DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, MAHARASHTRA
DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2019-20

Important notes:

1. An attempt is made to let the detailed content to be suggestive and not prescriptive. The nature and number of assignments, test, tutorials etc. are not specified intentionally. Every Institute and teacher should design these for their class. Every semester the exercises will be different and thus plagiarism could be avoided.
2. It is expected of all teachers to set up the exercises, tests and tutorials etc. in such a manner that they relate to student's own Design projects attempted in earlier semesters.
3. The detailed content for each course / subject in the document specifies the "Minimum" content to be disseminated to students. Every Institute depending on their Philosophy and Vision statement should make an attempt to go beyond this minimum content mentioned in the syllabus.
4. The content of each subject/course is divided into number of Credit point blocks relevant to the Credits allotted to that course/subject. For theory courses, the distribution of questions asked and marks allotted to topics should be proportionately spread over the content of each credit point in Mid Semester and Semester End Examinations. Questions asked and marks allotted to topics shall address all Credit point blocks of that course/subject at the Semester End Examinations.
5. For every "Elective" course / subject the student must attempt one of the three topics offered. His / her choice of the topic from amongst the three topics listed should be made at the beginning of the semester and conveyed to the Controller of Examinations of the University.
6. However the student may choose to attend more than one topic if he / she desires in an effort to acquire more knowledge. Also Institutes may offer topics other than mentioned in the syllabus and students may attend these extra classes voluntarily.
7. All courses / subjects are divided into three categories:
    a. Theory courses / subjects (TH) – Student's work will comprise of class tests, tutorials, assignments done in the class +attempt a Paper in the Mid-Semester examinations + Attempt a Paper at the end of Semester examinations. The evaluation of student's performance will be marked separately for continuous assessment during the class sessions – CA1: before Mid-Sem Exams, Mid-Sem exams; CA2: After Mid-Sem exams and End –Sem exams. The marks for CA1, Mid-Sem exams and CA2 should be displayed and performance should be discussed with the students.
    b. Studio Term Work courses (STW) - Student's work will comprise of class tests, tutorials, assignments done in the class. The assignments should reflect successful application of the knowledge in solving real life problems. The evaluation of student's performance will be marked separately for continuous assessment during the class sessions + assessment by an Internal & External Examiner at the End of Semester examinations where the student will not be present at the time of assessment. The work of the students shall be either in the form of manually drawn sheets, Journals, etc. or it shall be Acceptable in Digital format. Institutes have choice of selecting mode of submissions in any form.
    c. Studio – Viva courses (SV) - Student's work will comprise of class tests, tutorials, assignments done in the class. The evaluation of student's progress will be marked separately for continuous assessment during the class sessions + Jury / Viva conducted by an Internal & External Examiner at the End of Semester examinations where the student will present his / her work in person. The work of the students shall be either in the form of manually drawn sheets, Journals or it shall be Acceptable in Digital format. Institutes have choice of selecting mode of submissions in any form.
8. The Internal & External examiner mentioned above is generally defined as follows:
    a. Internal Examiner is the Teacher teaching that course / subject to that class during the semester.
    b. External Examiner shall be a person not teaching in the concerned Institute. He / she should be a qualified Architect registered with the Council of Architecture, New Delhi and with a minimum of 5 years' experience in teaching – profession. For allied subjects the person could be an expert in that field with 5 years of experience. External examiner for course / subject "Thesis" shall be a qualified Architect registered with the Council of Architecture, New Delhi and with a minimum of 10 years' experience in teaching – profession.

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FINAL Teaching - Evaluation Scheme for B. Arch (December 2018)												
SEMESTER IX												
Course Code	**Subject / Course**	**L/w**	**S/w**	**T/w**	**C T**	**Cr**	**T M**	**CA 1**	**MSE**	**CA2**	**ESE-P**	**ESE-SV/STW**
BA18091S	Architectural Design VII	0	14	14	SV	7	350	70	0	70	0	210
BA18092S	Special Structures	2	4	6	SV	3	150	30	0	30	0	90
BA18093S	Project management	2	0	2	STW	2	100	20	0	20	0	60
BA18094S	Research Methodology Thesis Topic	2	0	2	STW	2	100	20	0	20	0	60
BA18095T	Professional Practice II	2	0	2	TH	2	100	10	20	10	60	0
BA18096S	Elective IX (Any One from Below) (A) Urbanization & the City (B) Disaster Management (C) Understanding Basic Statistics	2	0	2	STW	2	100	20	0	20	0	60
BA18097S	Elective X (Any One from Below) (A) Architectural Conservation (B) Design Management (C) Geographical Information System	2	0	2	STW	2	100	20	0	20	0	60
		12	**18**	**30**		**20**	**1000**					

	SEMESTER X											
Course Code	**Subject / Course**	**L/w**	**S/w**	**T/w**	**C T**	**Cr**	**T M**	**CA 1**	**MSE**	**CA2**	**ESE-P**	**ESE-SV/STW**
BA18101S	Architectural Thesis	8	16	24	SV	14	700	140	0	140	0	420
BA18102T	Legal Aspects of Architectural Practice	2	0	2	TH	2	100	10	20	10	60	0
BA18103S	Elective XI (Any One from Below) (A) Set Design (B) New Media Design (C) Animation	2	0	2	STW	2	100	20	0	20	0	60
BA18104S	Elective XII (Any One from Below) (A) Ecotourism (B) Virtual Architecture (C) Textile Design	2	0	2	STW	2	100	20	0	20	0	60
		14	**16**	**30**		**20**	**1000**					

Abbreviations:

L/w	Number of Clock Hours of Lectures per week for the Subject / Course
S/w	Number of Clock Hours of Studios per week for the Subject / Course
T/ w	Total Number of Clock Hours per week for the Subject / Course
C T	Subject / Course Type: Theory (TH) or Studio Term Work (STW)or Studio Viva (SV)
Cr	Total Number of Credits allotted for the Subject / Course in the Semester
T M	Total Number of Marks allotted for the Subject / Course in the Semester
CA 1	Marks allotted for Continuous Assessment during the Semester before Mid Semester examinations the Subject / Course in the Semester
MSE	Marks allotted for Mid Semester examinations for the Subject / Course in the Semester
CA2	Marks allotted for Continuous Assessment during the Semester after Mid Semester examinations the Subject / Course in the Semester
ESE-P	Marks allotted for End of Semester examinations Paper for the Subject / Course in the Semester
ESE-SV/STW	Marks allotted for End of Semester examinations Studio Sessional work or Studio Viva for the Subject / Course in the Semester

Fifth Year B. Arch. - Semester 9

BA18091S: Architectural Design - VII

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18091S**	Architectural Design - VII	0	14	14	SV	5	350	70	0	70	0	210

Learning Objectives:

After successful completion of this course, student should be able to: To explore complex concepts. To understand building basic bye-laws in strict application. To understand services in building design.

Detailed Syllabus:

1.	Issues of Identity, Scale, Public spaces, Context, Grouping of buildings, Infrastructure for community formation etc. Site analysis with respect to surrounding environment, tradition, culture. Zoning, Climatic considerations. Study of Contours.
2.	Related Case Studies & studying building bye-laws. Formatting design brief. Research regarding selected style, Ism or philosophy. Understanding characters of selected style.
3.	Conceptual explorations of character and selected style. Detailing of all required Services. Suitable landscape design for the project.
4.	Urban neighborhoods, traditional and present day composition, structure, density, land use coverage, building controls, urban infrastructure and services. Considering structural solutions & materials for complex Architectural spaces. Considering use of mechanical vertical transport.
5.	Design Development. Consideration of bye-laws. Consideration of building related services. Finalization of Design Proposal. Highlighting the character of building as regards to style, Ism or philosophy. Complex Architectural spaces.
6.	Focuses on Detailed understanding of place and its character presented with various mappings of building age, Evolution of town, Nolli's Plan, built & unbuilt, building use, building heights, street pattern, vegetation, land per cal. Ownership, services, community mapping, hierarchy of open spaces, connectivity.
7.	Sketch documentation of a particular issue
8.	Various urban design theories related to particular issue of a place.
9.	Urban design program like 'Urban insertion, extension, transformation etc. are possible program.
10.	This design program should discuss about city's presence in the global context (or world view)
11.	By virtue of this design, discussion to be generated about critical identity of a place.
Studio Exercises suggested: Design of Complex function spaces as decided by the Institute. 1 no Major Project based on above Modules with creative presentation of drawings & models.	

Recommended Reading:

1.	Robert Sommer - Design Awareness.
2.	C.M. Deasy - Design for Human Affairs.
3.	Pierre Von Meiss - Elements of Architecture from form to place.
4.	Yatin Pandya - Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.

11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha .Synetics Involving creative thought
14	Frampton Kenneth, Critical Regionalism
15	Lynch Kevin, Image of the City.
16	Koolhaas Rem, Delirious New York
17	Collin Rowe – Collage City
18	Gehl Jahn – Cities for people.
19	Saskia Sassan - Global Cities
20	Geddes Pattrick – Garden City
21	Le Corbusier – City of Tomorrow & its Planning
22	Spiro Kostof – The City Shaped

BA18092S: Special Structures

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18092S**	Special Structures	2	4	6	SV	3	150	30	0	30	0	90

Learning Objectives:

After successful completion of this course, student should be able to:
Understand Special structural forms resulting from special technologies.

Detailed Syllabus:

1.	Geometry of forms. Shell structures and their structural behavior. Space frames and Geodesic domes – derivation of form and construction.
2.	Folded plate structures. Design of simple V type of folded plates.
3.	Membrane structures. Form finding methods. Planar grid and curved grid structures. Development of simple forms and scale models.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by Mckay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell

BA18093S: Project Management

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18093S**	Project Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Get an introduction to the competencies and skills for planning and controlling projects and understanding interpersonal issues that drive successful project outcomes. This course guides students through the fundamental project management tools and behavioral skills necessary.

Detailed Syllabus:

1.	Basics of Project Management: Introduction, Need for Project Management, Project Management Knowledge Areas and Processes, The Project Life Cycle, The Project Manager (PM), Phases of Project Management Life Cycle, Project Management Processes, Impact of Delays in Project Completions, Essentials of Project Management Philosophy, Project Management Principles.
2.	Project Identification and Selection: Introduction, Project Identification Process, Project Initiation, Pre-Feasibility Study, Feasibility Studies, Project Break-even point. Project Planning: Introduction, Project Planning, Need of Project Planning, Project Life Cycle, Roles, Responsibility and Team Work, Project Planning Process, Work Breakdown Structure (WBS). PERT and CPM: Introduction, Development of Project Network, Time Estimation, Determination of the Critical Path, PERT Model, Measures of variability, CPM Model, Network Cost System.

Recommended Reading:

1.	Elements of structure by Morgan
2.	Structure in Architecture by Salvadori
3.	Building construction by Mckay W. B., Vol. 1 to 4
4.	Construction of Building by Barry, Vol. I to V
5.	Construction Technology by Chudley R. Vol. I to IV
6.	Building Construction Illustrated – Ching Francis D.K.
7.	Elementary Building Construction by Michell
8.	Construction Project Management - K.K. Chitkara
9.	Construction Management - P.K Joy.
10.	Techniques in Planning and controlling construction projects. - Hira N. Ahuja
11.	Projects Planning by Prasanna Chandra
12.	Construction Engineering & Management by Girija K. IIT Delhi

BA18094S: Research Methodology Thesis Topic

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18094S**	Research Methodology Thesis Topic	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
To research a specific Issue (Architectural, Social, Environmental, Religious, Recreational, etc.) through readings, analysis& synthesis of readings plan a study & write a paper based on literature review. Identify a research area that will enable students to undertake a thesis project. Gather, assess, record & apply relevant information, interpret information gathered & conclude with justification.
Identify area of research for thesis. Identify research papers based on literature available. Identify research methods. Apply research methods in relevant case studies. Present paper in seminar. Present Synopsis for the Thesis Project to be undertaken in the next semester.

Detailed Syllabus:

1.	Research Methods. Understanding the applicability of various techniques of Architectural Research. Finalization of Research parameters. Discussion on required data collection. Case Studies Research Outcome. Draft Report. Finalization of Research parameters.
2.	Identifying scope of Architectural thesis. Discussion on required data collection. Identifying a specific issue & to address and resolve the same through Architecture. Presentation of synopsis for the proposed Thesis project.
The students shall produce a synopsis for Thesis topic, which will include details of related literature, Justification of the topic, summary of how they arrived at the selected topic for Thesis, and preferably identification of building typology to demonstrate the findings of the research.	

Recommended Reading:

1.	Babbie E.; The Practice of Social Research.
2.	Groat, L& Wang, D.; Architectural Research Methods
3.	Kothari C.R.; Research Methodology
4.	SanoffH.;Methods of Architectural Programming
5.	SanoffH.;Visual Research Methods in Design
6.	Handbook of Research Methodology by Dr.Shanti Bhushan Mishra and Dr.Shashi Alok

BA18095T: Professional Practice - II

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18095T**	Professional Practice - II	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

After successful completion of this course, student should be able to: Study Codes, laws, ethics and practice.

Detailed Syllabus:

1.	Office Organization & Management Types of offices and their structure Nature of emerging practices. Roles of various personnel at different levels Principals/partners, Design staff, Supporting staff, Managerial staff, Employer-employee relationship, Training responsibility. Expense structure, Salaries, Overheads, Perks to employees & principals. Tax Planning for Architects.
2.	Development Controls: Building regulations, their purpose, formation with base, generalization, violation (interpretations) Professional Associations Types, Purpose, Role, Responsibilities - IIA & COA, Formation, Controls, Activities, Advantages & Lacunas. Professional ethics, Fee Structure, Architectural Competitions Architectural Education

Recommended Reading:

1.	Handbook of Professional Documents - Council of Architecture publication
2.	Professional Practice - By Roshan H. Namavati
3.	Professional Practice in India - By Madhav G. Deobhakta
4.	Private Architectural practice – by Manrice E. Tayler
5.	Architectural Practice and Procedure – by Hamilton H. Turner.
6.	Professional Practice of Architecture by Prof. S.C.Garg & Dr. Yogesh K.Garg

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BA18096S: Electives – IX (A) URBANIZATION & THE CITY
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18096S**	Electives – IX (A) Urbanization & the City	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to: Understand process of urbanization and changing concept of city

Detailed Syllabus:

1.	Introduction to the concept of city and the process of urbanization. To understand hierarchy of urban agglomeration i.e. City, Metro city, Megacity and the concept of Global City, concept of metropolitan region.
2.	Understanding factors affecting urban agglomerations. Impact of digitalization on the physical form of the city. Changing or emerging concepts of urban area planning in order to accommodate impact of scientific development in terms of communication.

Recommended Reading:

1.	Lynch, Kevin. The Image of The City London: The MIT Press, 1960
2.	Spreriegen, Paul. Urban Design: The Architecture of Town and Cities. Malabar, FL-USA Krieger Publishing Co., 1967
3.	Bacon, Edmund. Design of Cities London: Thames and Hudson, 1974
4.	Book of AITP Exam study material: 'Planning Law and Legislation' by ITPI New Delhi
5.	City in History: Lewis Mumford
6.	Architecture of Town and Cities – Paul D. Spreiregen
7.	Landprints: Reflections on Place and Landscape by George Seddon.
8.	Urbanization and Urban Systems in India by R. Ramachandran
9.	Global Urbanization (The City in the Twenty-First Century). by Eugenie L. Birch (Editor), Susan M. Wachter
10.	Urbanisation in India: Challenges, Opportunities, and the Way Forward by Isher Judge Ahluwalia, Ravi Kanbur, P.K. Mohanty
11.	Celebrating Public Spaces of India by Archana Gupta and Anshuman Gupta.

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BA18096S: Electives – IX (B) DISASTER MANAGEMENT
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18096S**	Electives – IX (B) Disaster Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand that prevention, preparedness and recovery can be overcome through proper management as well as Architectural intervention.

Detailed Syllabus:

1.	Disaster Management definition: The organization and management of resources and responsibilities for dealing with all humanitarian aspects of emergencies, in particular preparedness, response and recovery in order to lessen the impact of disasters. Types of Disasters: Natural disasters: including floods, hurricanes, earthquakes and volcano eruptions that have immediate impacts on human health and secondary impacts causing further death and suffering from (for example) floods, landslides, fires, tsunamis. Environmental emergencies: including technological or industrial accidents, usually involving the production, use or transportation of hazardous material, and occur where these materials are produced, used or transported, and forest fires caused by humans. Complex emergencies: involving a break-down of authority, looting and attacks on strategic installations, including conflict situations and war. Pandemic emergencies: involving a sudden onset of contagious disease that affects health, disrupts services and businesses, brings economic and social costs
2.	Remedies for disaster: Disaster prevention, Disaster preparedness, Disaster recovery. The Disaster Management Act. Architectural intervention to prevent and for remedial measures in case of any disaster like: Observance of Fire rules, Exits and requirement, etc.

Recommended Reading:

1.	Disaster Management in India -Challenges & Strategies by R.K.Dave
2.	Disaster Management by O.S. Dagur
3.	Disaster Management E-Book by Harsh K. Gupta
4.	Natural Hazards and Disaster by NCERT

BA18096S: Electives – IX (C) UNDERSTANDING BASIC STATISTICS
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18096S**	Electives – IX (C) Understanding Basic Statistics	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to: Understand statistics is essential to understand research in the social and behavioral sciences and learn the basics of statistics; not just how to calculate them, but also how to evaluate them.

Detailed Syllabus:

1.	Introduction to the basics of statistics. Exploring Data: Introduction to the basic concepts of descriptive statistics, cases and variables, and how to order them in a so-called data matrix. Various levels of measurement and present your data by means of tables and graphs. Measures of central tendency (like mode, median and mean) and dispersion (like range, interquartile range, variance and standard deviation). How to interpret them, compute them. Z-scores. Correlation and Regression: Bivariate analyses: studies with two variables. Introduction to the concept of correlation. Investigating contingency tables, to understand and compute one of the most frequently used measures of correlation: Pearson's r.
2.	Introduction to the method of OLS regression analysis. Finding the regression line and how to describe this line by means of an equation, assess how well the regression line fits your data by means of the so-called r-squared. Careful interpretation of the results of a regression analysis. Probability: Introduction to probability theory and the rules for calculating with probabilities. Answering applied statistical questions, to understand the statistical analyses. Describing randomness, and explain how random events surround us. Intuitive definition of probability through an example and relate this to the concepts of events, sample space and random trials. A graphical tool to understand these concepts are introduced here as well, the tree-diagram. Number of concepts from set theory related to probability calculations, tree-diagrams, and contingency tables. Conditional probabilities, independence and Bayes rule are explained.

Recommended Reading:

1.	Statistics for Research by George Argyrous
2.	Statistical Methods for Practice & Research by Ajay S. Gaur
3.	Fundamentals of Research Methodology & Statistics by Y.K.Singh
4.	Understanding Basic Statistics by Charles Henry Brase, Corrinne Pellillo Bras
5.	Research Methodology: A Step-by-Step Guide for Beginners by Dr. Ranjit Kumar

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BA18097S: Electives – X (A) ARCHITECTURAL CONSERVATION
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18097S**	Electives –IX (A) Architectural Conservation	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
To develop the expertise in the field of Architectural conservation specifically catering to the regional context. To make architects aware of the holistic nature of the conservation practice. To equip architects with technical know-how required for Architectural Conservation.

Detailed Syllabus:

1.	History of Conservation movement. Principles of conservation, Degrees of interventions. Terms associated with conservation practice like rehabilitation, redevelopment, revitalization, regeneration, redevelopment, Role of UNESCO, other bodies. Study of Charters from Venice to Mexico. Introduction to historic structures and structural systems of India. Elements of historic structure as foundation, walls, floors, roof and structural behavior of the same. Identification of problems pertaining to each element. Study of traditional materials used in India. Process of their formation and extraction and properties.
2.	Fundamental theories and principles of documentation. Inventory formats and comparative study, Methods of documenting historic structures, areas, cities and region. Measured drawings of historic structures Methodology of identification and listing. Photography and photogrammetry. Systematic Study and analysis of historic Areas Identification of potential – cultural significance, Architectural vocabulary Traditional technology and materials. Identification of issues Study of existing legal framework. Preparation of conservation plan including short term and long term goals. Formation of conservation policy with holistic approach. Student will select one building of historic value and study the same for structural conservation along with appropriate reuse.

Recommended Reading:

1.	Technical Manual by Bernard Fieldon
2.	Charters by UNESCO
3.	Elements of structure – Morgan Reference Books
4.	Structural Systems – Cowan Henry J and Wilson Forrest
5.	Wood Technology in the design of structures – Hoyle Robert
6.	Stone – Nunn E
7.	Planning for conservation by Roger Kain
8.	Management Plans of world heritage sites
9.	A History of Architectural Theory – From Vitruvius to present day by Hanno-Walter
10.	A History of Architectural Conservation by Jukka Jokilehto
11.	Guidance on Heritage Impact Assessments for Cultural World Heritage Properties by ICOMOS
12.	Tender documents of heritage works
13.	Architecture of the city – Aldo Rossi
14.	PWD specifications

BA18097S: Electives – X (B) DESIGN MANAGEMENT
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18097S**	Electives – X (B) Design Management	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
An overview of Design management which is a field of inquiry that uses project management, design, strategy, and supply chain techniques to control a creative process, support a culture of creativity, and build a structure and organization for design.

Detailed Syllabus:

1.	How to be more innovative through the disciplined practice of Human-Centered Design. Methods for observing human experience. Methods for analyzing challenges & opportunities. Methods for envisioning future possibilities.
2.	Critically analyze, critically evaluate, critically reflect on experience of significant managerial responsibility Estimation of design impact using predetermined motion time studies and learning curves, calculating rate of return and break-even point. Brief introduction to following designs • Product design management • Brand design management • Service design management • Business design management • Engineering design management • Urban design management • Architectural management OPRERATIONAL MANAGEMENT • Value for business • Relation to other disciplines and departments • Hierarchy • Role and responsibility Design Policy

Recommended Reading:

1.	Design Management for Architects by Stephen Emmitt
2.	Leading the Team: An Architect's Guide to Design Management Dale Sinclair
3.	Lean Design Management by Stephen Emmitt
4.	Design Management In Architecture, Engineering And Construction: Origins And Trends by Stephen Emmitt
5.	Collaborative Design Management by Kirti Ruikar and Stephen Emmitt

BA18097S: Electives – X (C) GEOGRAPHICAL INFORMTION SYSTEM
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18097S**	Electives – X (C) Geographical Information System	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to: Understand use of computers and software for geographic location and mapping of environment.

Detailed Syllabus:

1.	Geographic Information sciences: History, Domains for GIS, Definitions of GIS, Components of a GIS, Comparisons of various software, Hardware requirements, Digital cartography and conventional CAD. Data models and Data structure, Conceptual models of real world, entities or fields, Vector data models, Tessellation of continuous fields, raster data models, Use of models - Cadastre, Utility networks, land cover, soil naps, Introduction to data structure, Vector data structure and Raster data structures. Hierarchical database Structure, Network data structure, Relational data structure, object oriented database structure.
2.	Introduction to data input, data capture methods, digitization, rasterisation, attribute or feature code inputting, verification and editing methods. Creation of continuous surfaces and simple analysis of Environmental problems. Mountainous environment land-use studies. Introduction to Remote sensing and Environmental mapping. Growth and change in land - use. Comparison of land uses of different periods. Exercises in database query, distance and context operators, Cost distance and least cost pathways, Boolean operations on maps, remote sensed data explorations, supervised and unsupervised classification and principal component analysis.

Recommended Reading:

1.	George B. Korte, “The GIS Book “, Onword Press (Thomson learning), 5th Edition.
2.	M Anji Reddi, “Remote sensing & Geographical Information Systems “,BS Publication, Second Edition.
3.	Peter A. Burrough and McDonell, “Principles of Geographical Information Systems “, Oxford University Press, 1998.
4.	GIS tutorial by Wilpen L. Gorr
5.	Geographic Information Systems and Science by Paul A. Longley, Mike Goodchild, David J. Maguire, David W. Rhind
6.	GIS fundamentals by Paul Bolstad
7.	GIS for the urban environment by Juliana Maantay and John Ziegler
8.	A to Z GIS: An Illustrated Dictionary of Geographic Information System by Shelly Sommer

Fifth Year B. Arch. - Semester 10

BA18101S: Architectural Thesis

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18101S**	Architectural Thesis	8	16	24	SV	16	800	160	0	160	0	480

Learning Objectives:

After successful completion of this course, student should be able to:
Pursue an idea of research with depth of inquiry, criticality and logic and carry out an in-depth investigation of an area of architecture that he/she is interested in.

Course Pre-requisite:

A Student will be able to attempt this course only if he / she has successfully passed in the:
"BA18094S Research Methodology Thesis Topic" course / subject of semester 9 - Fifth year Architecture.

Detailed Syllabus:

1 To 14	Thesis project is the culmination of the Undergraduate program in architecture. In thesis a student is expected to undertake an in-depth investigation of an area of architecture that he/she is interested in. These will be done with the help of a faculty guide. Two options offered in Semester 9 under the course **Research Methodology Thesis Topic** will be considered and one will be taken up as final design thesis project. The chosen project should demonstrate a student's ability to work independently, decide what is important to him/her and schedule oneself to adhere to a time frame. Projects will be chosen within the following parameters: Project should have the potential for a valid relationship between Architecture and the city/environment; have the potential to probe issues of cultural continuity and the language of the present in the Indian context, reinterpreting tradition anew into contemporary statement. Be of approx. 3,000 to 5,000 sq. Mts. of built up area (not too large in scale because the project must be developed to design details and not too small to lack potential of requisite design complexities). If the project is larger, it should be possible to develop a part of it after stage 3 to required detail in consultation with faculty. Be real, but not necessarily a live project, and must have the potential to demonstrate ones strengths in terms of scope – capacity of the project.

Recommended Reading:

1.	Robert Sommer. -Design Awareness.
2.	C.M. Deasy -Design for Human Affairs.
3.	Pierre Von Meiss -Elements of Architecture from form to place.
4.	Yatin Pandya- Elements of Space Making.
5.	Paul Lassau – Graphic Thinking for Architects and Planners.
6.	Peter Pearce, Structure in Nature – Strategy for Design.
7.	Peter Streens, Patterns in Nature.
8.	Anthony Antoniadis - Poetics in Architecture: Theory of design
9.	Am heim Rudolf, Visual Thinking.
10.	Jonathan A. Hale -Building Ideas. An introduction to Architectural Theory.
11.	William J.J. Synectics: The Development of Creative Capacity
12.	Elvadine R. Seligmanann : Reaching Students through Synectics: A Creative solution
13.	Jyoce, Bruce and Weil Marsha .Synetics Involving creative thought

BA18102T: Legal Aspects of Architectural Practice

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18102T**	Legal Aspects of Architectural Practice	2	0	2	TH	2	100	10	20	10	60	0

Learning Objectives:

In performing professional duties as an Architect we have to take cognizance of various Acts. We must ensure that all the rules and regulations are strictly followed in the solutions – designs and services we offer. Many times we also need to advice the client on various issues. In order to be correct in our actions, we have to be generally aware of these Acts and study certain provisions of these acts that are connected with actions and advice we offer. On completion of this course, the students will be able to understand the importance of studying the relevant provisions and sections of these Acts.

Detailed Syllabus:

1.	Maharashtra Regional & Town Planning Act (MRTP)-general provisions. Maharashtra Land Revenue Code - sections on conversion Agriculture to Non Agriculture Use of land, etc. Transfer of Property, Easements Act. Relevant sections of Maharashtra Factories Act & Rules, Maharashtra Prevention & Control of Pollution Act & Rules, Maharashtra Fire Act & Rules.
2.	Environment Protection Act – Coastal Zone Regulations of Central Government & Maharashtra Government. Indian Contract Act – Sections relevant to contracts, Tendering, etc. Arbitration & conciliation Act – sections relevant to settlement of disputes. Real Estate Regulatory authority Act (RERA) & MahaRERA Act – sections relevant to Architects role & responsibilities. Consumer Protection act. Intellectual property Rights Act.

Recommended Reading:

1.	Law Relating to Intellectual Property Rights by Virendra Kumar Ahuja
2.	The Maharashtra Regional and Town Planning Act by Shruti A. Desai
3.	The Maharashtra Regional and Town Planning Act 1966 by Aarti Shah
4.	The Maharashtra Land Revenue Code , 1966 by Sunil Dighe
5.	The Factories Act, 1948 (with the Maharashtra Factories Rules, 1963) by S.D. Puri
6.	Law & Practice of Alternative Dispute Resolution in India by Anirban Chakraborty
7.	Environment (Protection) Act, 1986 by Lawmann's
8.	A hand book of Environmental protection act: Environmental protection act by Dr. Hemant Pathak
9.	The Real Estate (Regulation And Development) Act, 2016
10.	Architects act 1972 by Council of Architecture

BA18103S: Electives – XI (A) SET DESIGN
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18103S**	Electives – XI (A) Set Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand scope of work in the new emerging stream of Design, which is very interesting and have good prospects in terms of work and earning potential.

Detailed Syllabus:

1.	Understanding scope of work -Set design for Drama/Theatre, Films & Televisions, Events like weddings, Talk shows, Public address, etc. Brief history of Set Design. Scope of Set Design, Design Strategies, Team & Sequence Performance. Types of Set Design, Principles & Elements of Set Design. Identifying the event, Theme and script, Requirement of Space, Style & Period, Movement and Topography.
2.	Stagecraft and Techniques, Material to be used, Installation and Reuse. Construction of Set Design, Practical Aspects. Set Dressing, Location Hunting, Script Reading, Breakdown, Story Boarding, Property Design. Services, Estimation, Safety Measures, Special Effects, Presentation Techniques. Requirement of Lighting, Style of Lighting, equipment. Requirement of Sound equipment.

Recommended Reading:

1.	Behind the Scenes by Phoebe Adler
2.	Vector works for Entertainment Design: Using Vector works to Design and Document Scenery, Lighting, and Sound by Kevin Lee Allen
3.	Handbook of Model-making for Set Designers by Colin Winslow
4.	Stage Design: A Practical Guide by Gary Thorne
5.	The Handbook of Set Design, Colin Winslow
6.	Stage Design: A Practical Guide, Book by Gary Thorne
7.	Designs on Film: A Century of Hollywood Art Direction, Cathy Whitlock
8.	Scene Design: A Guide to the Stage, Hake Talbot
9.	Technical Drawing for Stage Design, Gary Thorne
10.	Ken Adam Designs the Movies: James Bond and Beyond , Christopher Frayling

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, MAHARASHTRA
DETAILED SYLLABUS – BACHELOR OF ARCHITECTURE (B. Arch) 2019-20

BA18103S: Electives – XI (B) NEW MEDIA DESIGN
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18103S**	Electives – XI (B) New Media Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, students will learn the fundamental principles, techniques and technologies of visual communication and become familiarized with the tools and processes necessary to execute graphic design projects from concept to production.

Detailed Syllabus:

1.	Principles of Digital Communications :- a. Make strategic use of technology tools for academic purposes b. Find and evaluate information online, connect and collaborate with others c. Develop critical thinking about media consumption and creation, and ethical use of technology d. Recognize different media formats, resolution and outputs e. Demonstrate fundamental concepts of photography and videography f. Demonstrate fundamental concepts of composition as they relate to visual communications
2.	Design Basics :- a. Demonstrate knowledge of the basic principles and elements of graphic design b. Become familiar with graphic design terminology c. Understand and implement the design process in problem solving d. Successfully combine text and symbols to express meaning and convey information e. Produce graphic design solutions targeted to a specific message, audience and format f. Develop fundamental drawing skills to create thumbnails, roughs, and comps g. Recognize and evaluate graphic design work through group analysis discussions and critiques
3.	Digital Imaging :- a. Acquire and demonstrate knowledge of Illustrator, Photoshop and InDesign b. Develop a personal sense of aesthetics through visual thinking c. Create, edit and post-process digital images d. Demonstrate advanced knowledge of design elements and apply them to solve design problems e. Develop critical introspection of visual work through group discussion and critiques f. Plan and develop a project in which they explore new and emerging technologies in the industry g. Define a personal brand and professional identity and produce a portfolio website

Recommended Reading:

1.	Design Fundamentals for New Media by James Gordon Bennett
2.	Principles of digital communication by Robert G. Gallager
3.	Graphic Design for Architects: A Manual for Visual Communication by Karen Lewis
4.	Screen: Essays on Graphic Design, New Media, and Visual Culture by Jessica Helfland, John Maeda
5.	New Media Design by Tricia Austin, Richard Doust

BA18103S: Electives – XI (C) ANIMATION
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18103S**	Electives – XI (C) Animation	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to: Apply different tools and methods to create animated visuals and high-quality graphics for games, movies, television shows and extra.

Detailed Syllabus:

1.	Animation Principles And History. Animation Process And Visual Form:- Animation Processes, Pre-production, Production, Post-production, Visual Form.
2.	Animation Design and Theory:- Animation articulation and performance, Character Animation, Animal movement, Sfx, Theory. Anatomy and Drawing, Computers for Animation.

Recommended Reading:

1.	The Animator’s Survival Kit by Richard Williams
2.	Architecture + Animation by Wiley Academy
3.	The Noble Approach: Maurice Noble and the Zen of Animation Design by Tod Polson
4.	On the Animation of the Inorganic: Art, Architecture, and the Extension of Life by Spyros Papapetros
5.	The Illusion of Life by Frank Thomas and Ollie Johnston
6.	The Animator's Survival Kit, Richard Williams
7.	Learning Processing, Second Edition, Daniel Shiffman
8.	Animated Performance, Nancy Beiman
9.	Animation Development, David B. Levy
10.	Draw Great Characters and Creatures, Beverly Johnson
11.	Animation for Beginners: Basic Principles of Animation for Motion Graphics,Lisa Lee
12.	3D Animation for the Raw Beginner Using Autodesk Maya 2e, Roger King

BA18104S: Electives – XII (A) ECOTOURISM
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18104S**	Electives – XII (A) Ecotourism	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to: Realize that ecotourism is a part of environmental conservation, and understanding what the needs of the people are who are local to the area so that you can help to improve their quality of life. It also involves learning more about the history of other cities and preserving the historical landmarks.

Detailed Syllabus:

1.	What is ecotourism? How does it work? Why does it matter? And how can we, as travellers, put the core principles of ecotourism into practice? Importance of Ecotourism: Ecotourism is valuable for people and the Planet, Sustainable tourism is a learning experience for everyone involved, Ecotourism Promotes Economic Stability, We Become More Sensitive Through Ecotourism, Ecotourism Reduces our Carbon Footprint, Animals Suffer When We Don't Travel Sustainably.
2.	Planning to Travel Sustainably is Easier than Ever Before. Minimize physical, social, behavioral, and psychological impacts, Build environmental and cultural awareness and respect, Provide positive experiences for both visitors and local people, Provide direct financial benefits for environmental conservation Generate financial benefits for both local people and private industry, Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates Design, construct and operate low-impact facilities.

Recommended Reading:

1.	Ecotourism by David Fennell
2.	Ecotourism and sustainable development by Martha Honey
3.	Sustainable Tourism on a Finite Planet: Environmental, Business and Policy Solutions by Megan Epler Wood
4.	Ecotourism: Principles and Practices by Ralf Buckley
5.	Ecotourism and Its Role in Sustainable Development of Nepal By Anup K. C.
6.	Role of Ecotourism in Sustainable Development By Tuğba Kiper

BA18104S: Electives – XII (B) VIRTUAL ARCHITECTURE
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18104S**	Electives – XII (B) Virtual Architecture	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to increase skills in the management of 3D architectural projects and their fruition for print, video and other audiovisual media for final static and dynamic elaborations (3D animation); verification of the project through the use of 2D and 3D CAD programs; integration with other design and engineering functions.

Detailed Syllabus:

1.	Introduction to Virtual Architecture. Understanding Virtual Reality and its characteristics, Development of VR in Design.
2.	Methods of Modeling in VR environment, Representation of VR, Research tools in VR, Design tools in VR. Hardware Choices (Headgear, HMD (Head mounted display), Helmet, Gloves and Joystring, Cave & C2.

Recommended Reading:

1.	Bertol, D.: 1997, Designing Digital Space: An Architect's Guide to Virtual Reality, John Wiley & Sons New York.
2.	Biocca, F.: 1992, Communication within virtual reality: Creating a space for research, Journal of Communication,
3.	Bylinsky, G.: 1991, The marvels of "Virtual Reality," Fortune International, 123(12), 96.
4.	Senyapih, B. The True Model Concept in Computer Simulations Used in Architectural Design. B. Martens (ed.) 6th Conference of the European Full-Scale Modeling Association (EFA). Vienna: Vienna University of Technology, 133-140, 1996.
5.	Rheingold, H. Virtual Reality. New York: Simon & Schuster, 1991.
6.	Cicognani, A. and Maher, M.L. 1998. Two approaches to designing virtual worlds, Proceedings of Design Computing on the Net 98, International Journal of Design Computing, http://www.arch.usyd.edu.au/kcdc/journal Vol 1.
7.	Maher, M.L., Simoff, S., Cicognani, A. 1999. Understanding Virtual Design Studios, Springer-Verlag, London.

BA18104S: Electives – XII (C) TEXTILE DESIGN
ANY ONE OF THE ELECTIVES (A), (B), or (C)

Course Information:

Sem.	Code	Course	L	St	Tot	Type	Cr	TM	CA 1	MSE	CA2	ESE-Pap	ESE-SV/STW
1	**BA18104S**	Electives – XII (C) Textile Design	2	0	2	STW	2	100	20	0	20	0	60

Learning Objectives:

After successful completion of this course, student should be able to:
Understand house of textiles, their properties and characteristics while using in interior spaces. Through a series of full scale construction projects, the student will be asked to explore various textile materials and their potential in the design of interior structure.

Detailed Syllabus:

1.	Use of textiles in Architecture and Interiors Properties and characteristics of textiles while using in interior spaces.
2.	Exploration of various textile materials Exploration of various textile materials and their potential in the design of interior structure.

Recommended Reading:

1.	Textile Technology and Design: From Interior Space to Outer by Deborah Schneiderman (Editor), Alexa Griffith Winton
2.	Interior Textiles: Fabrics, Application, and Historic Style by Karla J. Nielson
3.	Interior Textiles by Editors: T Rowe
4.	The Textile Art in Interior Design by Melanie Paine