Uttarakhand Tech. University, Dehadun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 501 ARCHITECTURAL DESIGN – V

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
1	-	8	9	100	100	50	250	6 Hours

OBJECTIVES

- Understanding design as a function of specific agenda such as site conditions, orientation, climate, circulation and essential services with design limited of low – rise buildings.

CONTENTS

Designing with climate : Design exercises related to multi-functional buildings with specific agenda of peculiar climate, hot and dry, hot and humid, and cold to very cold, conditions.

Site constraints and Architecture : Design exercises on sloping terrain with specific orientation and views on peculiar sites. Suggested studio exercises: lowe-rise houses. Tourist resorts, holiday inns, artist's house, shopping malls etc or more advanced such as auditoriums, library, offices, commercial complexes etc.

METHODOLOGY

- Prototype studies may be done in groups of 3 – 5 students.
- Slide lectures on similar projects.
- Design time problems between major studio programs to prepare students for examinations.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 502 CONSTRUCTION & MATERIALS – V

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
1	-	6	7	100	50	50	200	3 Hours

OBJECTIVES

- To introduce and familiarize the students with constituents, manufacturing process / availability, properties / characteristics, defects, classifications, treatments, preservation and uses of traditional building materials used in construction.
- To understand the use of these traditional building materials in simple building works.

CONTENTS

MATERIALS

Gypsum Products	:	Introduction – Gypsum Board, Suspended Ceiling (Boards & Tiles), Gypsum Plaster, Components and Accessories, Jointing and Finishing.
Metals	:	Ferrous – Iron (Pig, Cast & Wrought), Steel Structural, Sheet and Alloys Non Ferrous – Aluminum.
Materials with special reference to interiors	:	Floor Coverings Wall Finishes Ceiling Finishes Window Dressings Fabrics / Upholstery Hardware

CONSTRUCTION

Structural Steel Works	:	Typical metal joinery (mechanical (riveted & bolted) soldering and brazing and welding. Detailing of structural steel work – beam to column joint, beam to beam joint. Column Splice, Column Base, Roof Truss to column joint.
Doors, Windows & Partitions (Metals)	:	L and Z section mild steel, Pressed steel section. Aluminum section.
Partitions & False Ceilings (Gypsum Board)		(Construction details of Metal Sand Partition single layer) Suspended Ceilings.

APPROACH

- The students would be familiarized with vernacular terminology prevalent in this part of the country.
- The emphasis will be on construction details as applicable to Indian conditions.
- Site visits and market surveys will be integral part of sessional work.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 503 ARCHITECTURAL STRUCTURES – V

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
2	2	-	4	-	50	50	100	3 Hours

OBJECTIVES

- To understand the analysis of intermediate structures and their use in field in greater.
- To understand the use of these traditional building materials in simple building works.

CONTENTS

- Properties of concrete and reinforcing steels, and it's specifications. Allowable stresses.
- Simple Theory of Bending for RCC beams (elastic theory), shear, stresses diagonal tension and bonds. Development length. Torsion effect on RCC beam.
- Theory & design of single reinforced, Doubly reinforced, L& T beams.
- One way, two way and flats slabs.
- RCC columns for Pure-axial load, lateral ties, Direct and bending stresses combined.
- Element of pre-stressed concrete principles and systems, loss of pre-stress analysis of stresses and design of beam.

APPROACH

- The lectures by the experts in the field of design and analysis will be arranged to make student's exposure to practical aspect of design.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 504 HISTORY OF ARCHITECTURE

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
2	1	-	3	50	50	-	100	3 Hours

OBJECTIVES

- Understanding of the period in terms of its location, climate as well as the socio-cultural, historical, economic and political influences of the time.
- Study of the building "types" and the development of architectural form and character passed on the developments in construction and technology exemplified through specific building examples that identify the works of the period.
- Understanding the intentions of the period and architects as a solution to the need or demands of the period.

CONTENTS

- **Greek Architecture**: Classical Orders and constituent element of Architecture. Column Orders and the articulation of temples. Classification of temples, Geometry and symmetry of individual buildings and their relationship with others based on different organizing principles and conditions of site. Study of important acropolis, agora, temples, theatres, tombs and house forms.
- **Roman Architecture :** Multiple building types to correspond and the complex social functions and structure. Complex axial organizations of Forums. Concrete and construction of walls, vaults and domes. Use of Classical Orders in surface articulation. Study of important forums, temples, basilicas, thermaes, theatres, amphitheatres, circuses, tombs, triumphal arches, palaces, houses and villas.
- **Early Christian Architecture :** Development of early church from Roman basilica. The concept of center and path of Christianity manifested through centralized and longitudinal church. Interiority of churches and the articulation of interiors to create spiritualized space. Study of different basilicas churches in Italy.
- **Byzantine Architecture:** Centralized in Byzantine churches. Centrality and interiority of both cross domed and cross in square planned church. Indistinct exteriors of churches and the domed 'heavenly' interior. Construction of dome over polygonal compartments through the use of pendentives. Study of important churches in Constantinople.
- **Romanesque Architecture :** Massiveness and verticality of medieval churches. Combination of the five towered structures and longitudinal basilica. Gradual integration of tower from early to later examples. Integration of centralized and longitudinal plans. Articulation of external wall like arcaded interiors resulting in dematerialization of exterior. Study of important cathedrals and churches from Italy and France.
- **Gothic Architecture:** Continued integration of centralized and longitudinal plans. Spatial and formal integration of Romanesque churches. Integration of wall and vault. Ribbed vault and the dissolution external wall to allow light. Sensitivity to light and use of stained glass for mysterious interiors. Need and development of different external buttressing. Study of important cathedrals and churches in France.

- **Renaissance Architecture :** Break with medieval churches for sources from Roman antiquity. Spatial centralization through simple addition of independent spatial elements. Use of elementary geometrical forms unified through symmetry and simple mathematical ratios. Reintroduction of anthropomorphic Classical Orders. Study of palazzos and development of centralized church form through specific examples form Italy.
- **Mannerism :** Conflict and tension in Mannerism in place of harmony and order of Renaissance. Dynamic interplay of contrasting elements as against static addition of independent units of Renaissance church. Interplay between manmade and nature in villas. Dynamism of urban spaces. Centralized longitudinal and the elongated central church plans. Study of important villas, churches and urban spaces in Italy.
- **Baroque Architecture:** Dynamism and systemization of Baroque architecture. Vitality and spatial richness with underlying systematic organization. Space as constituent element of architecture, as a complex totality and indivisible figure, comprising of interacting spatial elements based on inner and outer forces. Sensitivity to effects of texture, color, light and water. Study of important urban spaces and churches in Italy and Germany.

METHODOLOGY:

- Lectures to be specifically conducted with the visual aids and seminars presented by students.
- Students will make written assignments and seminar presentations on architectural characteristics that identify the building types and the intentions of the period in responses to context and time.
- Students will make free-hand sketches and orthographic Drawings in the tutorials of specific building examples of familiarize them with the architectural character that identifies the work of a particular period.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 505 INTERIOR DESIGN

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
1	-	3	4	50	50	50	100	3 Hours

OBJECTIVES

- To initiate students into theory and practice of Interior Design.

CONTENTS

THEORY

- Principles of Interior Design and their application
- Elements of Interior Design – Space, Light and Illumination, Colour, Texture, Furniture (movables & built-in), Fittings and Fixtures.
- Understanding the furniture works of Great Masters.
- Modern trends and contemporary attitudes to Interior Design e.g. Modular furniture, Modern materials

STUDIO

- Furniture design exercises.
- Design of a small interior space e.g. Entrance Hall, Conference Room, Executive's office, Study Room, Kitchen, Toilet etc.
- Making estimates for the designed projects.

METHODOLOGY

- Courses would the covered through lecturers and seminars by the students.
- Regular studio work for total grasp.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. ARCH. (Third Year) SEMESTER – V
AR – 506 BUILDING SERVICES (ELECTRICAL)

Schedule of Teaching and Examination								Examination Duration
L	**P/TV**	**ST**	**TOTAL**	**S**	**T**	**P/V**	**TOTAL**	
1	1	-	2	-	50	-	100	3 Hours

OBJECTIVES

- The course intends to integrate the knowledge of electrical services in buildings and to enable a student to take the appropriate decisions at the planning stage from electrical services point of view.
- To make the student familiar with the design principles and applications of light for indoor and outdoor requirements.

CONTENTS

Section – A
ILLUMINATION

- Terminology in illumination, definitions and units; and its characteristics – propagation, reflection radiation, transmission, absorption; light and vision, colours.
- Types of illumination schemes of lighting schemes: Methods of lighting calculations – Light flux method and Point to Point method.
- Sources of light, types and characteristics.
- Interior and Exterior Lighting : Residential, Commercial, Industry lighting, Flood lighting, Street lighting.

Section B

ELECTRICAL INSTALLATION

- Basic principles of electrical circuitry, definitions and units, NBC.
- Wiring Systems: System of supply & distribution; Methods of wiring – joint box and loop-in; Systems of wiring – Batten, Capping and Casing, conduits open and concealed, Circuits- Series and parallel, Simple circuits load calculation and wiring diagrams.
- Wiring Material and Lighting Accessories: Wires and cables – materials, types, sizes, specifications, Main switch, M.C.B. Distribution Board, Meter, Lighting accessories-switches, ceiling rose, socket outlets, plugs, lamp holders.
- Design Considerations of electrical installations : Protector against overload, short-circuit, earth fault, lightning protection, Earthing-methods of earthing. Fuse and types of fuses, Guidelines for installation of lightings.

APPROACH

- Site visits to existing facilities showing indoor and outdoor lighting and electrical services so as to give them exposure to practical aspects.
- Exercises representing services in drawing should be given.

Uttarakhand Tech. University, Dehradun
Faculty of Architecture

B. Arch. Third year SEMESTER V
AR – 507 COMPUTER APPLICATIONS TO ARCHITECTURE.

Schedule of Teaching and Examination — Examination Duration

L	P/TV	ST	TOTAL	S	T	P/V	TOTAL	
1	3	-	4	50	-	50	100	3 Hours

OBJECTIVES

- To develop an understanding of software assisting in 3-Dimentional design.
- Introduction to the use and application of internet.

CONTENTS

Understanding AUTOCAD 3-Dimentional drawing, learning to place elements in 3-D view of a predesigned space.

a. Creation of 2D, 3D surface and solids.
b. Introduction to UCS, view ports, 3-D views and 3-D orbit.
c. Internet Compatibility.

Using 3-D MAX 3-D Max and other related software for developing exterior and Interior surfaces and spaces and creating walkthroughs using camera, light and assigning materials.

a. Introduction to animation.
b. Animation of still life.
c. Introduction to modeling.
d. Introduction to materials and mapping.

i) Assigning material.
ii) Creating Transparencies.
iii) Mapping and mapping co-ordinates.

e. Introduction of lighting
i) Lighting effects.
ii) Shadow maps.

f. Rendering using active shades and depth of field.

Setting up an INTERNET Connection:

- Introduction to Internet Explorer and web Browsers like Netscape.
- Finding Information on the web.
- Browsing and Working Offline.
- Security Aspects of Internet.
- Printing and Saving Information.