RAMAIAH
Institute of Technology

# CURRICULUM

**for the Academic year 2023 – 2024**

## SCHOOL OF ARCHITECTURE

**VII & VIII Semester B. ARCH**

**RAMAIAH INSTITUTE OF TECHNOLOGY**
(Autonomous Institute, Affiliated to VTU)
Bangalore – 560054.

## About the Institute:

Dr. M. S. Ramaiah a philanthropist, founded 'Gokula Education Foundation' in 1962 with an objective of serving the society. M S Ramaiah Institute of Technology (MSRIT) was established under the aegis of this foundation in the same year, creating a landmark in technical education in India. MSRIT offers 17 UG programs and 11 PG programs. All these programs are approved by AICTE. All eligible UG and PG programs are accredited by National Board of Accreditation (NBA). The institute is accredited **with 'A+' grade by NAAC in March 2021** for 5 years. University Grants Commission (UGC) & Visvesvaraya Technological University (VTU) have conferred Autonomous Status to MSRIT for both UG and PG Programs since 2007. The institute has also been conferred autonomous status for Ph.D. program since 2021. The institute is a participant to the Technical Education Quality Improvement Program (TEQIP), an initiative of the Government of India. The institute has 380 competent faculty out of which 67% are doctorates. Some of the distinguished features of MSRIT are: State of the art laboratories, individual computing facility for all faculty members, all research departments active with sponsored funded projects and more than 300 scholars pursuing Ph.D. To promote research culture, the institute has established Centre of Excellence for Imaging Technologies, Centre for Advanced Materials Technology, Centre for Antennas and Radio Frequency systems (CARFS), Center for Cyber Physical Systems, Schneider Centre of Excellence & Centre for Bio and Energy Materials Innovation. **Ramaiah Institute of Technology has obtained "Scimago Institutions Rankings" All India Rank 107 & world ranking 600 for the year 2022.**

The Entrepreneurship Development Cell (EDC) and Section 8 company "Ramaiah Evolute" have been set up on campus to incubate startups**. M S Ramaiah Institute of Technology is recognized by National Institutional Ranking Framework, India Ranking 2023 in the band of 11-50, Innovation category.** MSRIT has a strong Placement and Training department with a committed team, a good Mentoring/Proctorial system, a fully equipped Sports department, large air-conditioned library with good collection of book volumes and subscription to International and National Journals. The Digital Library subscribes to online e-journals from Elsevier Science Direct, IEEE, Taylor & Francis, Springer Link, etc. The Institute is a member of DELNET, CMTI and VTU E-Library Consortium. The Institute has a modern auditorium, recording studio, and several hi-tech conference halls with video conferencing facilities. The institute has excellent hostel facilities for boys and girls. MSRIT Alumni have distinguished themselves by occupying high positions in India and abroad and are in touch with the institute through an active Alumni Association.

**As per the National Institutional Ranking Framework (NIRF), MoE, Government of India, Ramaiah Institute of Technology has achieved 78th rank among 1314 top Engineering Institutions & 23rd Rank for School of Architecture in India for the year 2023.**

# SCHOOL OF ARCHITECTURE

Ramaiah Institute of Technology (RIT), Bangalore, is a leading institution offering undergraduate, postgraduate and research programs in the areas of engineering, management and architecture. The institute was established in the year 1962, under the aegis of Gokula Education Foundation. Its mission is to deliver global quality technical education by nurturing a conducive learning environment for a better tomorrow through continuous improvement and customization.

The School of Architecture, RIT Bangalore, was established in the year 1992. Since its establishment, the School has played a vital role in providing quality education. The Council of Architecture (COA) and All India Council for Technical Education (AICTE) have recognized this program.

The mission of the school is to uphold the RIT mission and to thus provide quality education to the students and mould them to be excellent architects with adequate design and management skills and noble human qualities.

Full time faculty members having postgraduate qualifications from prestigious institutions in India and abroad are teaching at The School of Architecture. Experienced and well-respected practicing architects are invited to provide their experiences as visiting faculty. New milestones are continually being set and achieved. The synergy of the progressive management, committed faculty and students are ensuring excellent academic results year after year. This is reflected in the high number of University ranks that are secured by the students of the School.

The School of Architecture is now autonomous (affiliated to VTU) providing scope for further improvement. The focus has been towards fostering novel concepts and solutions in Architectural Design. The student's response is very encouraging, and the school recognizes and appreciates such good students by awarding them. After graduation, many students have pursued higher studies in various universities in the country and abroad. There is a great demand for the school graduates in the industry and the School is developing initiatives towards co-branding of the industry and the School. Many students have started their own enterprise and architectural practices as well.

All this has been possible as a result of the efforts of the impeccable faculty of the School. The faculty is committed to the welfare and success of the students. The teachers of the school are also engaged in enhancing their knowledge and skills and many are engaged in research activities as well. The School has experts in specialized disciplines like Habitat Design, Product Design, Urban Design, Urban Planning, Landscape Architecture, and Interior Design. The faculty also actively participates in national and international conferences and publishes and presents papers.

The School as part of a consultancy had started off with the maiden project to redevelop the RIT engineering college campus and is now involved in various campus designs.

## VISION OF THE INSTITUTE

To be an Institution of International Eminence, renowned for imparting quality technical education, cutting edge research and innovation to meet global socio-economic needs.

## MISSION OF THE INSTITUTE

MSRIT shall meet the global socio-economic needs through -

- Imparting quality technical education by nurturing a conducive learning environment through continuous improvement and customization.
- Establishing research clusters in emerging areas in collaboration with globally reputed organizations.
- Establishing innovative skills development, techno-entrepreneurial activities and consultancy for socio-economic needs.

## QUALITY POLICY

We at MS Ramaiah Institute of Technology strive to deliver comprehensive, continually enhanced, global quality technical and management education through an established Quality Management System complemented by the synergistic interaction of the stake holders concerned.

## VISION OF THE DEPARTMENT

To achieve and propagate high standards of excellence in architectural education.

## MISSION OF THE DEPARTMENT

- The School's commitment is to prepare people to make a difference;
- To create an environment that shall foster the growth of intellectually capable, innovative and entrepreneurial professionals, who shall contribute to the growth of the society by adopting core values of learning, exploration, rationality and enterprise; and
- To contribute effectively by developing a sustainable technical education system to meet the changing technological needs incorporating relevant social concerns and to build an environment to create and propagate innovative designs and technologies.

## PROGRAM EDUCATIONAL OBJECTIVES (PEOs):

**PEO 1:** Use the knowledge and skills of Architecture to analyze the real-life problems and interpret the results.

**PEO 2:** Effectively design, implement, improve and manage the integrated socio-technical systems.

**PEO 3:** Build and lead cross-functional teams, upholding the professional responsibilities and ethical values.

**PEO 4:** Engage in continuing education and life-long learning to be competitive and enterprising.

## PROGRAM OUTCOMES (POs):

**PO1: Architectural knowledge:** Apply the knowledge of mathematics, science, architectural fundamentals, and an architectural specialization to the solution of complex architectural problems.

**PO2: Problem analysis:** Identify, formulate, review research literature, and analyse complex architectural problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3: Design/development of solutions:** Design solutions for complex architectural problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern architectural and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The architect and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional architectural practice.

**PO7: Environment and sustainability:** Understand the impact of the professional architectural solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the architectural practice.

**PO9: Individual and teamwork:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:** Communicate effectively on complex architectural activities with the architectural community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:** Demonstrate knowledge and understanding of architectural and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## PROGRAM SPECIFIC OUTCOMES (PSOs):

**PSO1:** Apply knowledge and skills of arts and sciences based on function, form materials, information, facilities, technology and analysis to Design and develop sustainable Architectural projects

**PSO2:** Identify, formulate and solve industrial requirements and problems with a thorough knowledge of contemporary issues in industrial and service sectors and understand the impact of Architectural design solutions in a global and societal context.

**PSO3:** Understand and respect professional and ethical responsibility and implement the concepts of project and construction management with the cutting-edge technology

## BOARD OF STUDIES FOR THE TERM 2022 - 2023

| | | |
|---|---|---|
| 1. | Prof. (Dr.) Pushpa Devanathan | Chairperson |
| 2. | Dr. Deepika Shetty | VTU Nominee |
| 3. | Ar. Vidyadhar S. Wodeyar | External Industry Expert |
| 4. | Ar. Prasad G | External Industry Expert |
| 5. | Dr. Rama R. S | Academician |
| 6. | Dr. Chidambara Swamy | Academician |
| 7. | Ar. Subbiah T S | External Industry Expert |
| 8. | Prof. Vishwas Hittalmani | Member |
| 9. | Prof. Dr. Rajshekhar Rao | Member |
| 10. | Dr. Rashmi Niranjan | Member |
| 11. | Ar. Meghana K Raj | Member |
| 12. | Ar. Sudha Kumari | Member |
| 13. | Er. Vijayanand M | Member |

# SCHOOL OF ARCHITECTURE

## TEACHING FACULTY

| Sl No | Name | Qualification | Designation |
|---|---|---|---|
| 1 | Ar. Pushpa Devanathan | M Arch (Habitat Design), (PhD) P.G.D.I, | Professor & HOD |
| 2 | Ar. Vishwas Hittalmani | M Des. (Industrial Design) | Professor |
| 3 | Dr. Rajshekhar Rao | M Arch (Landscape Architecture), PhD | Professor |
| 4 | Dr. Jotirmay Chari | M Arch, PhD | Professor |
| 5 | Ar. Prasad G | M Arch (Landscape Architecture) | Professor (Tenure) |
| 6 | Dr. Rashmi Niranjan | MFA (Fine Arts), PhD | Associate Professor |
| 7 | Dr. Monalisa | M Arch, PhD | Associate Professor |
| 8 | Ar. Surekha R | M Arch (Landscape Architecture) (PhD) | Associate Professor |
| 9 | Ar. Lavanya Vikram | M Arch (Landscape Architecture) (PhD) | Associate Professor |
| 10 | Ar. Sudha Kumari | M Arch (Habitat Design) (PhD) | Associate Professor |
| 11 | Ar. Meghana K Raj | M Arch (Landscape Architecture) (PhD) | Associate Professor |
| 12 | Ar. Tejaswini H | M Arch (Landscape Architecture) (PhD) | Associate Professor |
| 13 | Ar. Mallika P V | M Arch (Landscape Architecture) | Associate Professor (Tenure) |
| 14 | Ar. Sudhir Chougule | M Arch (Landscape Architecture) | Associate Professor (Tenure) |
| 15 | Ar. Nikhil V Wodeyar | P G Dip (Urban Design) | Associate Professor (Tenure) |
| 16 | Er. Vijayanand M | M Tech (PhD) | Assistant Professor |
| 17 | Er. Aruna Gopal | B E (M Sc) | System Analyst |
| 18 | Ar. Kriti Bhalla | B Arch | Assistant Professor |
| 19 | Ar. Aishwarya Yoganand | M Sc (Sustainable Building Systems) | Assistant Professor |
| 20 | Ar. Divya Susanna Ebin | M Arch (Urban Design) (PhD) | Assistant Professor |

| | | | |
|---|---|---|---|
| 21 | Ar. Ranjitha Govindaraj | M Arch (Landscape Architecture) | Assistant Professor |
| 22 | Ar. Theju Gowda | M Sc (Architecture) | Assistant Professor |
| 23 | Ar. Akshata Shagoti | M Arch (Architectural Design) | Assistant Professor |
| 24 | Ar. Amala Anna Jacob | M Arch (Urban Design) | Assistant Professor |
| 25 | Ar. Meghana M | M A (World Heritage Studies) | Assistant Professor |
| 26 | Ar. Megha Ann Jose | MIAD (Interior Architecture & Design) | Assistant Professor |
| 27 | Ar. Pooja M Naik | M Arch (Urban Planning & Mgmt.) | Assistant Professor |
| 28 | Ar. Tanvi Katre | M Plan (Environmental Planning) | Assistant Professor |
| 29 | Ar. Sreesha S Bhat | M Arch (Urban Design) | Assistant Professor |
| 30 | Ar. Harshita D | M Arch (Urban Design) | Assistant Professor |
| 31 | Ar. Joyce Sequeira | M Plan (Urban Planning) | Assistant Professor |
| 32 | Ar. Shwetha P E | M Arch (Urban Design) | Assistant Professor |
| 33 | Ar. Pinki Bose | M Arch (Urban Design) | Assistant Professor |
| 34 | Ar. Sruti R | M Arch (Urban Design) | Assistant Professor |
| 35 | Ar.Aparna M P | M Arch (Urban Design) | Assistant Professor |
| 36 | Ar. Aswini Mani | M Arch (Urban Design) | Assistant Professor (Tenure) |

**ADMINISTRATIVE STAFF**

| | | | |
|---|---|---|---|
| 1 | Mr. Nagesh B L | Dip. in Mech Engg. | Instructor |
| 2 | Ms. Swathi P | B. Com | SDA |

**SUPPORT STAFF**

| | | |
|---|---|---|
| 1 | Mr. Ramachandra Chari | Attender |
| 2 | Mrs. Parvathi | Attender |

## BREAKDOWN OF CREDITS FOR B. ARCH DEGREE CURRICULUM (Semester I to X)

## BATCH 2018 - 2023
## (as per Council of Architecture)

| SEMESTER | HUMANITIES & SOCIAL SCIENCES (HSS) | ARTS & SCIENCE (AS) | BASIC ARCHITECTURE & ENGINEERING (BAE) | PROFESSIONAL CORE SUBJECTS (PCS) | ELECTIVES | PROJECT/ INTERNSHIP | TOTAL CREDITS |
|---|---|---|---|---|---|---|---|
| I | 1 | 7 | 7 | 11 | - | - | 26 |
| II | - | 8 | 7 | 11 | - | - | 26 |
| III | - | 6 | 8 | 11 | - | 1 | 26 |
| IV | 1 | 3 | 11 | 11 | - | - | 26 |
| V | 2 | 6 | 6 | 11 | - | 1 | 26 |
| VI | 2 | - | 13 | 11 | - | - | 26 |
| VII | 3 | - | 9 | 11 | 3 | - | 26 |
| VIII | 2 | - | 6 | 15 | 3 | - | 26 |
| IX | - | - | - | 3 | 3 | 20 | 26 |
| X | - | - | - | - | - | 26 | 26 |
| Total | 11 | 30 | 67 | 95 | 9 | 48 | 260 |

## SCHEME OF TEACHING & EXAMINATION - VII SEMESTER B. ARCH

## ACADEMIC YEAR 2023 - 2024

| 2020 Batch | | | Teaching scheme per week | | | | | Examination scheme | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No | Code | Subject | Lecture / Studio | Tutorial | Practical (Study Tour/ Case Study) | Credits | Contact hours | Exam | CIE Marks | SEE Marks |
| 1 | AR 701 | Architectural Design VI | 6 | 0 | 1 | 7 | 8 | SEE (viva voce) | 50 | 50 |
| 2 | AR 702 | Building Materials & Construction Technology VII | 3 | 0 | 1 | 4 | 5 | SEE (viva voce) | 50 | 50 |
| 3 | AR 703 | Urban & Regional Planning | 3 | 0 | 0 | 3 | 3 | SEE | 50 | 50 |
| 4 | AR 704 | Professional Practice I | 3 | 0 | 0 | 3 | 3 | SEE | 50 | 50 |
| 5 | AR 705 | Elective | 3 | 0 | 0 | 3 | 3 | SEE (viva voce) | 50 | 50 |
| 6 | AR 706 | Interior Design | 2 | 0 | 1 | 3 | 4 | SEE (viva voce) | 50 | 50 |
| 7 | AR 707 | Construction Management | 3 | 0 | 0 | 3 | 3 | CIE | 100 | |
| | | **TOTAL** | **23** | **0** | **3** | **26** | **29** | | | |

**CIE** = CONTINUOUS INTERNAL EVALUATION

**SEE** = SEMESTER END EXAMINATION

**EVALUATION PATTERN: Marks allocation for SEE**

| Subject Code | Subject Name | Design | Drawing | Viva Voce | Model | Total |
|---|---|---|---|---|---|---|
| **AR701** | **Architectural Design – VI (Viva Voce)** | 20 | 15 | 10 | 05 | 50 |

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| **AR702** | **Building Materials & Construction Technology VII (Viva Voce)** | 40 | 10 | 50 |

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| **AR705** | **Elective (Viva Voce)** | 40 | 10 | 50 |

| Subject Code | Subject Name | Portfolio | Viva | Materials Study | Total |
|---|---|---|---|---|---|
| **AR706** | **Interior Design** | 25 | 15 | 10 | 50 |

**Note:**

- Literature survey will be a requirement for Architectural Design study. Periodic review by external juror for subjects going for viva voce.
- National / international tours may be arranged during vacation for students, to study examples of architecture.
- For all viva voce examinations one internal faculty and one external faculty will conduct the exam.
- Portfolios have to be submitted on prescribed date announced by the department for the viva voce subjects.
- All students have to register on the first day at the beginning of the **Viva voce exam.**
- All students have to register on the first day of **Term work exams.**

## SCHEME OF TEACHING & EXAMINATION - VIII SEMESTER B. ARCH

## ACADEMIC YEAR 2023 – 2024

| 2020 Batch | | | Teaching scheme per week | | | | | Examination scheme | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Sl. No | Code | Subject | Lecture / Studio | Tutorial | Practical (Study Tour/ Case Study) | Credits | Contact hours | Exam | CIE Marks | SEE Marks |
| 1 | AR 801 | Architectural Design VII | 8 | 0 | 1 | 9 | 10 | SEE (viva voce) | 50 | 50 |
| 2 | AR 802 | Building Materials & Construction Technology VIII | 3 | 0 | 1 | 4 | 5 | SEE (viva voce) | 50 | 50 |
| 3 | AR 803 | IPR & Ethics | 2 | 0 | 0 | 2 | 2 | SEE | 50 | 50 |
| 4 | AR 804 | Professional Practice II | 3 | 0 | 0 | 3 | 3 | SEE | 50 | 50 |
| 5 | AR 805 | Elective II | 3 | 0 | 0 | 3 | 3 | SEE (viva voce) | 50 | 50 |
| 6 | AR 806 | Sustainable/Environmental Design | 3 | 0 | 0 | 3 | 3 | SEE | 50 | 50 |
| 7 | AR807 | Working Drawing II | 0 | 0 | 2 | 2 | 4 | SEE (viva voce) | 50 | 50 |
| | | **TOTAL** | **22** | **0** | **4** | **26** | **30** | | | |

**CIE** = CONTINUOUS INTERNAL EVALUATION

**SEE** = SEMESTER END EXAMINATION

**EVALUATION PATTERN: Marks allocation for SEE**

| Subject Code | Subject Name | Design | Drawing | Viva Voce | Model | Total |
|---|---|---|---|---|---|---|
| **AR801** | **Architectural Design – VII (Viva Voce)** | 20 | 15 | 10 | 05 | 50 |

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| **AR802** | **Building Materials & Construction Technology VIII (Viva Voce)** | 40 | 10 | 50 |
| **AR805** | **Elective II (Viva Voce)** | 40 | 10 | 50 |
| **AR807** | **Working Drawing II** | 40 | 10 | 50 |

**Note:**

- Literature survey will be a requirement for Architectural Design study. Periodic review by external juror for subjects going for viva voce.
- National / international tours may be arranged during vacation for students, to study examples of architecture.
- For all viva voce examinations one internal faculty and one external faculty will conduct the exam.
- Portfolios have to be submitted on prescribed date announced by the department for the viva voce subjects.
- All students have to register on the first day at the beginning of the **Viva voce exam.**
- All students have to register on the first day of **Term work exams.**

**SEMESTER - VII**

# ARCHITECTURE DESIGN-VI

**Course Code: AR701** **Course Credits: 6 : 0 : 1**
**Prerequisite: Nil** **Contact hours: 8 hours/week**
**Course Coordinator: Prof. Pushpa Devanathan**

**Course Objectives:**

To enable students to –
Understand how key aspects of urban context influences large scale architectural design
• Understand the dynamics of creating masterplans for large scale architectural design
• Understand multi-dimensional influences on large scale architectural projects

**Course contents**

**UNIT - I**

Study and analysis of the urban context, limited to the immediate surroundings. The studies can include that of street networks, mobility, traffic, streetscape, skyline, landmarks, nodes, edges, land use, building use, age of buildings, building bye-laws, environment, stakeholder and user group engagement etc. as per relevance to the project.

**UNIT - II**

Architectural studies linking the interdependencies of urban and architectural data and analysis for large scale architectural projects such as bus terminal, railway station, cinema complex, indoor sports complex, high density or large scale housing, multi-use urban complexes etc.

**UNIT - III**

Development of masterplan with due consideration of the interdependency of the immediate context and the site and where multiple layers superimpose to create the masterplan. These layers may include pedestrian networks, vehicular networks, building blocks, open spaces, service networks and should be sensitive to the features of the site also.

**UNIT - IV**

Development of architectural blocks taking into consideration issues of architectural design such as users, activities, byelaws, organization of spaces, circulation, density, built-unbuilt spaces, services, structures, aesthetics etc.

**UNIT - V**

Detailing of the largest block showing schematic drawings, conceptual drawings, floor plans, elevations, sections, 3D views, etc.

Introduction and basic design and planning of services like fire safety, HVAC and water system.

**References:**


1. Dominic Bradbury, John Hitchcock, 'Vertical Living: Interior Experiences by Yoo'; Thames and Hudson, 2014
2. Elizabeth M. Golden, "Building from Tradition: Local Materials and Methods in Contemporary Architecture", 2018, Routledge.
3. Paola Sassi, "Strategies for sustainable Architecture", 2006, Taylor and Francis Group.
4. Lisa Iwamoto, "Digital Fabrications: Architectural and Material Techniques", 2009, Princeton Architectural Press.
5. Jesse Reiser, " Atlas of Novel Tectonics", 2006, Princeton Architectural Press.
6. Russell Fortmeyer, Charles F. Linn, " Kinetic Architecture: Designs for Active Envelopes", 2014,The Images Publishing Group.
7. Michael Fox, " Interactive Architecture: Adaptive World", 2016, Princeton Architectural Press.
8. Christopher Alexander, "A Pattern Language ", Oxford University Press, 1977.


**Course Outcomes (COs):**

The students will be able to -

1. Study the required parameters from case studies and understand multi-dimensional aspects of influence surrounding the given site. (PO-2, PO-3, PO-4; PSO-2)
2. Understand the factors influencing large scale architectural projects (PO-3, PO-4, PO-5; PSO-2)
3. Develop an adequate architectural response to the influence of the immediate urban context. (PO-3, PO-4, PO-6; PSO- 2)
4. Design architectural solutions to projects in urban context.(PO-3, PO-4, PO-6; PSO- 2)
5. Plan and design basic transport interchanges. (PO-2, PO-3, PO-4, PO-6; PSO- 2, PSO-3)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Design | Drawing | Viva Voce | Model | Total |
|---|---|---|---|---|---|---|
| AR701 | Architectural Design - VI | 20 | 15 | 10 | 05 | 50 |

**SEMESTER – VII**

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY VII

**Course Code: AR702** **Course Credits: 3 : 0 : 1**
**Prerequisite: Nil** **Contact Hours: 5 hours/ week**
**Course Coordinator: Prof. Vishwas Hittalmani**

**Course objectives:**

To enable the students to -

- Learn construction techniques for interior spaces.
- Gain insight in the detailing of interior elements in residential and commercial buildings.
- Gain insight in the currently available / appropriate building materials used in interior spaces.
- Gain insight in the newer sustainable building materials used in interior spaces.

**Course Contents**

**UNIT - I**

Dividers / Cabinet shelves / Showcases - sizes, construction joinery and detailing, material specifications & hardware used, modular options available in market, newer sustainable materials, finishes, costs.

Wardrobes - sizes, construction joinery and detailing, material specifications & hardware used, modular options available in market, finishes, costs.

**UNIT - II**

Modular Kitchens - configurations, sizes, Construction joinery and detailing, material specifications & hardware used, modular options available in market, finishes, costs.

Recent trends in design and fabrication with modern materials to be introduced.

**UNIT - III**

Workstations - configurations, sizes, construction joinery and detailing, material specifications & hardware used, modular options available in market, finishes, costs.

Partitions - Full height & half height, size, construction joinery and detailing, material specifications & hardware used, modular options available in market, newer sustainable materials, finishes, costs.

**UNIT - IV**

False ceiling - sizes, construction joinery and detailing, material specifications & hardware used, modular options available in market, finishes, costs. Application of false ceiling in different areas to be emphasized.

## UNIT - V

Wall paneling - sizes, construction joinery and detailing, material specifications & hardware used, modular options available in market, newer sustainable materials, finishes, costs.

Architectural applications and suitability to be identified.

**References:**


1. Joseph DeChiara, J. Panero, M. Zelnik, 'Time-saver Standards for Interior Design and Space Planning'; McGraw-Hill Inc., 1991.
2. Interior Details Bedroom; Interior Architecture Group, 2018.
3. Natascha Meuser, 'Drawings for Architects: Construction and Design Manual'; DOM Publishers, 2015.
4. W. Otie Kilmer, Rosemary Kilmer, 'Construction Drawings and Details for Interiors'; John Wiley & Sons, 2016.
5. Margaret Krohn, NKBA, 'Kitchen & Bath Design Presentation: Drawing, Plans, Digital Rendering'; Wiley, 2014.
6. NKBA (National Kitchen and Bath Association), 'Kitchen Planning: Guidelines, Codes, Standards'; Wiley, 2013.
7. Maureen Mitton, Courtney Nystuen, 'Residential Interior Design: A Guide to Planning Spaces'; Wiley, 2016.


**Course outcomes (COs):**

The students will be able to

1. Understand construction and joinery techniques in Interior Design. (PO-5, PO-9, PO-10; PSO-2)
2. Apply construction techniques for interior spaces. (PO-5; PSO-2)
3. Carry out detailing of interior spaces in residential and commercial buildings. (PO-5, PO-9, PO-10; PSO-2)
4. Incorporate currently available/appropriate building materials used in interior spaces. (PO-5, PO-10; PSO-2)
5. Integrate newer sustainable building materials and innovative details in interior spaces. (PO-7; PSO-2)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| AR702 | Building Materials & Construction Technology VII | 40 | 10 | 50 |

**SEMESTER – VII**

# URBAN AND REGIONAL PLANNING

**Course Code: AR703** **Course Credits: 3 : 0 : 0**
**Prerequisite:** **Contact hours: 3 hours / week**
**Course Coordinators: Prof. Dr. Jotirmay Chari**

**Course Objectives:**

To enable the students to -

- Understand the principles of Urban and Regional Planning.
- Understand the theories of eminent persons who have contributed to Planning.
- Understand the process of urbanization.
- Understand the various techniques in planning.

## Course contents

### UNIT - I

Introduction to urban and regional planning – Need for Urban and Regional Planning, Aims and Objectives of Planning, Principles of Planning, Necessity of Planning. History of Planning in India.

Pre-Independence and Post-Independence - Jaipur, Chandigarh, Gandhi Nagar, Steel towns, Cantonment Towns Bangalore, Delhi. Origin and growth of towns and cities, types of settlements, evolution of villages to cities.

Urban form based on different determinants – Natural: climate, topography, resources, geography; Manmade: cultural, economic, religious, administrative, political.

### UNIT - II

Urbanization, urban area, urbanism, classification of urban systems, causes of growth and decay of cities, urban morphology.

Planning efforts and impacts on historical cities – ancient civilizations, classical cities, Indian cities.

Land use Planning theories – The Burgess Urban Land Use model, Hoyt model, Harris and Ullman model, Le Corbusier.

Land use classifications, CBD, slum rehabilitation.

### UNIT - III

Introduction to Regional planning, Planning goals and objectives, theories by Patrick Geddes, Ebenezer Howard, Frank Lloyd Wright.

Types of regions – functional, formal, perceptual.

Types of planning of regions. – Structural, Regional etc.

## UNIT - IV

Types of planning systems - perspective plan, development plan, local area plan, specific area plan, special purpose plan, annual plan. Population density, age-sex ratio, economic base, etc. Surveys conducted for developing the plans, contents of development plans. Urban renewal.

Scales of Planning – Master Plan, Comprehensive Development Plan, Area Plan, Regional Plan.

## UNIT - V

Principles of Neighbourhood Planning, Neighbourhood Planning Theory by Perry, Clarence Stein's Radburn Planning, UDPFI guidelines.

Project Work - Practical approach towards urban renewal/land use planning/neighbourhood planning.

**References:**


1. G K. Hiraskar, 'Fundamentals of town planning'; Dhanpat Rai Publication, 2018.
2. Rangwala, 'Town Planning'; Charotar Book Distributors, 2015 22
3. M. Pratap Rao, 'Urban Planning: Theory and Practice'; CBS, 2019.
4. Arthur Gallion, Simon Eisner, 'The urban pattern: City planning and Design'; Van Nostrand Reinhold, 1986.
5. F. Stuart Chapin III, Edward J. Kaiser, 'Urban Land Use Planning'; University of Illinois Press, 1979.
6. K. S. Rame Gowda, 'Urban and Regional Planning: Principles and Case Studies'; Prasaranga, University of Mysore, 1972
7. S. K. Kulshrestha, 'Dictionary of Urban and Regional Planning'; Kalpaz Publications, 2006.
8. S K Kulshrestha, 'Urban and Regional Planning in India: A Handbook for Professional Practice'; Sage Publications Pvt. Ltd., 2012.
9. Prasanna K Mohanty, 'Cities and Public Policy: An Urban Agenda for India'; SAGE India, 2014.
10. Amiya Kumar Das, 'Urban Planning in India'; Rawat Publications, 2007.
11. Simon Eisner, Arthur Gallion, Stanley Eisner, 'The Urban Pattern'; Wiley, 1993
12. Clara H. Greed, 'Introducing Town Planning'; Longman, 1993 13. K. C. Sivaramakrishnan, Amitabh Kundu, B. N. Singh, 'A Handbook of Urbanization in India: An Analysis of Trends and Processes'; Oxford University Press, 2007
13. Ministry of Urban Development, 'Urban and Regional Development Plans'; Government of India, 2014.
14. Formulation and Implementation Guidelines, MoUD Government of India

**Course Outcomes (COs):**

The students will be able to -

1. Integrate the knowledge of the evolution of human settlements that will help them devise method to envision future change. (PO-2, PO-6; PSO-3)
2. Identify important contributions in the field of urban planning and summarizing their relationships between the present and future in Planning. (PO-4, PO-6, PO-10; PSO-3)
3. Compare and contrast various planning theories at regional level and explain how they can bring about an effective planning outcome. (PO-4, PO-6, PO-10; PSO-3)
4. Understand and implement plans making the planning process inclusive of the disadvantaged. (PO-2; PSO-3)
5. Develop the values for effective problem solving in the practice of planning using ethical standards, values of equity, fairness, efficiency order and beauty. (PO-2; PSO-3)

**SEMESTER – VII**

# PROFESSIONAL PRACTICE -I

**Course Code: AR704** **Course Credits: 3 : 0 : 0**
**Prerequisite: Nil** **Contact hours: 3 hours/week**
**Course Coordinator: Prof. Pushpa Devanathan**

**Course Objective:**

To enable the students to -

- Understand the responsibilities & liabilities in the architectural profession.

**Course contents**

**UNIT - I**

-Profession of architecture- Idea of Profession Idea of profession; differences between profession, trade and business; Types and extent of service offered by architects, Types of Architectural firms, Proprietorship, partnership, Associateship, and private limited firms- advantages and disadvantages of each type of firm. Office management

**UNIT - II**

-Duties of an architect, towards client, contractor, scale of professional charges, mode of payment.
-Code of professional conduct.

**UNIT - III**

-Architect's Act of 1972, Role of Council of Architecture and The Indian Institute of Architects in the functioning of the profession, Architectural competitions -procedure and guidelines for the conduct of competitions, Architects professional liability.

**UNIT - IV**

-Tender document and its content, Types of tenders- advantages and disadvantages of each type of tender, tender notice, various issues arising out of tendering process, scrutiny of tender, award of tender. Architect's role in the tendering process, earnest money

**UNIT - V**

-Contract – general principles, types of contracts, conditions of a contract, breach of contract, duties of an architect under the contract, role of an architect in ensuring the completion of contract. Supervision and Contract management, issues arising in contract.

**References:**


1. K. G. Krishnamurthy and S. V. Ravindra, 'Professional Practice'; Prentice Hall India Learning Pvt. Ltd., 2014.
2. Matt Butcher, Matt Farina; 'Go in Practice: Includes 70 Techniques'; Manning Publications, 2016 24.
3. Roshan Namavathi, 'Professional Practice'; Lakhani Book Depot, 2013.
4. Robert Greenstreet, David Chappell, Michael Dunn, 'Legal & Contractual procedures for Architects'; Architectural Press, 2003.
5. S.C.Garg, Yogesh K Garg, ' Professional Practice of Architecture'; Satya Prakashan, 2014 Osamu A. Wakita, Richard M. Linde, Nagy R. Bakhoum, 'The Professional Practice of Architectural Working Drawings'; John Wiley & Sons, 2011 7.
6. Frederik Ahlemann, Eric Stettiner, Marcus Messerschmidt, Christine Legner, 'Strategic Enterprise Architecture Management: Challenges, Best Practices, and Future Developments'; Springer, 2014 8.
7. James Franklin, 'Architect's Professional Practice Manual'; McGraw-Hill Education, 2000


**Course Outcomes (COs):**

The students will be able to -

1. Understand the nature of the architectural profession and its practice. (PO-6; PSO-3)
2. Explain the ethical framework of architectural professional practice. (PO-6, PO-8; PSO-3)
3. Explain the role and responsibilities of the professional bodies in regulating, assisting and safeguarding interests of architects. (PO-6; PSO-3)
4. Explain the procedures and guidelines related to architectural competitions and tendering. (PO-6; PSO-3)
5. Explain the general principles and procedure of contract in building construction works. (PO-6; PSO-3)

**SEMESTER – VII**

# ELECTIVE

**Course Code: AR705** **Course Credits: 3 : 0 : 0**
**Prerequisite: Nil** **Contact hours: 3 hours/ week**
**Course Coordinator: Prof. Pushpa Devanathan & Prof. Vishwas Hittalmani**

**Course Objectives:**

To enable the students to –

- Pursue study and research in an area of special interest related to architecture.
- Select a topic of their interest for their Architectural Design Project.

**Course contents**

**UNIT - I**

Introduction regarding areas of special interest and types of projects; with focus on design and issue-based approaches.

**UNIT - II**

Topic selection and the norms and standards to be followed. Study of current issues and trends.

**UNIT - III**

Case study and collection of data from existing designs; study of character and styles.

**UNIT - IV**

Synthesis and presentation of data. Study and understand best practices.

**UNIT - V**

Finalization presentation, study models and report.

Suggested topics-
Urban Design; Housing; Heritage Conservation of buildings; Transport Planning; Product Design; Architectural Journalism; Photography; Material Sciences; Sustainable Practices; Renovation, Extension and Refurbishment; Vernacular Architecture

**Reference books:**


1. Atul Deulgaonkar, ‘Laurie Baker: Truth in Architecture’; Jyotsna Prakashan, 2015.
2. Simon Unwin, ‘Analysing Architecture’; Routledge, 2009.
3. Joseph De Chiara, Michael J. Crosbie, ‘Time Saver Standards for Building Types’; McGraw Hill Education, 2017.
4. Donald Watson, Michael Crosbie, John Callender, ‘Time Saver Standards for Architectural Design Data’; McGraw-Hill Education, 1997.
5. Ernst Neufert, ‘Architects' Data’; Wiley-Blackwell, 2019.
6. David Bergman, ‘Sustainable Design: A Critical Guide’; Princeton Architectural 26 Press, 2012.
7. Elizabeth A. T. Smith, Peter Gossel, ‘Case Study Houses’; Taschen GmbH, 2009.
8. Peter Blundell Jones, Eamonn Canniffe, ‘Modern Architecture Through Case. Studies 1945 to 1990’; Architectural Press, 2007.
9. Analyzing Architecture Case Studies for Beginners- RIBA.
10. National building code of India, Bureau of Standards.
11. Building Byelaws and Zonal regulations.


**Course outcomes (COs):**

The students will be able to -

1. Identify their areas of special interest. (PO-2; PSO-1)
2. Select their topics of interest. (PO-2; PSO-1)
3. Collect appropriate data for their research. (PO-2; PSO-1)
4. Analyse and synthesize data. (PO-2; PSO-1)
5. Furbish project and site details for their Architectural Design Project in the following semester. (PO-4; PSO-1)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| AR705 | Elective (Viva Voce) | 40 | 10 | 50 |

**SEMESTER – VII**

# INTERIOR DESIGN

**Course Code: AR706** **Course Credits: 2 : 0 : 1**
**Prerequisite: Nil** **Contact hours: 4 hours/ week**
**Course Coordinator: Prof. Dr. Jotirmay Chari**

**Course Objectives**

- To introduce the students to the discipline of interior design.
- To enable students to develop the skill required to handle simple interior design projects.

**Course contents**

**UNIT - I**

Case studies of Interior projects.

**UNIT - II**

Activity analysis, anthropometrics, application of scale and proportion.

**UNIT - III**

Effects of enclosure, psychological effects of space.

**UNIT - IV**

Elements of an interior space including furniture placement and layout, surface treatment and interior landscape.

**UNIT – V**

Material and construction details. Services in interiors including design for comfort-climatic, air conditioning natural, artificial lighting, acoustics, etc.

**References:**


1. Kim Kuhteubl, ‘Branding + Interior Design: Visibility and Business Strategy for Interior Designers’; Schiffer Publishing Ltd., 2016.
2. Aparna Gwande, ‘Designs from Indian Textiles: Chintz – Kalamkari’; Story Mirror Infotech Pvt Ltd, 2017.
3. Joseph De Chiara, Michael J. Crosbie, ‘Time Saver Standards for Building Types’; McGraw Hill Education, 2017 28.
4. Donald Watson, Michael Crosbie, John Callender, ‘Time Saver Standards for Architectural Design Data’; McGraw-Hill Education, 1997.
5. Ernst Neufert, ‘Architects' Data’; Wiley-Blackwell, 2019.

6. Erin Gates, ‘Elements of Style: Designing a Home & a Life’; Simon & Schuster, 2014.
7. Lauren Liess, ‘Habitat: The Field Guide to Decorating’; Harry N. Abrams, 2015.
8. Justina Blakeney, ‘The New Bohemians: Cool and Collected Homes’; Harry N. Abrams, 2015.
9. Kate Watson-Smyth, ‘Mad about the House: How to Decorate Your Home with Style’; Pavilion, 2018.
10. John F Pile, ‘Interior Design’; Pearson, 2007.
11. Francis D K Ching, ‘Interior Design Illustrated’; John Wiley & Sons, 2012.
12. Julius Panero & Martin, ‘Human Dimension and Interior Space: A Source Book of Design’; McGraw-Hill Professional, 2001.
13. Maureen Mitton, ‘Interior Design Visual Presentation: A Guide to Graphics, Models and Presentation Techniques’; John Wiley & Sons, 2012.
14. John F Pile, ‘A History of Interior Design’; John Wiley & Sons Inc, 2000.
15. John Curtich and Garret Eakin, ‘Interior Architecture’; John Wiley & Sons, 1995.

**Course outcomes (COs):**

The students will be able to -

1. Observe and learn about design from built interior spaces. (PO-2; PSO-2)
2. Understand the interaction between humans and objects in an interior space. To integrate design with the practical aspect of able space. (PO-2; PSO-2)
3. Analyze the effect of interior spaces on behavioural aspects of a user. (PO-2; PSO-2)
4. Render and present interior design projects and draft the required drawings to execute the project on site. (PO-2; PSO-2)
5. Integrate the understanding of various services in the design and drawings. Evolve innovative details in construction. (PO-2; PSO-2)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Portfolio | Viva | Materials Study | Total |
|---|---|---|---|---|---|
| AR706 | Interior Design (Viva Voce) | 25 | 15 | 10 | 50 |

**SEMESTER – VII**

# CONSTRUCTION MANAGEMENT

**Course Code: AR707** **Course Credits: 3 : 0 : 0**
**Prerequisite: NIL** **Contact hours: 3 hours/week**
**Course Coordinator: Asst. Prof. M. Vijayanand**

**Course Objectives:**

- Provide insight into management of buildings/construction projects involving management financial, machines and human resources.

## Course Contents

### UNIT - I

Construction Management and Planning:
Basic concepts in the development of construction plan – Choice of technology and construction method – Defining works tasks – Definition precedence relationships among activities – Estimating activity duration – Estimating resource requirements for work activities.

### UNIT - II

Construction Management Techniques: Construction planning, scheduling, and controlling phases- use of management techniques- bar chart, milestone chart

### UNIT - III

Network Analysis: Introduction – Advantages of network analysis – Activity and Event oriented network – calculation of critical path scheduling – Comparison between PERT and CPM- Activity float and schedules – Crashing and time cost tradeoffs – Improving the scheduling process, problems.

### UNIT - IV

Machinery for building works: Introduction – necessity to mechanize, options of procuring equipment, selection of equipment, concept, standard equipment, construction equipment deployed in large scale building works, construction equipment and their operational use.

### UNIT - V

Cost Effectiveness: Introduction- role of client, contactor, consultant, architect, and engineers. System improvement to achieve cost effectiveness.

**References:**


1. M.R. Sharma, 'Fundamentals of Construction Planning & Management'; S.K. Kataria & Sons, 2013.
2. P.N. Modi, Sanjeev Modi, Rajeev Modi, 'PERT AND CPM (Program Evolution and Review Technique and Critical Path Method)'; Standard Book House, 2017.
3. Calin M. Popescu, Chotchai Charoenngam, 'Project Planning, Scheduling, and Control in Construction: An Encyclopedia of Terms and Applications'; Wiley 1995.
4. Prasanna Chandra, 'Projects: Planning'; McGraw Hill, 2009.
5. Sharma J.C., 'Construction Management and Accounts'; Sathya Prakashan, 2006.
6. Robert Peurifoy, Clifford Schexnayder, Aviad Shapira, Robert Schmitt, 'Construction Planning, Equipment and Methods'; McGraw-Hill Education, 2010.
7. S. P. Mukhopadhyay, 'Project Management for Architects and Civil Engineers'; IIT Kharagpur; 1974.
8. K G Krishnamurthy, S V Ravindra, 'Construction and Project Management'; CBS Publishers, 2017.
9. P.L. Meiyappan, 'Construction Management'; Pradeepa Publications, 2010.
10. B.C. Punmia, K.K. Khandelwal, 'Project Planning and Control with PERT and CPM'; Laxmi Publications, 2016.
11. B. Sengupta and H. Guha, 'Construction Management and Planning'; McGraw Hill Education, 1995.
12. S. K. Bhattacharjee, 'Fundamentals of PERT/CPM & Project Management'; Khanna Publishers, 1996.
13. Jerome D. Wiest and Ferdinand K. Levy, 'A Management Guide to PERT/ CPM'; Prentice Hall, 1969.
14. R.A. Burgess, G. White, 'Building Production and Project Management'; The Construction Press, 1979.
15. K. G., Krishnamurthy, S. V. Ravindra, 'Construction and Project management for Engineers, Architects, Planners and Builders; CBS Publishers.


**Course outcomes (COs):**

The students will be able to -

1. Manage building/construction projects. (PO-11; PSO-3)
2. Understand different management techniques and their tools of network. (PO-11; PSO-3)
3. Identify the required technology in construction planning. (PO-11; PSO-3)
4. Evaluate the cost of the project and estimate the resources required for various construction activities. (PO-11; PSO-3)
5. Suggest and categorize the different construction management techniques, innovations, and processes. (PO-11; PSO-3)

**SEMESTER – VIII**

# ARCHITECTURAL DESIGN-VII

**Course Code: AR801** **Course Credits: 8 : 0 : 1**
**Prerequisite: Nil** **Contact hours: 10 hours/week**
**Course Coordinator: Prof. Pushpa Devanathan**

**Course Objectives:**

To enable students to -

- Understand the role of architecture in the urban context.
- Gain an in-depth understanding of the urban context
- Equip students with tools of data collection for the urban context
- Improve student's critical thinking skills for analysis of the urban context
- To enable students to develop Urban insert large scale projects. based on context studies

**Course contents**

**UNIT - I**

Introduction to key concepts and theories to lay the foundation of urban studies and the study of public realm.
Case studies to understand design parameters within the city.

**UNIT - II**

Planning and understanding of macro, micro and site level context.
Study of the urban and larger city context which may include the study of city history, urban morphology -street networks, landuse, building use, density, environment, topography, townscape, built form characteristics, byelaws, socio-cultural context, political and economic contexts, technology, human activity and behaviour etc. to be able to analyze influences on issues pertaining to health, society, economy and environment.

**UNIT - III**

Study of urban space, large gathering spaces.
Analysis of urban and city context which includes analysis of city, urban morphology - street networks, landuse, building use, density, environment, topography, townscape, built form characteristics, byelaws, socio-cultural context, political and economic contexts, technology, human activity and behaviour etc. and be able to identify a suitable urban and architectural project.

**UNIT - IV**

Development of an appropriate response for the public realm that may address the issue
Study of multiple functions in a space, mixed use development.

**UNIT - V**

Identification and development of an architectural project based on study and analysis completed.
The architectural project should be a response to the study and analysis and should facilitate a suitable solution to the issue(s) identified.

**References:**


1. Charles Correa, Housing & Urbanization: Building Ideas for People and Cities'; Thames and Hudson, 2000
2. James Tait, The Architecture Concept Book, Thames and Hudson, 2018
3. Aldo Rossi, "Architecture of the City", Oppositions Book, The MIT Press, 1984
4. Christopher Alexander, "A Pattern Language: Towns, Buildings, Construction'; ", Oxford University Press, 2015.
5. Krier, Rob, "Urban Space", Academy Editions, London,1967.
   Rizzoli, 1993
6. Kamu Iyer, "Bombay: From Precincts to Sprawl", Popular Prakashan Ltd; 2014.
7. Kevin Lynch, "The Image of the City", MIT Press, 1960.
8. Kevin Lynch, " Good City Form", MIT Press, 1984.
9. Gordon Cullen, " The Concise Townscape", Architectural Press, 1961.
10. Michael Larice and Elizabeth MacDonald, 'The Urban Design Reader', Routledge 2012
11. Elizabeth Welch, "Architecture and Urban Design"; Willford Press, 2019.
12. Charles Montgomery,' Happy City: Transforming Our Lives Through Urban Design', Penguin, 2015.
13. Jan Gehl, 'How to Study Public Life: Methods in Urban Design', Island press, 2013.
14. Frederica Miller, 'Ecovillages around the World: 20 Regenerative Designs for Sustainable Communities'; Findhorn Press, 2018.
15. Mathew Carmona et al, "Public Places Urban Spaces: The Dimensions of Urban Design 2nd edition", Elseiver Ltd., 2010


**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Design | Dwg | Viva | Model | Total |
|---|---|---|---|---|---|---|
| AR801 | AD – VII (Viva voce) | 20 | 15 | 10 | 05 | 50 |

**SEMESTER – VIII**

# BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY VIII

**Course Code: AR802** **Course Credits: 3 : 0 : 1**
**Prerequisite: Nil** **Contact Hours: 5 hours/ week**
**Course Coordinator: Prof. Vishwas Hittalmani**

**Course Objectives**

- Learn Contemporary Construction Systems with modern techniques.
- Acquaint with advanced construction management methods.
- Innovate new directions in Information, Prefabrication and Modular Constructions.
- Experiment with high level of innovations in materials usage and cost control techniques with sustainability.
- Have concern for environmental issues and impact on ecology.

**Course Contents**

**UNIT - I**

**Highrise buildings** – Structural Design, issues, constraints, materials, wind bracing, fabrication, Equipment, maintenance and environmental issues.

**UNIT - II**

**Technology integration** – Influence of Informatics in Construction Industry, Big data, Cloud Collaboration, Information Management, New advances in Construction Technology, building automation.

**UNIT – III**

Green Building Concepts, Construction and Materials, Zero Energy building concepts

**UNIT – IV**

**Retrofit and Repairs**: Life cycle concept of buildings and materials, Repairs / Retrofitting of building due to natural disasters, Earthquake resistant Building Construction methods. Makeshift and prefab structures.

**UNIT - V**

**Smart and Nanomaterials** in Construction and Building Industry. Technologically advanced construction techniques and equipment.

**References:**


1. Modern Construction Handbook – by Andree Watts
2. Modern Construction case studies: Emerging Innovations in Building Techniques – Birkhauser Basel


**Course Outcomes (COs):**

1. Understand the total Construction Technology and Materials handling for Highrise Construction. (PO-5, PO-9, PO-10; PSO-2)
2. Understand Technology Integration, Information Science and new advances in Construction methods. (PO-5, PO-10; PSO-3
3. Apply the Green Building Concepts and energy efficient practices. (PO-7; PSO-2)
4. Understanding Retrofitting and Repairs required for old buildings. (PO-11; PSO-2)
5. Acquire knowledge in smart building concepts and Nanomaterials. (PO-7; PSO-2)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Theory | Project | Total |
|---|---|---|---|---|
| AR802 | Building Materials & Construction technology VIII | 30 | 20 | 50 |

**SEMESTER – VIII**

# IPR & ETHICS

**Course Code: AR803** **Course Credits: 2 : 0 : 0**
**Prerequisite: Nil** **Contact hours: 2 hours/week**
**Course Coordinator: Assoc. Prof. Dr. Rashmi N**

**Course Objective:**

- To provide an insight into professional ethics, legislation aspects and intellectual property rights.

**Course contents**

**UNIT - I**

Introduction of the subject and its relevance to architectural field and society. Fundamentals of Intellectual Property- An introduction to the basic concepts of intellectual property, meaning and scope, comparison of intellectual property vs. physical property. Introduction to types of Intellectual Property Rights trademark, Industrial Design, SICLD, Undisclosed information or trade secret, Geographical indicators, plant varieties & farmer's rights, traditional knowledge.

**UNIT - II**

Fundamentals of intellectual property- Introduction to each type of IPR protection procedure with reference to architecture, to provide insight into patent regime, copyrights and architectural infringement (case studies in other areas).

**UNIT - III**

Prior art search, Technology Transfer and Licensing -Technology Transfer and Commercialization, patent search exercise using the internet, creation of copyright for your own Architectural Design Thesis Project types.

**UNIT - IV**

Filing an application, patent drafting, invention disclosures, Patent Drafting- PCT Applications.

**UNIT - V**

Ethics and Plagiarism in Intellectual Property, infringement Cases

**References:**


1. Thomas Fisher, 'Ethics for Architects: 50 Dilemmas of Professional Practice'; Princeton Architectural Press, 2010.
2. Barry Wasserman, Patrick J. Sullivan, Gregory Palermo, 'Ethics and the Practice of Architecture'; Wiley, 2000.
3. N K Acharya, 'Text Book on Intellectual Property Rights'; Asia Law House, 2012.
4. VK Ahuja, Archa Vashishtha, 'Intellectual Property Rights - Contemporary Developments'; Generic, 2020.
5. Philippe Cullet, 'Intellectual Property Protection and Sustainable Development'; Lexis Nexis India, 2005.


**Course Outcomes (COs):**

The students will be able to -

1. Explain the basic concept of Intellectual Property Rights. (PO-8; PSO-3)
2. Demonstrate the knowledge of different forms of IPR and their characteristics. (PO-8; PSO-3)
3. Understand the technique of prior art search with respect to architectural design and in general. (PO-4; PSO-3)
4. Describe the steps of filing an application and the importance of patent drafting. (PO-6; PSO-3)
5. Work with the awareness of professional ethics, legislation and intellectual property rights. (PO-6; PSO-3)

**SEMESTER – VIII**

# PROFESSIONAL PRACTICE II

**Course Code: AR804** **Course Credits: 3 : 0 : 0**
**Prerequisite: Nil** **Contact Hours: 3 hours/week**
**Course Coordinator: Prof. Pushpa Devanathan**

**Course objectives:**

To enable the students to -

- Understand the professional responsibilities within the ambit of the laws of the land by studying building byelaws and codes.
- Gain insight into easement rights, Arbitration and Conciliation, Valuation, Dilapidation, and law related to land and property.

**Course contents**

**UNIT - I**

Zoning Regulations and building byelaws**:** Introduction, Land use categories, regulations of main land use types, building byelaws applicable to cities-their necessity, various building byelaws - FAR /FSI, setbacks, garage, projections into open spaces, means of access, basement floor, parking norms, etc.

**UNIT - II**

Easement Rights: Definition, characteristics of an easement, natural rights, various easement rights- easement of support, easement of drainage, easement of light and air (ancient light), easement of right of way, easement of eave projection, etc. Continuous and discontinuous easements, apparent and non-apparent easements, extinction of easements, modes of acquiring easement rights, architect's role.

National Building Code: Importance of the NBC, stipulations with respect to fire norms in high-rise buildings.

**UNIT - III**

Valuation: Definition, purpose of valuation, value classification - market value, fair market value, salvage value, etc. Brief description of various methods of valuation, valuation report.

**UNIT - IV**

Dilapidation: Definition, information required prior to preparation of a schedule, schedule format, report and recommendation, architect's role.

Arbitration: Need for Arbitration, modes of settlement of disputes, The Arbitration and Conciliation Act-1996- objective and salient features, procedure adopted in arbitration,

arbitrator, order of reference, selection of arbitrators, powers and duties of arbitrators, arbitral award.

**UNIT - V**

Types of land holdings: freehold tenure and leasehold tenure –building lease, occupation lease

Land Acquisition: Objective, Land Acquisition Act 1894(amended in 1984), procedure for land acquisition.

Introduction to EIA and Acts.

**References:**


1. Practicing architecture- M C Jagger
2. Professional Practice 101: Business Strategies and Case Studies in Architecture- Andrew Pressman
3. The architect- Ram H
4. Legal and Contractual Procedures for Architects by Bob Green Street
5. AJ Legal Handbook
6. Professional Practice for Architects and engineers by Roshan Namavathi
7. Professional Practice by KG Krishnamurthy and SV Ravindra
8. In-fin eight- Prajeet budhale
9. The Architecture Reference & Specification Book- Julia McMorrough
10. By profession - The architect- Sampooneau Vaslov


**Course outcomes (COs):**

The students will be able to -

1. Carry out the professional responsibilities within the ambit of the laws of the land by studying building bye laws, codes. (PO-6; PSO-3)
2. Apply easement rights related to land and property as required. (PO-4; PSO-3)
3. Carry out the process of valuation in architecture works. (PO-4; PSO-3)
4. Apply the process of dilapidation and arbitration to land and property wherever required. (PO-4; PSO-3)
5. Demonstrate key insights on subjects of - land holding and land acquisition. (PO-4; PSO-3)

**SEMESTER – VIII**

# ELECTIVE II

**Course Code: AR805** **Course Credits: 3 : 0 : 0**
**Prerequisite: Nil** **Contact hours: 3 hours/ week**
**Course Coordinator: Prof. Pushpa Devanathan & Prof. Vishwas Hittalmani**

**Course Objectives:**

To enable the students to –

- Pursue study and research in an area of special interest in architecture.
- Select a topic of their interest for their Architectural Design Project.

**Course contents**

**UNIT - I**

Introduction regarding areas of special interest and types of projects.

**UNIT - II**

Topic selection and the norms and standards to be followed.

**UNIT - III**

Case study and collection of data.

**UNIT - IV**

Analysis and synthesis of data.

**UNIT - V**

Finalization of architectural design project with requirements, site details etc.,

**Reference books:**


1. Atul Deulgaonkar, ‘Laurie Baker: Truth in Architecture’; Jyotsna Prakashan, 2015.
2. Simon Unwin, ‘Analysing Architecture’; Routledge, 2009.
3. Joseph De Chiara, Michael J. Crosbie, ‘Time Saver Standards for Building Types’; McGraw Hill Education, 2017.
4. Donald Watson, Michael Crosbie, John Callender, ‘Time Saver Standards for Architectural Design Data’; McGraw-Hill Education, 1997.
5. Ernst Neufert, ‘Architects' Data’; Wiley-Blackwell, 2019.
6. David Bergman, ‘Sustainable Design: A Critical Guide’; Princeton Architectural 26 Press, 2012.
7. Elizabeth A. T. Smith, Peter Gossel, ‘Case Study Houses’; Taschen GmbH, 2009.

8. Peter Blundell Jones, Eamonn Canniffe, 'Modern Architecture Through Case. Studies 1945 to 1990'; Architectural Press, 2007.
9. Analyzing Architecture Case Studies for Beginners- RIBA.
10. National building code of India, Bureau of Standards.
11. Building Byelaws and Zonal regulations.

**Course outcomes (COs):**

The students will be able to -

1. Identify their areas of special interest. (PO-2; PSO-1)
2. Select their topics of interest. (PO-2; PSO-1)
3. Collect appropriate data for their research. (PO-2; PSO-1)
4. Analyse and synthesize data. (PO-2; PSO-1)
5. Furbish project and site details for their Architectural Design Project in the following semester. (PO-4; PSO-1)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| AR805 | Elective (Viva Voce) | 40 | 10 | 50 |

**SEMESTER – VIII**

# SUSTAINABLE ENVIRONMENTAL DESIGN

**Course Code: AR806** **Course Credits: 3 : 0 : 0**
**Prerequisite: Nil** **Contact hours: 3 hours/ week**
**Course Coordinator: Prof. Vishwas Hittalmani**

## Course Objectives

- To sensitize students about the need for sustainable practices in building design.
- Study of various factors involved in creating a sustainable and energy efficient building.

## Course contents

### UNIT I

Introduction to sustainable design and methods adopted in current scenario.

### UNIT II

Assessment of tools in green buildings. For eg LEED, GRIHA etc

### UNIT III

Designing building skins building envelops and building systems considering energy as a major factor.

### UNIT IV

Role of solar geometry in reducing energy within the built environment in addition overall understanding of passive Design principles.

### UNIT V

Existing case studies and retrofitting of Energy efficient buildings, adapting the principles of energy efficient design to the Architectural Design project.

## References:


1. "Housing climate comfort" by Martin Evans.
2. "Climate responsive architecture" by Arvind Kishan, Baker and Szokolay.
3. "Green Architecture"-Design for a sustainable future by Brende and Robert vale.
4. "Green Architecture"-A guide for sustainable design by Michael J Crosbie.

**Course Outcome (COs):**

1. Understand the sustainable methods in current scenario. (PO: 4; PSO: 1)
2. Understand the concept of green buildings. (PO: 4; PSO: 1)
3. Apply sustainable concepts in designing built spaces. (PO: 3; PSO: 2)
4. Understand the passive design principles. (PO: 7; PSO: 2)
5. Apply various factors involved in creating a sustainable and energy efficient design in architectural project. (PO: 3; PSO: 2)

**SEMESTER- VIII**

# WORKING DRAWING-II

**Course Code: AR807** **Course Credits: 0 : 0 : 2**
**Prerequisite: Nil** **Contact hours: 4 hrs / week**
**Course Coordinator: Assoc. Prof. Surekha R**

**Course Objectives:**

To enable the students to -

- Learn the techniques of preparing drawings which are used for construction of buildings
- Prepare centerline drawings of structural and architectural schemes
- Prepare schedule of openings required for a building
- Apply and provide the various services that needs to be provided in a building and to learn the preparation of service drawings for a building
- Learn to represent and draw the detailed interior drawings

**Course Contents**

**UNIT – I**

-Project Work: Project continued from previous working drawings. Preparation of structural drawings. Understand conventions & symbols.

-Foundations/Footing detail - Plan and sections, plinth band, tie beams,.

-Typical column sections; typical beam sections; typical slab sections; miscellaneous details as staircase, ramp, chajja, lintel, arch, duct & pergolas etc.

**UNIT – II**

-Preparing complete set of services drawings for the above said project. The drawings to incorporate services details complete with schedule and all specifications.

-Electrical drawings: Conventions & symbols; plans at all levels along with legend.

-Mechanical drawings: Conventions & symbols; plans at all levels; details of lift along with legend.

**UNIT – III**

-Preparing complete set of services drawings for the above said project. The drawings to incorporate services details complete with schedule and all specifications.

**UNIT – IV**

-Complete integration of architectural, structural and services drawings and details.

**UNIT – V**

-Detailed interior drawings.
-Flooring and skirting plan with fixing details for all floors
-Dado and wall tile pattern for all floors.
-Plaster pattern and color scheme
-Reflected ceiling plan and false ceiling details

**References:**


1. Fred A. Stitt, 'Working Drawing Manual'; McGraw-Hill Education, 1998
2. George T. Clayton, 'Site Plan in Architectural Working Drawings'; Stipes Publishing Llc., 1973
3. Donald Watson, Michael Crosbie, 'Time-Saver Standards for Architectural Design'; McGraw Hill Education, 2017
4. Keith Styles, Andrew Bichard, 'Working Drawings Handbook'; Taylor and Francis
5. Edward Muller, Philip Grau III, 'Reading Architectural Working Drawings: Residential and Light Construction'; Pearson, 2003
6. William J. O'Connell, 'Graphic Communications in Architecture: Standard Format for Architectural Working Drawings'; Stipes Publishing, 1985
7. Rosemary Kilmer, W. Otie Kilmer, 'Construction Drawings and Details for Interiors'; John Wiley & Sons, 2016


**Course Outcomes (COs):**

Students will be able to -

1. Prepare structural drawings that are good to be issued to site for construction (PO: 1; PSO: 1)
2. Prepare electrical and mechanical drawings that are good to be issued to site for construction (PO: 1; PSO: 1)
3. Prepare water supply and sanitary drawings that are good to be issued to site for construction (PO: 1; PSO: 1)
4. Prepare integrated architectural and services drawings (PO: 1; PSO: 1)
5. Prepare interior drawings and develop innovative construction details that are good to be issued to site for construction (PO: 1; PSO: 1)

**Evaluation Pattern:** Marks allocation for SEE

| Subject Code | Subject Name | Portfolio | Viva | Total |
|---|---|---|---|---|
| AR807 | Working Drawing II (SEE Viva Voce) | 40 | 10 | 50 |