

# UNIVERSITY OF MUMBAI



## **Syllabus for the Bachelor of Architecture**

**Programme : B.Arch.**

**Bachelor of Architecture  
(Semester IX & X )**

(As per Credit Based Semester and Grading System with  
effect from the academic year 2016-17)

## Scheme of Teaching and Examinations Bachelor of Architecture (B. Arch.)

### Semester IX

Semester IX Exam conducted by college		Teaching Scheme		Credits		
Course code	Courses	Lecture	Studio	Theory	Studio	Total
BARC 901	Architectural Design Studio 8		8		8	8
BARC 902	Allied Design Studio 8	2	3	2	3	5
BARC 903	Architectural Building Construction 8	2	2 classes of technology studio	2	1	3
BARC 904	Theory and Design of Structures 8	1		1	1	2
BARC 908	Architectural Building Services 6	1	2 classes of technology studio	1	1	2
BARC 906	Environmental studies 4	2		2	1	3
BARC 910	Professional practice 2	3		3		3
BARD 911	Design Dissertation 1	1	3	1	3	4
BARE 921	Elective 8		3		3	3
BARE 922	Elective 9		3		3	3
	Total	14	22	14	22	36

Semester IX Exam conducted by college		Examination Scheme			
Course code	courses	Theory (paper)	Internal	External viva	Total
BARC 901	Architectural Design Studio 8		100	100	200
BARC 902	Allied Design Studio 8	50	50		100
BARC 903	Architectural Building Construction 8		100		100
BARC 904	Theory and Design of Structures 8		50		50
BARC 908	Architectural Building Services 6		50		50
BARC 906	Environmental studies 4		100		100
BARC 910	Professional practice 3	50	50		100
BARD 911	Design Dissertation 1		50	50	100
BARP 921	Elective 8		100		100
BARE 922	Elective 9		100		100
	Total	100	650	150	1000

## **Syllabus (Course Content) for final year B. Arch. programme Semester IX**

### **901 Achitectural Design Studio 8**

**Credits-8**

#### **Teaching Hours**

Lectures- -----

Studio- 144 periods of 50 minutes duration -120 hours

#### **Scheme of examination**

Theory: -----

#### **Sessional marks-**

Internal- 100

External ---100

#### **Course Objectives**

Collection and analysis of data related to Design topic.

Application of technical knowledge to design detailing

Understanding impact of socio economic factors on user requirements

Study of climatic conditions, Site analysis, site planning

Understanding traffic patterns and transportation.

#### **Expected Course out come**

Architecture for urban commercial, transportation, recreation, entertainment activities for masses with respect to following

- Development of appropriate architectural forms, their grouping and composition,
- Architectural detailing.
- Provision of required infrastructure and services
- Design of complex/ multifunctional buildings and surrounding spaces

### **902 Allied Design Studio 8**

**Credits-5**

#### **Teaching Hours**

Lectures- 36 classes of 50 minutes duration – 30hours

Studio- 54 periods of 50 minutes duration -45 hours

#### **Scheme of examination**

Theory: one paper of two hours duration Max. marks- 50 Min marks for passing- 20

**Sessional marks-**

Internal- 50 marks

External ----

The course content will be developed by the individual colleges as per their choice of Allied Design scheme.

Suggested Themes: Town planning, Urban Design, Housing, Environmental design

**903 Architectural Building construction 8****Credits-3**

Lectures-36 periods of 50 minutes duration- 30 hours

Studio- 18 periods of 50 minutes duration- 15 hours

( to be conducted as a part of technology studio of 36 periods of 50 minutes duration – 30 hours)

**Scheme of examination**

Theory: -----

**Sessional marks-**

Internal- 100 marks

External ----

Long span structures, Long span beams, Long span Trusses & Roof structures.

Long span Arches,

Cable structures,

Folded Plate structures, and Space frames,

Shell structures.

**904 theory and Design of Structures 8****Credits-2**

Lectures-18 periods of 50 minutes duration- 15 hours

Studio- 18 periods of 50 minutes duration- 15 hours

( to be conducted as a part of integrated studio of 36 periods of 50 minutes duration – 30 hours)

**Scheme of examination**

Theory: -----

**Sessional marks-**

Internal- 100 marks

External ----

1. Long span structures

Long span beams, Long span Trusses & Roof structures.

Long span Arches,

2. Cable supported structures

3. Folded Plate structures, Shell structures.
4. Space frames
5. Portal frames
6. Pre-stressed Concrete, Pre-stressing and its applications to buildings, Principles of Pre-tensioning & Post-tensioning

Sessional work based upon above.

### **906 Environmental Studies 4** **Credits-3**

Lectures-36 periods of 50 minutes duration- 30 hours  
 Studio- 18 periods of 50 minutes duration- 15 hours  
 ( to be conducted as a part of technology studio of 36 periods of 50 minutes duration – 30 hours)

#### **Scheme of examination**

Theory: -----

#### **Sessional marks-**

Internal- 100 marks

External ----

**Objective:** To study and understand sustainable building design processes

#### **1. Concepts of Sustainable Building**

Social, Economic and Environmental aspects  
 Different types of Indian and International Rating Systems (GRIHA, LEED, IGBC, Eco Housing, BREEAM, CASBEE, etc)

#### **2. Studying the Nation Building Code (NBC 2005) code with respect to the Chapter 11 on Sustainability**

#### **3. Energy Efficiency**

Energy Efficient Design (Achieving Efficiency through design)  
 Energy Conservation Building Codes (ECBC) Codes 2007  
 Learning Different Energy Simulation Techniques (Energy / Lighting)  
 Advanced Energy Efficient Standards and Systems  
     HVAC  
     Lighting  
     Appliances and Equipments  
     Building Envelope

Understanding and calculation of energy consumption of a House, office building

#### **4. Water Efficiency**

Water and Waste Water Management (Study of Water Balancing)

Rain Water Harvesting

Efficient waste water treatment techniques (DEWATS, MBR, MBBR etc)

Efficient Water Fixtures

#### **5. Material Efficiency**

Understanding various parameters for Sustainable Building Materials and evaluate using LCA (ISO 14000)

#### **6. Solid Waste Management**

Sessional work based upon above in form of case studies, report, presentations.

### **908 Architectural Building services 6**

#### **Credits-2**

#### **Teaching Hours**

Lectures-18 periods of 50 minutes duration- 15 hours

Studio- 18 periods of 50 minutes duration- 15 hours

( to be conducted as a part of technology studio of 36 periods of 50 minutes duration – 30 hours)

#### **Scheme of examination**

Theory: -----

#### **Sessional marks-**

Internal- 50

External ---

#### **Theme:**

Integrated services

Specialized Services required for specific functions/ building types (for example hospitals, hotels, auditorium)

Specialized services as per climatic conditions

Building management systems

Infrastructure and amenities for public spaces

Sessional work: Reports and Case studies related to Thesis topic.

### **910 Professional Practice 2**

### **Credits-3**

#### **Teaching Hours**

Lectures- 54 classes of 50 minutes duration – 45 hours

Studio- -----

#### **Scheme of examination**

Theory: one paper of two hours duration Max. marks- 50 Min marks for passing- 20

#### **Sessional marks-**

Internal- 50 marks

External ----

Instructions in the following should be such as to understand the purpose and implication of its application, instructions to the students should be general without going too much in detail in legal aspects.

#### **Acquisition**

General principles of land acquisition with reference to norms of compensation.

Purpose of acquisition

#### **Valuation**

Elements of valuation- market value methods of valuation specially income capitalization technique and physical method of valuation

Elementary examples including one for ownership flats and premises, Building up or determining rate of capitalization based on **gilt-edged theory** and general **investment market theory**.

Valuer and his/her function including registration

Meaning of immovable property- ownership and possession.

Joint tenancies and tenancy in common- types of tenure with special reference to freehold and leasehold tenure.

Different types of tenures of land- as commonly found- leasehold and freehold and lease and other rents.

Rent- different types of rent- standard rent, example on working out of standard rent.

Ratable value and its relation to rent- nature and purpose of ratable value. Rent control act

Definition of property- ownership and possession- Joint tenancies and tenancy in common- types of tenure with special reference to freehold and leasehold tenure.

Principle types of landed properties- their outgoings calculation of rented value and not income market value.

Principles governing the rate of interest required for different types and class of properties- gilt edged securities.

Valuation

Ownership basis flats  
Use in practice( Construction is not contemplated)  
Gross annual value ratable value and their application

Dilapidation  
Procedure for preparing report and schedule of dilapidations  
Settlement of claims  
Law related to structural and general repairs

Fire Insurance  
Insurance policy and cover note  
Fire loss assessment claim and report  
Insurable value of the property.

Easement of Light, Ventilation and Access.

Sessional work based on above

## **911 Design Dissertation 1**

**Credits-4**

### **Teaching Hours**

Lectures- 18 classes of 50 minutes duration – 15hours  
Studio- 54 classes of 50 minutes duration – 45 hours

### **Scheme of examination**

Theory: -----

### **Sessional marks-**

Internal- 50 marks                      External viva – 50 marks ( in the beginning of semester 10 )

Students are required to choose a topic and conduct research under the guidance of internal teachers. They are required to submit a report to in the given format.

The report should include

Title and description of the topic

Justification for Architectural intervention in context.

Back ground study

Review of related literature

Analysis of terms

Methodology of study (Survey, Case studies, project reviews)

Findings and analysis based on the methodology

Design objectives based upon the findings, and development of design brief

Site selection criteria



Description of the site

Site analysis to include local Architectural context, and socio economic conditions.

Climatic and environmental conditions, and prevalent bylaws.

### **921 Elective 8**

**Credits- 3**

**Teaching Hours**

Studio- 54 periods of 50 minutes duration – 45 hours

**Sessional marks-**

Internal- 100

External -----

*The electives are to be offered by individual colleges based upon current issues in Architecture and Urbanity*

### **922 Elective 9**

**Credits- 3**

**Teaching Hours**

Studio- 54 periods of 50 minutes duration – 45 hours

**Sessional marks-**

Internal- 100

External -----

The elective can be chosen by individual students based upon the topic related to Design Dissertation, under the guidance of internal teacher / guide.

**DETAILS OF SCHEME OF EXAMINATION SEMESTER IX**

**BACHELOR OF ARCHITECTURE: SEMESTER IX EXAMINATION  
TO BE CONDUCTED BY COLLEGES.**

SUB. NO.	COURSES	No of Papers	Duration	Max Marks	Min Marks for Passing	SESSIONAL MARKS				Max Marks for the Course
						THEORY		INTERNAL	EXTERNAL	
	Semester IX EXAMINATION Exam conducted by individual colleges									
BARC 901	Architectural Design 8	---	----	---	---	100	50	100	50	200
BARC 902	Allied Design 8	1	2HOURS	50	20	50	25	----	----	100
BARC 903	Architectural Building Construction 8	----	---	---	---	100	50			100
BARC 904	Theory and Design of Structures 8	----	---	---	---	50	25	---	----	50
BARC 906	Environmental studies 4	---	----	---	---	100	50	----	----	100
BARC 908	Architectural Building Services 6	---	----	---	---	50	25			50
BARC 910	Professional Practice 2	1	2HOURS	50	20	50	25	----	----	100
BARD 912	Design Dissertation 1	----	---	---	---	50	25	50	25	100
BARE 921	Elective 8	---	---	---	---	100	50	---	---	100
BARE 921	Elective 9	---	---	---	---	100	50	---	---	100
<b>Total marks for the examination</b>										<b>1000</b>

**Notes:** Theory, Internal sessional work, and External viva are considered as separate heads of passing

Total marks for the examination = 1000

Minimum marks for passing the examination= 500

## Scheme of Teaching and Examinations Bachelor of Architecture (B. Arch.)

### Semester X

Semester X Exam conducted by University of Mumbai		Teaching Scheme		Credits		
COURSE CODE.	COURSES	Lecture	Studio	Theory	Studio	Total
BARC 1006	Environmental studies 5 ( Building sciences and sustainability)	2	8 classes of technology studio	2	1	3
BARC 1007	Architectural representation & detailing 9			6	6	
BARC 1012	Advanced Building Construction and structures	2		2	1	3
BARC 1009	Advanced Theories 4			2		2
BARC 1010	Professional Practice 3	2		2		2
BARD 1011	Design Dissertation 2		16		16	16
BARE 1021	Elective 10		4		4	4
	Total	2	34	2	34	36

Semester X Exam conducted by University of Mumbai		Examination Scheme			
COURSE CODE	COURSES	Theory (paper)	Internal	External viva	Total
BARC 1006	Environmental studies 5 ( Building sciences and sustainability)		100		100
BARC 1007	Architectural representation & detailing 9		100	100	200
BARC 1012	Advanced Building Construction and structures		100		100
BARC 1009	Architectural Theories 4		50		50
BARC 1010	Professional Practice 3		50		50
BARD 1011	Design Dissertation 2		200	200	400
BARE 1021	Elective 9		100		100
	Total		700	300	1000

## **Syllabus (Course Content) for final year B. Arch. programme Semester X**

### **1006Environmental Studies 5**

#### **Credits-3**

Lectures-36 periods of 50 minutes duration- 30 hours

Studio- 18 periods of 50 minutes duration- 15 hours

( to be conducted as a part of technology studio of 144 periods of 50 minutes duration – 120 hours)

#### **Scheme of examination**

Theory: -----

#### **Sessional marks-**

Internal- 100 marks

External ----

**Objective:** To evaluate and apply sustainable building strategies over design.

- 1. Post occupancy evaluation of case studies of student's thesis work.**
- 2. Urban sustainability**
- 3. Impacts of built environment on its surroundings.**

### **1007Architectural Representation and detailing 8**

#### **Credits 6**

#### **Teaching Hours**

Studio-108 periods of 50 minutes- 90 hours.

( to be conducted as a part of technology studio of 144 periods of 50 minutes duration – 120 hours)

#### **Scheme of examination**

Theory: -----

#### **Sessional marks-**

Internal- 100

External ---100

**External viva will be conducted simultaneously for Design dissertation and design detailing**

Students are required to submit a report to describe :

Structural system

Method of construction and materials

Active and passive Systems related to building sciences and environment protection

Required Drawings :

Detailed sections showing structural system

Schematic plan of design with services

Students are encouraged to detail out any significant part of their design under supervision of guides.

**1012 Advanced Building construction and structures**  
**Credits-3**

Lectures-36periods of 50 minutes duration- 30 hours

Studio- 18 periods of 50 minutes duration- 15 hours

( to be conducted as a part of technology studio of 144 periods of 50 minutes duration – 120 hours)

**Scheme of examination**

Theory: -----

**Sessional marks-**

Internal- 100 marks

External ----

1. Study of various Structural systems and methods of construction
2. selection criteria of structural system and method of construction for building types
3. Intelligent structures and control of structural response

Sessional work – Case studies, reports

Applications- structural and construction details for design Dissertation projects

## **1009 Architectural Theories 4**

### **Credits-2**

Lectures-36 periods of 50 minutes duration- 30 hours  
Studio -----

### **Scheme of examination**

Theory: -----

**Sessional marks- 50**

### **Advanced Theories**

Theory is an integral aspect of cultural analysis of which architecture is central. Significant inputs to current architectural theory have been from disciplines outside architecture that have made thinking richer and more relevant. Architectural Theory today is multi-disciplinary in nature, and this has significant bearing on architectural design.

The objective of learning in this semester is to make students aware of the current discourses in architecture through a direct interaction with architectural thinking and ideas. It is to make comprehensible the evolution of ideas in architecture, especially after the modernist era. Students should be provided readings, and discussions on both the ideas and the language of theory are encouraged, using actual examples of architecture. Sessional work should include writing about architecture, becoming conversant with the current language of theory and gaining an insight and sensitivity to architectural thinking that influences architectural practice today.

1.0 What are the current discourses in architecture today?

Understanding the effects of contemporary thought in society and culture today, and its impact on architectural design. Understanding theory as an academic discipline.

2.0 Tracing the rise of theory in architecture and culture after modernism. The significance of post-modern and post millennial discourses in architecture. Developing a post-modern world view.

3.0 The multi disciplinary approach: Understanding ideas from outside architecture that have informed current architectural discourse- from philosophy, sociology, linguistics, psychology, feminism, post-colonial studies, information technology, art, cultural and critical theory, etc. (Teachers may choose significant disciplines from which writings can be discussed)

4.0 Describing through theoretical discourse the post-millennial world we live in and the impact of architecture in our world today.

## **1010 Professional Practice**

### **Credits-3**

Lectures-36 periods of 50 minutes duration- 30 hours

Studio-

### **Scheme of examination**

Theory: -----

### **Sessional marks-**

Internal- 50 marks

External ----

### **Professional and legal responsibilities of Architects**

Arbitration clause.

Arbitration, Conciliation and Mediation.

Arbitration proceedings and Awards.

Duties and liabilities in profession.

Legal responsibility of architect to Employer.

Government bodies and local bodies.

Express and implied authority of the Architect.

Architect's relationship with the Client and the Contractor.

Duration of liability.

Consumer Protection Act 1986.

All Acts related to non agricultural lands in relation to Building activities related to regions such as M.R.T.P, M.H.A.D.A and M.M.R.D.A. acts

Environmental policy and laws related to protection of environment.

## **1011 Design Dissertation**

**Credits-16**

Lectures-----

Studio- 288periods of 50 minutes duration -240 hours

### **Scheme of examination**

Theory: -----

### **Sessional marks-**

Internal- 200marks

External -200

**External viva will be conducted simultaneously for Design dissertation and design detailing**

Students are required to develop the design as per the design objectives and design brief submitted in the report.

Drawings should include location plan, site plan, detailed floor plans, elevations, views and large scale sections.

## **1022 Elective 10**

**Credits- 3**

### **Teaching Hours**

Studio- 54 periods of 50 minutes duration – 45 hours

### **Sessional marks-**

Internal- 100

External -----

The elective can be chosen by individual students under the guidance of internal teacher



**DETAILS OF SCHEME OF EXAMINATION SEMESTER X**

<b>BACHELOR OF ARCHITECTURE: SEMESTER X EXAMINATION TO BE CONDUCTED BY UNIVERSITY OF MUMBAI</b>										
	<b>Semester X</b> Exam conducted by University of Mumbai	<b>THEORY</b>				<b>SESSIONAL MARKS</b>				
						INTERNAL		EXTERNAL		
<b>COURSE CODE</b>	<b>COURSES</b>	No of Papers	Duration	Max Marks	Min Marks for Passing	Max Marks	Min Marks for Passing	Max Marks	Min Marks for Passing	Max Marks for the Course
BARC 1006	Environmental studies 5	---	----	---	---	100	50	----	----	100
BARC 1007	Architectural Representation & Detailing 8	----	---	---	---	100	50	100	50	200
BARC 1009	Architectural Theories 4					50				50
BARC 1010	Professional Practice 3					50				50
BARC 1012	Advanced Building Construction and structures	----	---	---	---	100	50	---	---	100
BARD 1011	Design Dissertation 2	----	---	---	---	200	100	200	100	400
BARE 1021	Elective 10	---	---	---	---	100	50	---	---	100
	<b>Total marks for the examination</b>									<b>1000</b>

**Notes:** Theory, Internal sessional work, and External viva are considered as separate heads of passing

Total marks for the examination = 1000

Minimum marks for passing the examination= 500