">• Compilation and drawing of conclusions• Recommendations for future scope.

Course Outcome:

Students shall get familiarised with universal research procedures

Students will also learn how to analyse research data

Reference Books:

- “Research : How to Plan, Speak and Write about it”, C. Hawkins & M. Sorgi, Springer-Verlag, 1985.
- “Research Methodology” ,Rajagopalan, Mathews and Ramamurthy
- Kothari, C R (1990) Research Methodology: methods & techniques, 2nd edn, Wishwa Prakashan, New Delhi.

AR-513: URBAN DESIGN

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

- To introduce Urban Design as a tool/language to understand/develop public space.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> History and Origination of Urban Design Urban Design Meaning, Principles, Elements, Vocabulary like edges, street, Plaza, landmark, node, districts, Urban Agglomeration, Morphology etc. Scope of Urban Design
II	<ul style="list-style-type: none"> Importance of People and Context : Various Layers for Context analysis, regional study and project understanding Factors influencing urban design like economy, politics, culture, religion and region. Various Scales: Street Level, Neighborhood level, City Level, Regional Level
III	<ul style="list-style-type: none"> Understanding the difference: Urban Planning and Urban Design, Role of Various Stakeholders involved like, Politician(for public), Developer, Activists, Planner, Architects etc. and Agencies like Ministry of Urban Development, Urban Local Bodies, Municipal Corporation, Town and Country Planning Department, Himachal Pradesh Urban Development Funds, etc Introduction to Various Components of Urban Design Guidelines: Glimpse of , UTTIPEC, URDPFI.
IV	<ul style="list-style-type: none"> Urbanization in Himachal Pradesh: Trends, Comparative Picture, Introduction to Smart City Concept. New Urbanism: Understanding the concept, basic principles and some examples. Design Exercise: An Intervention and Formulation of Urban Design Guidelines for a small urban area or patch.

Course Outcome:

- Student shall achieve a comprehensive understanding of various aspects of urban design.
- The course shall prepare the students to gain understanding of the prevalent issues and inculcate the skills to design a better public space.

Reference Books:

- “The Image of the City”, Kevin Lynch, The MIT Press, First Edition, 1960
- “The Urban Pattern: City Planning and Design”, Arthur B. Gallion & Simon Eisner, Van Nostrand, Second Edition, 1963
- “People Places : Design Guidelines for Urban Open Space”, Clare Cooper Marcus & Carolyn Francis, Van Nostrand Reinhold Company, First Edition, 1990
- “Urban Design : Green Dimensions”, J.C. Moughtin & Peter Shirley, Architectural Press, First Edition, 1996
- “City Planning : Arco colour
- “Urban Design: Green Dimensions”, J. C. Moughtin & Peter Shirley, Architectural Press, First Edition, 1996

- “A New Theory of Urban Design (Center for Environmental Structure Series, Vol 6)”, Christopher Alexander, Hajo Neis, Artemis Anninou & Ingrid King, Oxford University Press, 1987
- “The Urban Design Handbook: Techniques and Working Methods” ,Ray Gindroz, Urban Design Associates,2003
- “Urban Design: Street and Square, J. C. Moughtin, Architectural Press ,Third Edition”, 2003
- “Urban Spaces, No. 4”, John Dixon, Visual reference publication, 2006
- “People Places: Design guidelines for urban open spaces”, Clare Cooper Marcus, Carolyn Francis (Eds.), John Wiley & Sons, 1998.

AR-514: PROJECT MANAGEMENT

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

To let the students understand the onsite problems related to building construction and causes of delay in construction, as well as to inculcate the skills as a team manager.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Aim, objectives and functions of Construction Management.• Construction stages, Construction team• Role of an architect in construction management.• Management techniques and tools.
II	<ul style="list-style-type: none">• Bar charts and limitations of bar charts.• Program Evaluation and Review Techniques (PERT)• Critical Path Method (CPM) for project management• Development and analysis of CPM net work
III	<ul style="list-style-type: none">• Cost time analysis in network planning• Scientific methods of construction management.
IV	<ul style="list-style-type: none">• Project management for repetitive types of buildings. Line of balance method – its working knowledge with exercises. □ Resources scheduling methods through Bar charts, CPM and Line of Balance method. □ Inspection and quality control. □ Safety in Construction.

Course Outcome:

Upon completion of the course, the student shall have achieved a comprehensive understanding of various aspects in the field of urban design.

The course shall prepare the students to gain understanding of the prevalent issues and develop skills to design a better public space.

Reference Books:

- Construction Planning and Management – U.K.Shrivastava
- Total Construction Project Management – George J Ritz

AR-515: BUILDING INFORMATION MODELLING

Teaching Scheme				Credits C	Marks			Duration of End Semester Examination
L	T	S	P		Sessional	End Semester Exam	Total	
1	0	0	4	3	40	60	100	3hrs

COURSE OBJECTIVE:

- This course aims to make the participants productive by giving them the ability to produce drawings and redefine images of buildings.
- It will help you navigate user interface, architectural objects such as floor, walls, roofs, windows, and stairs.
- This course will assist in the creation of schematic design through construction documentation.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Introduction to building information modelling• Exploring User Interface
II	<ul style="list-style-type: none">• Working with building elements• Conceptual modelling using massing• Presenting the model of building
III	<ul style="list-style-type: none">• Creating building components.• Using editing commands for adding walls
IV	<ul style="list-style-type: none">• Managing view, documentation and schedules• Controlling visibility of object.• Exercise/modelling using BIM.

Course Outcome:

The student will be able to design and use building information modelling.

Reference Books:

Relevant software guides.

AR-516 A: ARCHITECTURE CONSERVATION

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

- To equip students to deal with Architecture conservation, along with the related design issues of existing Architecture, old Monuments, and natural and urban heritage areas.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> Understanding Heritage- types, need and purpose. Defining Preservation , Conservation, Restoration and Adaptive reuse. Distinction between Architectural and Urban Conservation. History of Conservation Movement, International agencies like ICCROM , WMF, THF, Prince Claus Fund, UNESCO and their role in Conservation, World Heritage Sites , Selection criteria. Ethics of Conservation , Significance and Value Assessment.
II	<ul style="list-style-type: none"> Monument Conservation and the role of Archaeological Survey of India Role of INTACH, Central and State government policies and legislations, inventories and projects- select case studies of sites such as Champaner, Ahmadabad, Delhi, Hampi- Issues of conservation. Listing of monuments, documentation of historic structures, assessing architectural character.
III	<ul style="list-style-type: none"> Importance of old and new materials in conservation. Understanding different techniques of cleaning, repairing and preservation. Modern cleaning techniques like sand blasting, laser cleaning and chemical cleaning of buildings and sculptures.
IV	<ul style="list-style-type: none"> Different case studies for architectural conservation and adaptive reuse in India and across the globe.

Note: Site visits to local monuments and conservation projects.

Course Outcome:

- Student shall be able to understand importance and significance of conservation of historical monuments.
- Students shall be exposed to various terminologies and process involved in architectural conservation.

Reference Books:

- Architecture in Conservation: Managing Development at Historic Sites (Heritage: Care Preservation-Management) –James Strike
- Protection, Conservation and Preservation of Indian Monuments- Shanti Lal Nagar
- Architectural and urban conservation- Santosh Ghosh, Ranajit Gupta, Sumita Gupta
- History of Architectural Conservation- Jukka Jokilehto

AR-516 B: APPROPRIATE BUILDING TECHNOLOGIES

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none">• Introduction to appropriate technology.• Need for energy saving eco-responsive sustainable development issue.• Need for alternative technology
II	<ul style="list-style-type: none">• Affordability factors• Appropriate basic resources for construction activity composition of building material & labour component
III	<ul style="list-style-type: none">• Appropriate technology criteria for selection.• “low cost” technology.• Concept of ecological footprint.
IV	<ul style="list-style-type: none">• Alternative- appropriate technology.• Appropriate technology aspects philosophical need.• Technology evolved by research and development institutions.

Course Outcome:

- Students will learn about using efficiently the building materials .
- Students will appreciate environment-friendly technologies.

Reference Books:

- Vernacular traditions and contemporary architecture by Ashwarya Tipnis.
- Houses: how to reduce building costs by Laurie Baker.
- Mud by Laurie Baker.
- Rural house plans by Laurie Baker.
- Cost reduction for primary school buildings by Laurie Baker.
- A manual of cost cuts for strong acceptable housing by Laurie Baker.

AR-516 C: BUILDING MAINTENANCE

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

- This course aims to make the participants productive by giving them the ability to produce drawings and redefine images of buildings.
- It will help you navigate user interface, architectural objects such as floor, walls, roofs, windows, and stairs.
- This course will assist in the creation of schematic design through construction documentation.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Introduction and principles of building maintenance - terminologies, objectives, classification of building maintenance. • Building deterioration and design considerations economic considerations in building maintenance.
II	<ul style="list-style-type: none"> • Foundation and substructures defects. • Foundation rehabilitation methods: shoring and underpinning. • Dampness in buildings and its maintenance. • Cracks in building and repairing structural and non-structural cracks, bulging and leaning of walls Surface protection
III	<ul style="list-style-type: none"> • Maintenance of water supply systems at unit level and city • Standards of World Health Organization, Central Public Health Engineering and Environment Organization (CPHEEO), Public Health Engineering Department (PHED) at State level, Municipal Corporation level . • Maintenance of sewerage system at unit level and city
IV	<ul style="list-style-type: none"> • Maintenance of mechanical and electrical systems in buildings. Repair and Rehabilitation of distressed structures (Repair and Retrofitting) Computerized Maintenance Management Exemplars study

Note: Site visits to local monuments and conservation projects.

Course Outcome:

- Student shall be able to understand importance and significance of conservation of historical monuments.
- Students shall be exposed to various terminologies and process involved in architectural conservation.

Reference Books:

- BRE (1991) Housing Defects reference Manual, The Building Research Establishment, Chapman and Hall.
- Chudley, R (1981) The maintenance and adaption of buildings, Longman, New York.
- CPWD (2001) Maintenance Manual, Central Public Works Department, New Delhi.
- CPWD (2002) Handbook of RCC, Central Public Work Department, New Delhi.
- Eldridge, H. J. (1976) Common Defects in Buildings, Her Majesty's Stationery Office, London.

- NBA (1983) Common Building Defects - Diagnosis & Remedy, National Building Agency, UK.
- Panchdhari, A. C. (1998) Maintenance of Buildings, New Age International (P) Limited Publishers, New Delhi.
- Ransom, W H (1981) Building Failures: Diagnosis and Avoidance, Spon Press.
- Richardson, B., (1995). Remedial Treatment of Buildings. 2nd Edition, London: Architectural Press.
- Sharma, G (2006) Building Repair and Maintenance Management, CBS Publishers.
- Wood, B. (2003) Building Care, Blackwell Science.

AR-516 D: ARCHITECTURE JOURNALISM AND PHOTOGRAPHY

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

This course covers topics on in the photography in relation to Architecture & Journalism. The objective of the course is to make students aware about importance of visually analyzing the architecture and its interpretation through journalism.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Definition of journalism, theories of journalism, techniques and processes • Appreciation of journalism in architecture, mediums, techniques. • Digital journalism, architecture, arts and journalism / media.
II	<ul style="list-style-type: none"> • Writing original reports on design projects/buildings/complexes etc. • Works of Indian and international writers and critics will be presented and discussed. Seminars on Indian architectural writers, journalists and critics.
III	<ul style="list-style-type: none"> • General introduction to the art of photography; concept of color; concepts of lighting, distance, visual angle, Frames; media; • Types of camera, properties and priorities; Exposure, Aperture, Speed; Photographic films, Film processing color, black and white, printing techniques, developing. • Significance of the visual medium in architectural journalism.
IV	<ul style="list-style-type: none"> • Organizing material for publication in newspapers, magazines, research journals etc • Photo Journalism, Captioning pictures, programmes and events Ethics and legal issues in journalism, Copy right issues, plagiarism. • Exercise on integrating photography in architectural journalism.

Course Outcome:

1. Students shall be conversant with various terminologies to journalism in Architecture.
2. Students shall learn various techniques of photography.

Reference Books:

- [Mies van der Rohe: Photographs by Yoshihiko Ueda.](#)
- [LC FOTO: Le Corbusier Secret Photographer](#) TIM BENTON
- [The Images of Architects](#) VALERIO OLGIATI
- [Composing Space](#) HÉLÈNE BINET

AR-521: ARCHITECTURAL DESIGN THESIS

Teaching Scheme				Credits	Marks			End Semester Viva
L	T	S	P	C	Sessional	End Semester Exam	Total	
0	0	8	6	15	60	40	100	

COURSE OBJECTIVE:

This thesis aims to provide students the opportunity to prove that they have acquired adequate ability to handle in totality all stages and phases of an architectural project thereby giving proof of their preparedness to take on the responsibilities of a professional architect.

The Thesis is expected to demonstrate: • Understanding of research methods appropriate to the field of study • Critical investigation of the subject of research • Independent and original contribution to existing body of knowledge.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Stage I (Synopsis) - Introduction, Validity, Aims & Objective, Methodology, Site Conditions and tentative space requirement. • Stage II - Synopsis, Case Studies, Data Analysis, Library study and Framing of the requirements, Design philosophy. • Stage III – Concept, Preliminary design proposal and conceptual model. • Stage IV – Pre-final design proposal, detailed drawings showing any two of the following services: Air-conditioning, Landscape, Structure, Interior detailing, Water supply & Sanitation or any other detail. Spiral bound report. • Stage V – Final design proposal along with model/views, to be evaluated by external examiner. Hard Bound report.

Note:

<ul style="list-style-type: none"> • Thesis project will be independent personal endeavor under the supervision of an academic supervisor. Thesis subject highlights a candidate's interest and showcase his / her academic and professional strengths. • Students can identify a number of topics of their interest, however the final topic shall be approved after consultation with the Head and faculty/supervisors. • The thesis project shall articulate thesis topic, aim and objectives, scope, methodology, validity within the following framework: <ul style="list-style-type: none"> ○ The topic should meet the academic curriculum objectives. ○ The topic should include all relevant data for the purpose of pre-design study and analysis. ○ Topic must be of a valid scope & within the self-assessed capability of the student. ○ It must have relevance to the contemporary context.
<ul style="list-style-type: none"> • Students should formulate detailed Architectural Programme of the thesis topic allotted to him/her by using an analysis of existing literature, exemplar study (primary and secondary sources), relevant standards etc. • Analyze site attributes, site zoning, develop alternative design concepts of the thesis topic. • Students shall meet the thesis supervisor at least fortnightly.
<ul style="list-style-type: none"> • The Supervisor will be drawn from the core faculty of the Department. • A group of students will be allocated to each Supervisor whose consent for their respective Thesis subjects is necessary. • The Supervisor is expected to guide the student during the course of the thesis project through scheduled meetings on a weekly basis. • Thesis shall include the submission and presentation of the student's work through a report (including relevant drawings to appropriate scale), presentation drawings and models. The

thesis report shall be well structured document of not more than 10000 words with clear objectives and well-argued and appropriate conclusions.

Course Outcome:

Students shall learn a methodology of handling project independently.

Students shall develop various presentation skills to illustrate/explain his/her design.

Reference Books:

- Archiving - Architectural thesis - Council Of Architecture
- ARCHIPRIX INTERNATIONAL

AR-522: PROFESSIONAL PRACTICE AND ETHICS

Teaching Scheme				Credits	Marks			Duration of End Semester Examination
L	T	S	P	C	Sessional	End Semester Exam	Total	
3	0	0	0	3	40	60	100	3hrs

COURSE OBJECTIVE:

- Introduction to the professional, vocational and legal aspects of architectural practice and profession.

COURSE CONTENT:

UNIT	CONTENT
I	<ul style="list-style-type: none"> • Architectural professional association, its role and responsibilities. • Council of Architecture – its role and responsibilities • Introduction of Architects Act 1972.
II	<ul style="list-style-type: none"> • Code of professional conduct. • Condition of engagement and scale of professional fees. • Copyright Act as applicable to architectural work. • Architectural competitions.
III	<ul style="list-style-type: none"> • Contract –Types, Preparation of contract documents general conditions of contract, interim certificates defect liability period, retention amount and virtual completion. • Duties and liabilities of architects, contractors. • Articles of agreement, execution of work payment and Arbitration. • Tenders – types and the process of calling, security and selection system.
IV	<ul style="list-style-type: none"> • Human Values and Professional Ethics. • Office organizations and management, Role of design staff and supporting managerial staff; Personal management.

Course Outcome:

- Students will learn the importance of Architects Act 1972.
- Students shall be conversant to various terminologies of professional practice.

Reference Books:

- Apte, V. S. (2008) Architectural Practice and procedure, Pillai College of Architecture, Mumbai.
- Banerjee, D. N. (1998) Principles and Practice of Valuation, 5th ed. Eastern Law House, Calcutta.
- Council of Architecture (2013) Directory of Architects and Architectural Firm, Council of Architecture, New Delhi.
- Council of Architecture (2013) Handbook of Professional Practice, Council of Architecture, New Delhi.
- Greenstreet, R., Chappell, D. and Dunn, M. (2002) Legal and Contractual Procedures for Architects, Architectural Press, London.
- Krishnamurthy, K G and Ravindra, S V (2014) Professional Practice, PHI Learning Pvt. Ltd.

- Namavati, Roshan (1991) Theory and Practice of Valuation, Laxmi Book Depot, Mumbai.
- Namavati, Roshan (1993) Professional Practice, Laxmi Book Depot, Mumbai.
- The Indian Institute of Architect (1988) Handbook of Professional Practice, Architects Publishing Corporation, Bombay
- Wills, Arthur (1974) The Architect in Practice, Crosby Lockwood Staples, London.