

# RAJIV GANDHI PROUDYOGIKI VISHWA VIDYALAYA, BHOPAL (M.P.)

## SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE

### FOURTH YEAR - SEVENTH SEMESTER

S. No.	Subject Code	Subject Name	Maximum marks allotted					Teaching hours per week			Total credits	Exam Duration
			Theory			Practical		Lecture (L)	Tutorial (T)	Practical/ Studio (P/S)		
			END SEM	Mid sem test	Quiz	End Sem	Lab/ Studio work					
1	AR 411	Design- VII	100	30	20	50	150	2	-	6	8	24
2	AR 412	Adv. Building Construction	50	20	10	50	100	2	-	4	6	3
3	AR 413	Adv. Building Services (Acoustics & Fire fighting)	50	10	10	-	20	2	-	2	4	3
4	AR 414	Town Planning	50	10	10	-	20	-	1	1	2	3
5	AR415	Dissertation	-	-	-	50	50	2	1	2	5	-
6	AR416	Vaastu & Architecture	50	10	10	-	20	-	1	2	3	3
7	AR417	Elective- III (Any One)	50	10	10	-	20	2	1	1	4	3
			350	90	70	150	340	10	4	18	32	1000

#### AR417 - Elective III–(Any One):

1. Conservation 2. Urban & Regional Planning 3. Sustainable Architecture .

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			END SEM	Mid sem test	Quiz	End Sem	Studio work/ Sessional					
1	AR 411	Design- VII	100	30	20	50	150	2	-	6	8	24

**Aim:** The aims of the course is to emphasize and evolve the methodology for architectural design with reference to the previous knowledge of functional aesthetics as well as present and future scenario of urban and rural development, their problems and prospects.

**Course content:**

- Design with application of principles and theory of urban design, urban and regional planning aspects and philosophies of contemporary architects.
- The attempt is towards developing ones own language and philosophy of architect on guide towards exploring alternative building forms for different activities which help in understanding the relationship of structure and possibilities in building forms.
- Design of cost effective, sustainable structures for various economic and social groups to solve problem of efficient housing in urban India, post disaster rehabilitation & earth quake resistant structures, etc
- Emphasis on consideration of advanced construction materials and techniques with RCC framed structure, Steel structure for large span buildings, and use of lightweight prefabricated panels and other etc
- Details of services like sanitary, water supply, electrical and mechanical, acoustics, fire fighting, parking etc
- Detailed Site planning of the scheme with the details of landscaping and site agglomeration
- Design under the framework of existing local zoning regulations and other relevant Building codes.

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### **Design problems:**

- Design of large housing schemes and neighborhood planning etc with emphasis on above parameters
- Design of multistoried commercial complex, specialized market, five star hotels, motels, shopping malls, multiplexes, etc
- Design of universities, institutional campus, multistoried office buildings, town planning schemes, public buildings, Computer centers, IT Parks, and other infrastructure
- Design of conference halls, science museums, sports complex etc
- Design of specialized hospitals/ college campus and other medical facilities

### **Design approach:**

The literature survey & data collection is necessary. There should be regular site visits to buildings dealt in studio problems. Documentation should be done with the help of photographs, slides, video etc.

There should be minimum one time problem of 24 hrs. Duration apart from min. two regular design problems in the studio

**Note:** The sessionals will be in the form of drawings and models along with technical report for the design dealt with. The evaluation should be done in intermediate review consisting of internal and external experts. There should be regular site visits to the building types dealt in the studio problems of which audio-visual should be prepared.

### **LIST OF TEXT AND REFERENCE BOOKS:**

#### **AR411 - DESIGN-VII**

1. "Planning by E. & O.E". Liffie book Ltd., London.
  2. D.E. CHIRAIRA & CALLENDAR, "Times Saver Standard for Building Types".
  3. RUDOLF HERGE, "Nuferts Architects Data", Cross By Lockwod & Sons Ltd.
  4. EDWARD D. MILLS, "Planning the Architects Hand Book".
  5. National Building Code.
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			END SEM	Mid sem test	Quiz	End Sem	Studio work/ Sessional					
2	AR 412	Adv. Building Construction	50	20	10	50	100	2	-	4	6	3

**Aim:** The aim of the subject is to introduce the students about Execution of building component with their constructional details and presentation of working drawing.

1. Steel North Light roof trusses.
2. Monitor type trusses and Industrial roofing in Steel.
3. Tubular trusses and built- in trusses in steel. Industrial glazing, industrial cladding.
4. Canopies in steel, covered path ways in steel.
5. Advanced foundation types such as pile, grillage etc.
6. Steel structural joineries

**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).  
 iii) Sessional shall be prepared in the form of hand made drawings on the above mentioned topics.

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## **SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE**

### **LIST OF TEXT AND REFERENCE BOOKS:**

1. MITCHEL, “Advanced Building Construction”, Allied Publishers Pvt. Ltd.
2. P.N. KHANNA, “Handbook of Civil Construction”, Engineering Pub. New Delhi.
3. W. B. McKay, “Building Construction Vol. 3, 4, Orient Longman.
4. R.BERRY, “Construction of Buildings”, The English language book society London-1976.
5. Catalogues of various manufacturers of Steel sections

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3	AR 413	Adv. Building Services (Acoustics & Fire fighting)	50	10	10	-	20	2	-	2	4	3

**Aim:** To develop the understanding of important Services in buildings, definitions and terms used, functioning and their applications in building.

Course content:

### SECTION - A

#### Acoustics:

- Definition of sound. Fundamental characteristics of sound.
- Behavior of sound in enclosed spaces in general and few enclosed functional spaces in particular without involving much of mathematical complexity. Need to study acoustics.
- Development of this science through different periods. Pioneers and their works.
- Properties of sound, its origin propagation and sensation. Behavior of sound with respect to various surfaces, openings and in an enclosed space.
- Study of various sound absorbing materials, single and in combination of various frequencies of sound, panel absorbers, porous materials and cavity resonators.
- Reverberation time, Sabine's formula. Criteria for acoustics environment for reverberation in spaces.

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## **SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE**

- Sound application systems. Constructional and planning measures for good acoustical design.
- Acoustical defects and remedies. Sound application systems. Case studies for the above aspects.
- Noise and its effects on man. Physiological and psychological principles of noise control including acoustic lent insulation for various domestic services and industrial fitting and constructions. Structure borne and air borne noise, their effects and control.

### **SECTION – B**

#### **Fire fighting:**

- Introduction - Fire, causes of fire and spread of fire, fire fighting, protection & fire resistance.
- Fire safety Equipment & methods of fighting fire,.
- Code of fire safety, fire regulations, fire insurance, combustibility of materials.
- Structural elements and fire resistance, planning and design of Fire escape routes and elements, wet risers, dry risers, sprinklers, smoke detectors, fire dampers, fire doors, water curtains etc
- Firefighting bye-laws governing various types of public buildings, fire escape, fire safety in high rise buildings.

Note: Sessional shall be prepared in the form of notes and calculations, drawings / layout exercises and case studies if required.

#### **LIST OF TEXT AND REFERENCE BOOKS:**

1. R.G.EDKIE, “Architectural Acoustics & illumination”, EKWEERA PRAKASHAN, NAGPUR - 12
2. SIRASKAR, “Acoustics in Building Design”
3. S.OMEN & B. J. SMITH, “Acoustics & Noise Control”
4. T.S.S - Design data..
5. E. J. RICHARDSON, “Acoustics for Architecture”.
6. J.E. MOORE, “Design for good acoustics”.
7. VERN O KNUDSEN, CYRIL M.HARRIS “, Architectural Acoustics “, John Wiley & Sons.
8. National Building Code ( N.B.C.)

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4	AR 414	Town Planning	50	10	10	-	20	-	1	1	2	3

**Aim:** the course is intended to give elementary knowledge of subject pertaining to its history ,scope , general principles, acts and bye-laws

### Course content:

- 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.
- General principles of planning, elements of city plans(communication, open spaces, land use etc),neighbourhood,gardencity movement, survey for planning.
- Planning Acts, building bye-laws, State bye-laws, Land acquisition Act, Urban land ceiling Act and other important state Acts.
- New towns: Chandigarh, Gandhi Nagar Industrial townships etc.
- 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.



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## **SCHEME OF EXAMINATION - BACHELOR OF ARCHITECTURE**

### **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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5	AR415	Dissertation	-	-	-	50	50	2	1	2	5	-

**AIM:** Objective of subject Dissertation is to enlighten students on the fundamentals of Research methods before attempting final year Project Thesis.

Basics of research to be understood by the students are:

- Basic research principles and research methods.
- Report writing skills

### 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.

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6	AR416	Vaastu & Architecture	50	10	10	-	20	-	1	2	3	3

As the name of the subject suggests that it is shastra (science) of VASTU (BUILDING) and precisely this has given the identity to our ancient Architecture. This shastra embodies the cosmic, metaphysical and astrological, astronomical, mystic and physical characteristic. This subject is only introductory to teach the very basic of Vastushastra and its application to contemporary architecture.

1. Review of ancient wisdom, introduction to Vastushastra its relevance and importance.
2. Fundamental cannons: a) Importance of directions ( dignirnaya). b) Vastu-pada vinyasa. c) Mana. d) Ayadi Sadvarga. e) Patakadi Satchandas.
3. Covering elements of villages / towns, road beautification and application in todays context.
4. Civil and Secular Architecture.
5. Application of Vastushastra for present day usages such as individual house/ flats/ industries / offices / temples/ etc.

**Note:** the sessional work will include collection of information from various sources ,case studies of auspicious/non auspicious building and application of Vastushastra in new designs/plans.

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### **LIST OF TEXT AND REFERENCE BOOKS:**

1. D.N Shukla, vastu shastra vol I Munshi Ram pub.
2. Dwijendra Shukla ,” Samrang –Sutradhar-Vastu Shastra”, Vishwa Pub.
3. Derebail Murli , Hidden Treasure Of Vastu Shastra And Indian Tradition, Diamond Pockets
4. Mayamat, Sitaram Bhartia Institute Of Science And Research ,translated by Bruno Dagon
5. Dr. Balgopal T.S Prabhu & Dr. A. Achyutam –Manusalyachandrika ,Vastuvidyapratisthana, Kiliyanad Calicut 673001.
6. Dr. P. Acharya Manasar Series volume I to VII
7. N.H Shahastrabudhe/ R.D Mahature- Secret Of Vastushastra; Sterling publishers, New Delhi
8. N.H Shahastrabudhe/ R.D Mahature- Mystic Science Of Vastu; Sterling publishers, New Delhi

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7	AR417	Elective- III (Any One)	50	10	10	-	20	2	1	1	4	3

### 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.
- INTACH. 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.

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- 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. Sustainable Architecture.**

- 1) Introduction to the ideas, issues and concepts of sustainable Architecture, global environment and the built environment, principles of environmentally and ecologically supportive architecture
- 2) Study of sustainable architecture, use of energy, materials, health and global environment as related to the construction and operation of buildings
- 3) Sustainable and conservation practices -water conservation, sewerage treatment, solid waste treatment, economics and management 4) Low energy design, hybrid systems, modeling and simulation of energy systems, integration of PV and wind systems in the building,
- 5) wind solar and other non conventional energy systems, solar thermal applications for heating and cooling, electricity generation in buildings
- 6) Case studies on specific contemporary sustainable architecture.
- 7) Green Specification parameters, carbon credits. 8) Introduction to ECBC, GRIHA, LEEDS, etc., simulation techniques and their applications.

NOTE: The Sessional will be oriented towards live case studies and modeling