

**Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal**  
**BACHELOR OF ARCHITECTURE**

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VII Semester (CBGS) For batches admitted in July,19 (w.e.f. July, 2019)

S. No .	Subject Code	Subject Name	Category	Maximum Marks Allotted					Total Marks	CT HR S.	Contact Periods per week			Total Credits
				Theory Slot			Practical Slot							
				End Sem.	Mid Sem .	Quiz/ Assignment	End Sem.	Lab work & Sessional						
1	AR411	Architectural Design – VII	DC- 14	-	50	50	50	150	300	7	2	3	2(1.5)	8

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Understand how to use modern technology while planning
2. prepare detail drawings of Adv. Services
3. Learn about high rise structure.

**Course content:**

In the studio, stress is to be given on building design with use of modern technology. multistoried building with use of lift, escalators, air conditioning etc. Stress is also to be given on detailing of the services, parking and firefighting.

Problems should be of different nature in terms of scale, site potentials and constraints eg. Factories, hotel, multi-storeyed offices, commercial centres, mixed used buildings etc.

Note: one time –problem of 24 hrs. duration should be done.

Sessional should be in form of drawings, models & visuals. the evaluation should be done on the basis of regular reviews.

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2	AR412	Adv. Building Construction	BSAE-18	50	30	20	20	30	150	5	2	1	2(1.5)	6	

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Understand the properties and use of steel.
2. How to cover any large span as well as small span spaces with steel trusses
3. Learn various joinery details in steel construction.

Course content

Unit 1 :shop front ,including interior of shops for storing display

Unit 2 :suspended ceilings & false flooring for services.

Unit 3:partitions& screens.

Unit 4:wall panelling, sound proofing, construction including various types of materials and construction details, various interior and exterior surface treatments such as cladding, lining, rendering etc.

unit 5. Design and detailing of various types of front counter for various shops, banks, jewellers, general merchandise, bar counters etc.

**Note:**

- i) There should be regular site visits to buildings under construction or constructed to explain the above topics. Use of audio-visuals should be stressed.
- ii) Minimum 8 sheets shall be prepared out of which two may be in sketch form (scaled).

**List Of Text And Reference Books:**

1. W.B. McKay, "Building Construction Vol.1to Iv, Orient Longman.
2. R. Chudley, :Building Construction Handbook Vol. 1 To 4 "British Library Cataloguing In Publication Data 1990.
3. Dr. B.C. Punamia, "Building Construction", A. Sauraby& Co. Pvt. Ltd.
4. R. Berry, "Construction Of Buildings". The English Language Book Society London 1976.
5. Mitchel, " Advance Building Construction", Allied Publishers Pvt. Ltd

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3	AR413	Town Planning	DC- 16	50	20	20	20	30	140	4	2	-	2	3

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Learn about the history ,scope of town planning
2. Understand the application of bye-laws .
3. Learn about Philosophies of eminent planners and study of their theoretical and executed works

**Course content:**

**Unit 1:**Meaning and level of planning, scope and objectives, development of planning thought, a brief historical survey of town and cities planned in various periods of world history with special reference to development and growth of towns in India.

**UNIT 2:**General principles of planning, elements of city plans(communication, open spaces, land use etc), neighbourhood, garden city movement, survey for planning.

**UNIT 3:**Planning Acts, building bye-laws, State bye-laws, Land acquisition Act, Urban land ceiling Act and other important state Acts.

**UNIT 4:**New towns: Chandigarh, Gandhi Nagar Industrial townships etc.

**UNIT 5:**Introduction to various planning processes. Master plan and its components. Zoning: need and advantages

Note: Problem/Studio work: Design of small town planning schemes, site layouts in Urban areas and village schemes.

**LIST OF TEXT AND REFERENCE BOOKS:**

**AR414 – Town Planning**

1. V.K. BHEDASGAONKAR, "Handbook of Town Planning", Amar Mudranalaya.
2. G.K.HIRASKAR, "Fundamentals of Town Planning", Dhanpt Rai & Sons.
3. PATRICK ABERCROMBIE, "Town and Country Planning", Oxford univ. Press.
4. KEEBLE, "Principles and Practice of Town and Country Planning".
5. S.C. RANGWALA, "Town Planning", Charotar Publishing House.
6. BANDYOPADHYAY, ABIR, "A Text Book of Town Planning", New Central Book Agency, Calcutta

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4	AR414	Building Sciences & Energy Conservation	BSAE-19	50	20	10	-	-	80	4	2	2	-	4

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. LEARN about the environmental issues
2. LEARN FROM HISTORY ABOUT IMPLICATION OF ENERGY.
3. UNDERSTAND various energy efficient materials & construction techniques.

**UNIT1.** Global environmental issues; types of energy, energy sources, availability and reserves of conventional and non-conventional energy, Role and importance of Energy requirements in buildings

**UNIT2.** Study of works of various Architects in this area through history; Implication of above in design of energy conscious buildings.

**UNIT3.** Introduction to Bio-Climatic architecture, Study of solar radiation on earth's surface, Measurement, angles, estimation and analysis, Orientation of building, with reference to solar radiation, Special design and planning detailing.

**UNIT 4.** Introduction to architecture, study and analysis of micro level wind. considering winds.

**UNIT 5.** Study of energy efficient building material and construction techniques. Case study of national and international

Assessment of energy consumption in a building and methods of energy conservation:-

- (a) Through minimizing wastages.
- (b) Through appropriate use of climatology.
- (c) Through appropriate design and planning of buildings

**Note:** the sessional work should include reports, drawings, experiments etc. in assignment / seminar form.

**List Of Text And Reference Books:**

1. Wagner, Walter, "Energy Efficient Buildings"
2. Theo.C. Steemers, "Solar Architecture in Europe", Prism press.
3. A.S. Miffat, "Landscape Design that saves energy", William Morrow & Co., INC, NY.
4. Claude L. Robbins, "Day lighting Design &

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5	AR415	Elective II*	DE- 7	-	-	-	20	30	50	4	1	1	2	3

**1.Conservation      2) Urban and Regional Planning      3) Road Safety and Civic Sense**

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Understand the need of architectural conservation
2. Develop a sensitivity toward the heritage building.
3. Learn different causes of damage & its solution
4. Identify Contemporary problems of settlements, Current theories on physical planning.
5. Understand Environmental impact of planned and unplanned growth, regional linkages,

**1.Conservation**

- This course intends to develop an understanding in Architectural conservation.
- Meaning of Architectural Conservation, need and degrees of conservation. History of conservation in India and West, conservation charters, role of Archaeological survey of India in conservation of India's cultural heritage.
- Listing and documentation, its importance and methods.
- Urban conservation, methodologies to be adopted for conservation management. Case studies in conservation related to Adaptive reuse, Building in context, preservation, Urban conservation.

Reference: Handbook on Architectural Conservation by Sir Bernard Fielden. INTACH, New Delhi.

**2.Urban and Regional Planning:**

- Basic components of urban areas and Regions; Role and working of Urban and Regional planning at different levels like national level, state level, district level, metro level concepts,
- Different planning theories and models; Socio-cultural, land use planning, general principles, utopian thoughts/models for planning and their relevance in Indian context.
- General principles and working; Planning norms and development norms for urban and Regional approaches / techniques of development for existing areas, renewal schemes and development;
- Detailed survey and preparation of questionnaire for land use, socioeconomic, Transportation planning etc;

- Review of regional plans.

References:

1. Zhenjiang Shen - Geospatial Techniques in Urban Planning.
2. Richard E. Klosterman - Community Analysis Plan.
3. Douglass B. Lee – Models and techniques for Urban Planning.
4. Thomas Telford - Design: Urban Design in the Planning System.

### **3. Road Safety and Civic Sense**

**Objective:** To introduce the concepts, principles, tools and aids of Road Safety and Civic Sense to the students of B. Arch. To acquaint them with the design and safety standards for roads. Also inculcate the practice of safe road behavior and civic sense among them.

Methodology: Lectures, Tutorials and Case Studies.

#### **1. Introduction to Road Safety**

Road as an active space, Types of Users, User Behaviour, Sensory Factors like Vision and Hearing in User Behaviour.

Types of Vehicles: Heavy Vehicles, Light Motor Vehicle, Two Wheelers, Auto-Rickshaw, Bicycles and Cycle Rickshaw, Non-Motorised Vehicles.

Vehicle Characteristics: Dimensions, Weight, Turning Radii, Braking Distance, Lighting System, Tyres, etc.

Type of Hazards: Conflicts and Accidents.

#### **2. Typology of Roads: Components and Design**

Road Classification: National Highways, State Highways, District Roads (MDR and ODR), Village Roads Urban Road Classification: Expressways, Arterial, Sub-Arterial, Collector, Local, Service Roads, One-Way, Two-Way etc. Mountainous Road. Speed Limits of the Road types.

Design of Roads: Cross-Sectional Elements- Right of Way, Carriageway, Median, Shoulders, Sidewalk, Lanes, Cycling Track, Green Strip, Curbs, Camber, etc. Spatial Standards for the Cross-Section Design. Relationship between Road Design and Road Safety.

#### **3. Intersections**

Types of Road Intersections: Basic Forms of at-grade Junction (T, Y, Staggered, Skewed, Cross, Scissors, Rotary, etc. Grade Separated Junctions (with or without interchange): Three-Leg, Four-Leg, Multi-Leg, etc.

Design of Intersections: Design and Spatial Standards for Traffic Islands, Turns, Turning Radii, Directional Lanes, Pedestrian Crossings, Median Openings, Traffic Calming Components like Speed Breakers and Table-Top Crossings etc.

Design Considerations for Diverging, Merging, and Weaving Traffic.

Location and Design for Traffic Signals.

#### **4. Pedestrian Circulation and Barrier Free Design**

Requirement of Pedestrian Infrastructure: Sidewalks and Footpaths, Recommended Sidewalk Widths, Pedestrian Crossings, Pedestrian Bridges, Subways, Cycle Tracks, etc.

Barrier Free Design: Location and Design Standards for Ramps for Wheel Chair Access, Other Provisions like Tactile for Visually Challenged etc.

Safety Provisions: Pedestrian Railings, Anti-Skid Flooring, Pedestrian Signal, Walk Button, etc.

#### **5. Traffic Signs and Road Markings**

Type for Traffic Signs: Principles and Types of Traffic Signs, Danger Signs, Prohibitory Signs, Mandatory Signs, Informatory Signs, Indication Signs, Direction Signs, Place Identification Signs, Route Marker Signs, etc. Reflective Signs, LED Signs. Static and Dynamic Signs.

Standards for Traffic Signs: Location, Height and Maintenance of Traffic Signs

Types of Road Markings: Centre Lines, Traffic Lane Lines, Pavement Edge Lines, No Overtaking Zone Markings, Speed Markings, Hazard Markings, Stop Lines, Pedestrian Crossings, Cyclist Crossings, Route Direction Arrows, Word Messages, Marking at Intersections, etc.

#### **6. Traffic Signals, Traffic Control Aids, Street Lighting**

Traffic Signals: Introduction, Advantages, and Disadvantages

Signal Indications: Vehicular, Pedestrian and Location of the Signals.

Signal Face, Illustration of the Signals. Red, Amber, Green Signals and its Significance, Flashing Signals Warrant of Signals Co-ordinated Control of Signals.

Traffic Control Aids: Roadway Delineators (Curved and Straight Sections), Hazard Markers, Object Markers, Speed Breakers, Table Top Crossings, Rumble Strips, Guard Rails, Crash Barriers etc.

Street Lighting: Need for Street Lighting, Type of Lighting, Illumination Standard, Location and Intermediate Distance.

#### **7. Road Accidents**

Nature and Types of Road Accidents (Grievously Injured, Slightly Injured, Minor Injury, Non-Injury, etc.)

The situation of Road Accidents in India (Yearly), Fatality Rates, etc.

Factors (and Violations) that cause accidents, Prevention and First Aid to Victims

Collision Diagrams and Condition Diagrams exercises.

Traffic Management Measures and their influence in Accident Prevention.

### **8. Road Safety and Civic Sense**

Need for Road Safety, Category of Road Users and Road Safety Suggestions.

Precautions for Driving in Difficult Conditions (Night, Rain, Fog, Skidding Conditions, Non-Functional Traffic Lights, etc.)

Types of Breakdowns and Mechanical Failures. Accident Sign (Warning Light, Warning Triangle, etc.)

Introduction to Concept of Civic Sense and its relationship to Road Safety: Importance of Civic Sense, Road Etiquettes and Road User Behaviour, Rules of Road, Right of the Way. Providing Assistance to Accident Victim. Sensitisation Against Road Rage.

### **9. Traffic Regulations, Laws & Legislations**

Indian Motor Vehicles Act (Chapter VIII: Control of Traffic to be discussed in detail)

Regulations Concerning Traffic: Cycles, Motor Cycles and Scooters, Rules for Pedestrian Traffic, Keep to the Left Rule, Overtaking Rules, Turning Rules, Priority Rules, Hand Signals, etc.

Speed and Hazard Management. Penal Provisions.

National Road Safety Policy, Central Motor Vehicle Rules, State Motor Vehicle Rules

Introduction to Good Practices.

### **Suggestive Readings:**

1. Introduction to Traffic Engineering, R Srinivasa Kumar
2. Traffic Engineering and Transport Planning, LR Kadiyali
3. Book on Road Safety Signage and Signs, Ministry of Road Transport and Highways, Government of India
4. MORT&H Pocketbook for Highway Engineers, 2019 (Third Revision)
5. Publications by UTTIPEC namely, Street Design Guidelines, UTTIPEC Guideline for Road Markings, UTTIPEC Guideline and Specification for Crash Barriers, Pedestrian Railing and dividers, UTTIPEC Standard Typical Crossing Design.
6. Street Design Standards as provided in TimesSavers, Neuferts etc.
7. Publications by Indian Road Congress.



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6	AR416	Disaster Managemen t	PE-2	50	20	10	-	-	80	2	1	1	-	2

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Understand about environmental issues causing disaster
2. Learn about the policies and acts for disaster management.
3. Spread awareness about the safety norms of disaster in community.

**Unit 1** : What is Disaster? Natural & Manmade disasters; Causes, consequences and after effects of disasters;

**unit 2:** Disaster management policy and Acts– national and states; Disaster Management

Mechanisms: national, state and district levels; select global practices; disaster and development; physical planning and disaster management plans;

**unit 3:** Roles and responsibilities of different agencies– NGOs / CBOs and Armed Forces; Community Based Disaster Preparedness (CBDP), Disaster Risk Mitigation; disaster safe construction practices for different types of disasters, Disaster Preparedness Forecasting and early

warning systems for various types of disasters; communication and information technology in disaster management; disaster education and awareness;

**unit 4:** Post Disaster Management: Cross Cutting Issues, rehabilitation and reconstruction of disaster affected areas; urban, disaster mitigation; natural resource management for disaster safe habitation; relationship between, disaster and environment;

**unit 5** : safe hill area development guidelines and coastal zone regulations for safe habitation; human settlement planning for consequence mitigation of global warming and climate change.

Sessional should be in the form of documentation and case studies on natural disasters

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7.	AR417	Dissertation	PAEC-5	-	-	-	50	50	100	4	2	-	2	3

**COURSE OUTCOME:-**

After completion of this course student will be able to-

1. Understand the basic research principals and methods
2. Develop the skill for report writing

**Course Content:**

- First phase of dissertation Students are expected to choose their own topic of research by referring the area / field already identified in other two phases. It allows students to identify the broad area / field of Architecture of their interest in which they may intend to do the research. This is to be done by studying and reproducing the brief of technical papers in the form of report review.
- Second phase allows the students to do the study of example of research already done by choosing the specific aspect / area relevant to broader field they have selected in first phase. This phase is aimed to understand the method of collecting data (survey methods), analysis of data (statistics and mathematical formulas), drawing inferences and conclusion as attempted by the author of the book.
- Third phase involves the review of book/ journal dedicated to that specific aspect or area / the writing of detailed dissertation report and Research paper

**NOTE:** Sectionals will be submitted in the form of Dissertation report, audio-visual Presentation and publication of research papers.

**LIST OF TEXT AND REFERENCE BOOKS: AR 415 - Dissertation**

1. Instruction Manuals on report writing.