

BACHELOR OF ARCHITECTURE - PROGRAMME OUTCOMES

1. **Knowledge** -Understanding about role of various knowledge domains such as humanities, technology, and environment in design of built environment.
2. **Principles & Theory**- Knowledge of principles of architecture & theoretical knowledge and its application in design.
3. **Creativity** - Creative and design thinking ability.
4. **Practice** - Ability to understand real life situation of Architectural Practice and to work with ethical and professional responsibilities.
5. **Collaborative Working** -Ability to communicate effectively and work in interdisciplinary groups.
6. **Inclusivity** -Sensitivity in design for inclusivity, equity, environment, diverse cultures, and heritage.
7. **Technological Knowhow**-Ability to review, comprehend and report technological developments in the profession of architecture and construction.
8. **Ability to choose Area of Specialisation or Practise**- Able to judge one's area of interest and accordingly choose the field of practice.

BACHELOR OF ARCHITECTURE - COURSE OUTCOMES

First year, Semester 1

- 1. Basic design**
 - a. Creation using elements and principles of design.
 - b. Synthesis of multi-sensory aspects of space.
 - c. Space making.
- 2. Building construction and materials I**
 - a. Students will develop a basic understanding of the relationship of materials to construction systems, techniques and methodology with specific reference to load bearing construction
- 3. Theory of structures I - At the end of semester student develops**
 - a. The understanding of building/structure as a system of forces and transfer of forces/load from roof to foundation and soil.
 - b. The understanding of various loads acting on a structure
 - c. The understanding of behaviour of elements like walls, beams and columns subjected to tension, compression, shear and bending.
- 4. Architectural graphics and drawing I**
 - a. Students at the end of the semester should be able to comprehend and express nuances of graphic language through various methods learnt.
 - b. Students should be able to communicate various ideas through architectural graphic representations including building plans and sections (drafting and sketching).
- 5. History of architecture and culture I**
 - a. An understanding of architecture, including settlements, landscapes and buildings as a cultural product shaped by various factors.
 - b. An understanding of the formal, structural, and stylistic aspects of architectural development.
- 6. Communication skills**
 - a. At the end of the course the student should be able to communicate fluently in english language and also use tools of communication such as written and graphical for effective communication
- 7. Workshop I**
 - a. Students at the end of semester should be able to understand relevance of model making both in the process of design and as a product

First year, Semester 2

1. Architectural design I

- a. The student would be able to analyze simple spaces, identify factors affecting their design and be able to design a simple space for human use.

2. Building construction and materials II

- a. Students will expand a basic knowledge about earthquake, understanding of properties, construction techniques of timber with specific reference to use of timber in superstructure (spanning, framing techniques).

3. Theory of structures II - At the end of semester student develops

- a. the understanding of effect of various forces in terms of various stresses and deflection for various structural members like beams and columns.
- b. the understanding of truss as lattice construction and structural actions in it's members

4. Architectural graphics and drawing II

- a. Students at the end of the semester should be able to comprehend and express composite solid geometry through sketches and drawings leading to comprehension of building components.
- b. Students should be able to communicate various ideas through architectural graphic representations including building plans and sections (drafting and sketching).

5. History of architecture and culture II

- a. An understanding of architecture as a cultural product shaped by various factors.
- b. An understanding of the formal, structural, and stylistic aspects of architectural development.
- c. An understanding of indian architecture of the twentieth century in the context of its historical precedents.

6. Fundamentals of architecture

7. Workshop II

- a. Students at the end of semester should be able demonstrate sufficient skills in making architectural models.

Second year, Semester 3

1. Architectural Design II

- a. At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design and communicate it in form of 2D and 3D representations.

2. Building Construction and Materials III

Students will develop a basic understanding of the relationship of materials to construction systems, techniques and methodology with specific reference to reinforce cement concrete construction; an understanding of the concepts of concrete as a building construction material.

3. Theory of Structures IV

At the end of semester student develops

- i. The understanding of the concepts of Fixity, Continuity and Torque
- ii. The Skills to Design small spanned Wooden Beams
- iii. The Skills to Design Small Spanned R.C.C Structure w.r.t Slabs, Beams and Columns and use it for his B.C.M and W.D. subjects

4. Computer Aided Drawing and Graphics

- a. Students should be able to comprehend and express nuances of graphic language through various presentation techniques and methods learnt.
- b. Students should be able to communicate various ideas through architectural graphic representations (drafting and sketching).

5. History of Architecture and Culture III

- a. An understanding of architecture as a product shaped by various factors like religion and society.
- b. An understanding of the formal, structural, and stylistic aspects of architectural development.
- c. An understanding of the factors that bring about the processes of change in architectural manifestations and its meanings.

6. Building Services I

7. Climatology

Second year, Semester 4

1. Architectural Design III

At the end of the course the student is equipped to take design decisions by considering various aspects and methodically evolve a design where two or more buildings are to be planned on a site and communicate it in form of 2D and 3D representations.

2. Building Construction and Materials IV

Students will develop an understanding about concrete and its variants and artificial materials such as glass and plastic and their application in construction. Students will be developing knowledge about the vertical transportation systems and their design and construction requirement.

3. Theory of Structures IV

At the end of course student develops

- a. The understanding of supporting Balconies and Staircases
- b. The Understanding of Dividing Larger Rooms in Smaller One Way or Two Way Slab Units
- c. The Understanding of Steel as a Material and Various Steel Sections and their use.
- d. The understanding of using Steel Girders and Stanchions

4. Environmental Science

Students should be able to grasp the interdisciplinary nature of environment science and its interdependence on development and society. They should be able to think holistically about environment when taking architectural design decisions

5. History of Architecture and Culture IV

- a. An understanding of architecture as a product shaped by various factors like technological developments, colonization, globalization, economy, and urbanization.
- b. An understanding of the formal, structural, and stylistic aspects of architectural development.
- c. An understanding of contemporary architecture of the world with reference to historical precedents and responses to the same.
- d. An understanding of the architecture of colonial and post-independence India.

6. Building Services II

Students should be able to understand basic principles of daylight and artificial lighting and should be able to design a lighting plan for a space. They should be able to calculate the energy requirement of building electrical systems. Students should be able to identify space requirements and integration of these systems in architectural design.

7. Site Survey and Analysis

At the end of the course students would be able to comprehend the site characteristics, reading and interpreting survey drawings, understanding equipment and methods of surveying leveling

Third year, Semester 5

1. Architectural Design IV

- a. Build competency and ability to make communicative architectural drawings that are of readable scales, preferably in:
 - i. 1:200 (Site level drawings & Model)
 - ii. 1:100 (Cluster level drawings)
 - iii. Appropriate details to be explored at 1:50/20/10 etc.
- b. Be able to negotiate various scales in drawings and models.
- c. Be equipped to resolve structural systems of various construction techniques and services

2. Building Construction and Materials V

Students will understand of the principle, methods, advantages and disadvantages of concrete floor construction systems and single basement construction. Students will get to know the proprietary construction techniques for partition ceilings with latest available materials

3. Theory of Structures V

At the end of semester student develops

- i. The understanding of larger space spanning both in R.C.C and Steel
- ii. The understanding of carrying of vertical loads by R.C.C. Columns and Stanchions
- iii. The understanding Lateral pressure and structural principles for overcoming it.

4. Landscape Architecture

5. Elective I [Contemporary Architecture]

- a. Application of the knowledge gained through the study of history of architecture to analyse contemporary architecture.
- b. Development of individual view point and construction of an argument to put it across.
- c. Skill of orally presenting a topic of choice, and generating a discussion.

6. Building Services III

7. Working Drawing I

Third year, Semester 6

1. Architectural Design V

- a. Build competency and ability to make communicative architectural drawings that are of readable scales, preferably in:
 - i. 1:200 (Site level drawings & Model)
 - ii. 1:100 (Cluster level drawings)
 - iii. Appropriate details to be explored at 1:50/20/10 etc.
- b. Be able to negotiate various scales in drawings and models.
- c. Be equipped to resolve structural systems of various construction techniques and services.

2. Building Construction and Materials VI

Students will develop an understanding of possibilities of steel as an important building construction material. Understanding of properties of ferrous and non ferrous metals as materials for buildings will able students to use Steel innovatively in building projects.

3. Theory of Structures VI

At the end of semester student develops

- i. The understanding Effects of Lateral Pressure of Soil and Water
- ii. The sense to frame R.C.C and Steel Buildings
- iii. The Understanding of different Structural Systems for Larger Spans and Tall Buildings with an understanding of Wind Load

4. Research in Architecture I

5. Elective II

6. Working Drawing II



MASTERS IN ARCHITECTURE (LANDSCAPE ARCHITECTURE)

PROGRAM EDUCATIONAL OBJECTIVES [PEO]-

1. **THEORITICAL BASE** - To develop a theoretical understanding of landscape architecture from micro-level to macro-level.

2. **KNOWLEDGE AND SKILLS** – To enhance the knowledge and skills of the students with reference to designing and planning of open spaces as part of natural and designed environment. The importance of local and traditional knowledge (citizens, decision-makers or experts) and its contribution to the design process is essential.

3. **VALUES** – To instill the students with the ability and desire to work on interdisciplinary teams, respecting universal values as well as context –specific values associated with various disciplines involved values of nature and community both.

4. **RESEARCH** –To give opportunity to students to be part of a culture of landscape research and scholarship, which involves scientific research, encouraging the students and faculty to think creatively and critically both, and to make them aware about the landscape architecture profession, its opportunities and challenges.

5. **PRACTICE AND ETHICS** – To make the students critically aware of the motivations behind clients' needs within the context of public policy and the environment in order to foster an ethical framework for decision making in the profession at design, planning and management level of landscapes.

PROGRAM OUTCOMES [PO]-

1. DESIGN AND PLANNING ABILITIES – Imparting the abilities with respect to design and planning of landscapes

2. KNOWLEDGE BASE – Knowledge of theory of landscape architecture, research and allied disciplines relevant to the field and its challenges , applicative understanding of the theoretical base

3. PRACTICAL, TECHNICAL AND COMMUNICATION SKILLS- Ability to work on real life contexts/projects (design, planning, and research) and contribute individually and also as team member to the same with practical, technical and communication skills. Ability to communicate and work in an interdisciplinary team.

4. SENSITIZATION, RESPONSIBILITY, COMMITMENT (TOWARDS NATURAL AND CULTURAL ENVIRONMENT AND ASSOCIATED ETHICAL PRACTICES)- Ability to be sensitive, responsible and committed towards natural and cultural environment and associated ethical practices

5. OUREACH, DIVERSITY AND EXPOSURE – Ability to expand the scope of work of landscape design and planning and to respond to diverse situations in urban and rural contexts with an interdisciplinary perspective. Ability to imbibe, review, make decisions through self initiated learning process, outreach and exposure with respect to local, national and international platforms which need services of a landscape architect.

MATRIX OF PROGRAM EDUCATIONAL OBJECTIVES AND PROGRAM OUTCOMES

PEO	PO1 DESIGN AND PLANNING	PO2 KNOWLEDGE BASE	PO3 PRACTICAL, TECHNICAL AND COMMUNICATI	PO4 SENSITIZATION, RESPONSIBILT Y, COMMITMENT	PO5 OUREACH, DIVERSITY AND EXPOSURE
PEO1- THEORITICAL BASE	√	√			
PEO2- KNOWLEDGE AND SKILLS	√	√	√	√	√
PEO3- VALUES	√		√	√	
PEO4 RESEARCH	√		√		√
PEO5 PRACTICE AND ETHICS			√	√	√

Sr.No.	Program Outcomes	Subjects in curriculum
1	PO1- 1. DESIGN AND PLANNING ABILITIES	Landscape Design Studio-I, II, III Plants and Design Landscape Planning Theory of Landscape-I, II Landscape Architecture Project
2	PO2- 2. KNOWLEDGE BASE	Elective-I, II, III Landscape Engineering Geology and soils Geomorphology and Hydrology Ecology and Ecosystem Analysis Plant systematic and taxonomy Landscape Management and Legislation Research-I
3	PO3- 3. PRACTICAL, TECHNICAL AND COMMUNICATION SKILLS	Landscape Professional practice and Training Elective-2 Research-II Landscape Architecture Project
4	PO4- 4. SENSITIZATION, RESPONSIBILITY, COMMITMENT	Landscape Architecture Project Elective –III (Open Elective) Landscape Professional practice and Training
5	PO5- 5. OUREACH, DIVERSITY AND EXPOSURE	Elective-1 Elective-2 Elective -3 Landscape Architecture Project

Sr.No.	Electives	Tentative Subjects of Electives
01	Elective I [Sem-1]	1. Horticulture Practices 2. Sustainable landscape practices 3. Nature and Community 4. Social and behavioural study
02	Elective II [Sem-2]	1. Landscape Architecture Journalism 2. Landscape and Art 3. Landscape Construction and Services
03	Elective III [Sem-4]	Open Elective-Choice Based-Interdisciplinary Elective



Masters in Digital Architecture

PROGRAM OUTCOMES (PO)

- **PARAMETRIC KNOWLEDGE BASE** – Ability to understand concepts and skills for architectural geometry construction using parametric modelling processes and having knowledge of theoretical framework towards development of contemporary parametric modelling processes for customizing generative design systems
- **PARAMETRIC SKILL BASE** - Proficiency in digital design and fabrication towards the creative design of an advanced level interactive built environments
- **TECHNICAL AND COMMUNICATION SKILL**- Proficiency in describing various elements of architectural design as sets of parameters which are then expressed as numeric and geometric relationships. Develop ability to communicate parametric process and design through graphical technical and communication skills.
- **CONTINUING PROFESSIONAL DEVELOPMENT**- To be able to expand the acquired proficiency in parametric processes or to develop the area of study so that it contributes to contemporary architectural practice
- **DIVERSITY & EXPOSURE TO A MULTIDISCIPLINARY ENVIRONMENT**- Ability to apply parametric skills to allied design fields and Work in teams on interoperability platforms

Sr No	Program outcomes	Subjects in curriculum
1	Parametric knowledge base	Digital Design Studio I,II&III DA process theories and History-1,II,III
2	Parametric design skills	Parametric Softwares Digital Fabrication I,II&III Analysis Software
3	Technical and communication skill	Analytical diagramming and Architectural Representation Parametric urban mapping Research Methodologies -I
4	Continuing professional development	Practical training Digital Architectural Project Elective III Research Paper
5	Diversity & Extension to a multidisciplinary environment	Elective –I Elective-II
Sr No	Electives	Tentative Subjects for Electives
01	Elective I(Sem I)	Digital Materiality and Tectonics, Performative design, Techniques and Technologies in Morphogenetic Design
02	Elective II (Sem II)	Product design, Furniture Design, Automotive design and styling and Fashion technology.

03	Elective III(Sem IV)	Open Elective –Choice based -interdisciplinary elective
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PROGRAM EDUCATIONAL OBJECTIVES (PEO)-

1. **THEORETICAL BASE** – To inquire into the varied nature and practice of computation in architectural design, and the ways in which design meaning, intentions, and knowledge are constructed through parametric thinking, representing, sensing, and making. They focus on the development of innovative computational tools, processes, and theories, and their application
2. **KNOWLEDGE AND SKILLS** - to enhance skills wrt creative design of an advanced level interactive built environments that pursues transformation of conceptual design to production documentation and manufacturing of built environments using contemporary digital mediums
3. **RESEARCH** - To encourage students to enhance understanding of a specific field of interest, and to initiate them towards experimental leanings in the field of Digital architecture and fabrication practice
4. **EXTENSION & COLLABORATION** -To expose the students to the prevalence of collaborative platforms in the field of Parametric architecture and digital research and to allow them to test their skills of digital design and production by venturing in any allied field of practice /research

CO(Course outcome)

- Digital technologies with its applications have been a catalyst in changing the way we live and aspire and have significantly changed the way architecture is practiced and produced. The focus of the curriculum is to prepare architectural academics for future aspirations. The intent is to reconfigure learning patterns that are inspired by a desire to harness increasingly sophisticated digital technologies in architectural design and construction.
- Digital architecture covers the entire gamut of digital tools, software's and technologies as and when they are applied to architectural design and execution process and thus relates to the entire span of the built environment based on digital technologies ranging from analysis, mapping to computational design, services, information modelling and construction management.
- At the heart of the curriculum are the parametric design processes that are used for generation of different formal expressions of a design concept. The term parametric design implies the representation of a design with a series of associative operations, controlled by constraints and parameters. These are defined in parametric software's that are able to generate interactive forms in the three dimensional (3D) space. The realization of such designs is facilitated by CAM processes essentially known as digital fabrication. With the use of parametric design tools, students/practitioners can study the interactive relationships of architectural designs in the early steps. By enabling the enlarged set of performances assessed impact choices at an early stage, parametric tools enhance interdisciplinarity, and creates a visual link between form

and numeric performance evaluations, which in turn reduce the investment in poor performing solutions. Furthermore, they can revise basic aspects of the actual construction, including material, manufacturing technologies and structural components. This understanding and formulation of a procedural symbiotic relationship between conception, generation, and production is the crux of the digital architecture curriculum. The gamut of functional and formal knowledge includes parametric design methodologies, digital fabrication, parametric process theories, parametric software proficiencies, Interactive architecture through embedded systems, parametric urbanism as its core intent and are supported by a variety of subjects like, analytical diagramming and parametric thinking, evolutionary processes and morphogenetic strategies, performance based studies through analysis software's, parametric urbanism and research methodologies Experimental leanings in the field are explored through subjects like digital tectonics and materiality, parametric processes in allied fields, generative urbanism and responsive design in the form of electives.

Mechanisms used for attainment of these POs,COs,PSOs.

The digital Architecture department specifically takes efforts to integrate the analogue and digital design methods in the studio. The Fabrication studio briefs are all attuned to the exchange between analogue and digital formats of experimentation and data exchange that enable us to appropriate makeability of the digital designs on site in the Indian conditions.

- The studio(Design and Fabrication) briefs allows students to create and research on geometries, material and design that have no precedence and are also converted into life scale enclosure installations and furniture giving them a credible experience of learning by doing
- The departments make attempts at converting students projects into life scale prototypes to be able to facilitate the concept of learning by doing
- The presence of the Fabrication lab in the form of DFL(Digital Fabrication Lab) allows Digital tools – computers, software, and imaging, modelling to stretch the boundaries of architecture both in terms of form and design process. The facility allows us to approach architecture as a craft.



MASTERS IN ARCHITECTURE (ENVIRONMENTAL ARCHITECTURE)

PROGRAM EDUCATIONAL OBJECTIVES (PEO'S)

1. **KNOWLEDGE AND SKILLS** - To enable students to gain practical knowledge in the field of environmental design and interpret this to achieve environmental sustainability. To enable students to integrate traditional knowledge with contemporary practices.
2. **RESEARCH** - To enable students to critically evaluate research and practices in the field to arrive at studied solutions. To inculcate scientific research thinking and critical analysis in the environmental research domain for the students and faculty both.
3. **EMPLOYABILITY**- To enable students to become architectural practitioners with a clear understanding of global issues. To enable students to take informed and independent decisions pertinent to their field with client needs in mind in the context of current policy requirements.
4. **ETHICS & VALUES** – To instill students with the ability to work in context specific domains in an interdisciplinary work culture respecting the values of the various disciplines. To provide students with the ability to integrate knowledge of environment enabling them to work for the larger benefit of society. The students should be able to take design decisions based on ethical considerations in the profession.
5. **THEORETICAL BASE** – To provide students with a technically sound base of theory and practical knowledge from issues ranging from the micro to the macro level of environmental concerns.

PROGRAM OUTCOMES (PO's)

On completion of the program

1. **Design and planning knowledge** - Graduates will be able to identify issues related to sustainability and provide architectural or planning solutions. Graduates will be able to address various environmental problems through design and planning using cutting edge methods and approaches.
2. **Research Skills** - Graduates will be able to demonstrate skills in research and critical thinking
3. **Technical Knowledge** - Graduates will be able to address and resolve issues related to energy and other sustainability concepts in architectural design. Graduates will be able to apply appropriate methods, tools and technologies to achieve integrated environmental designs
4. **Practical Knowledge** - Graduates will be able to identify and resolve issues in the real life context with the goal of achieving environmental sustainability. Ability to imbibe current and contemporary practices enabling them to handle a wide range of projects from rural to urban contexts.
5. **Sensitization and Responsibility** - Graduates will be able to understand the holistic perspective of environment developing a sensitive understanding of the natural environment to ensure the responsibility towards the future generations for the use of these resources.

6. **Communication Skills** – Graduates will be enabled with the ability to effectively communicate their ideas through various mediums like graphic and oral presentation skills to ensure the transfer of knowledge to professionals and common man alike.
7. **Social Responsibility** - Graduates will be able to apply knowledge gained to the greater good of society through design and research.

M.ARCH. (ENVIRONMENT)
SPPU, PUNE

MATRIX OF PROGRAM EDUCATIONAL OBJECTIVES AND PROGRAM OUTCOMES

PEO	PO1 DESIGN AND PLANNING	PO2 RESEARCH SKILLS	PO3 TECHNICAL KNOWLEDGE	PO4 PRACTICAL KNOWLEDGE	PO5 SENSITIZATION AND RESPONSIBILITY	PO6 COMMUNICATIO N SKILLS	PO7 SOCIAL RESPONSIBILITY
PE01- KNOWLEDGE AND SKILLS	√	√	√			√	
PE02- RESEARCH		√				√	√
PE03- EMPLOYABILITY	√		√	√	√	√	√
PE04 ETHICS & VALUES		√			√		√
PE05 THEORETICAL BASE	√		√	√			

Sr.No.	Program Outcomes	Subjects in curriculum
1	PO1-DESIGN AND PLANNING	Environmental Design Studio-I, II, III Sustainable Development and Environmental Management Environmental Architecture Project Lighting Lab
2	PO2- RESEARCH SKILLS	Elective-I, II, III Research I and II Environmental Laws and Legislations Environmental Architecture Project
3	PO3- TECHNICAL KNOWLEDGE	Research-II Environmental Architecture Project Building Energy Management I and II Tools for measuring sustainability Software Simulation Building Physics I Lighting Lab Advanced Technology and Design Lab
4	PO4- PRACTICAL KNOWLEDGE	Environmental Architecture Project Elective –III (Open Elective) Environmental Professional practice and Training Building Physics I

Sr.No.	Program Outcomes	Subjects in curriculum
5	PO5- SENSITISATION AND RESPONSIBILITY	Environmental Design Studio II Environmental Architecture Project Natural Resource Management
6	PO6- COMMUNICATION SKILLS	Research II Elective I Elective II Elective III Environmental Design Studio-I, II, III Environmental Professional practice and Training
7	PO7- SOCIAL RESPONSIBILITY	Environmental Design Studio II Research II

Sr.No.	Electives	Tentative Subjects of Electives
01	Elective I [Sem-1]	1. Efficient Building Materials & Technologies 2. Carbon Footprint and Mapping 3. Global Trends in Sustainability and Outreach
02	Elective II [Sem-2]	1. Environmental Behavior 2. Indoor Environmental Quality 3. Post Occupancy Evaluation and Techniques
03	Elective III [Sem-4]	Open Elective-Choice Based-Interdisciplinary Elective



