BACHELOR’S DEGREE COURSE IN ARCHITECTURE

(Revised Syllabus based on 1991 syllabus)

(To be made Effective from the Academic Session 2011-2012)

SCHOOL OF PLANNING AND ARCHITECTURE
(Deemed to be a University under Section–3 of the UGC Act),
4, Block-B, Indraprastha Estate,
New Delhi - 110 002
Ph: 23702390-91 Fax: 23702381
Email: hodarchspa@gmail.com
PREAMBLE

In the Academic Council meeting held on December 9, 2010 under item 8, Prof. Manoj Mathur stated that syllabus still needs lot of changes to be incorporated and revised syllabus will be presented in next meeting of AC.

Referring the Council of Architecture norms which have been supplemented in 2008, major changes are expected in near future, which may lead to eight semesters of teaching and one year of Practical Training after eight semesters.

In view of such scenario it was decided that the syllabus of B.Arch course be revised only after said issues have been settled and be continued with existing syllabus for year 2011-12 with following minor changes:

1. The rules of Examination as approved by EC on 16th December 2009 to replace the rules presently written in existing syllabus to be applicable from session 2011-2012.

2. The exams to be held at the end of each semester instead of end of year. Hence the subject names are marked with semester number instead of year number.

3. No changes in subjects except the flexibility in studio themes of semester 7 (Housing) and 9 (Urban Design) introduced by giving subject options from themes like: Energy Conscious Architecture, Interior Design, Product Design, Building Management, Landscape etc. in addition to Housing and Urban Design to enable student to pick their areas of interest.

4. The Council of Architecture also stipulates that maximum students in each class to be 40. In view of that three sections to be made for classes having more than 100 students.
OBJECTIVES

The Bachelor of Architecture Degree programme prepares students for professional practice in the field of Architecture. Being an undergraduate programme, it has a broad scope, providing exposure to a variety of interests in this field and assisting students to discover their own directions for further development.

There is increasing recognition today of Architecture as an intellectual discipline, both as art and as a profession. Architects make a vital contribution in the shaping of our environment and society, in the design and technology for a diverse range of situations, both in the rural and urban contexts. In India, we have further complexities of different social, cultural, geographical, economic and technical nuances which are unique and typical of every region in our country.

It is the appreciation of this over-changing context that the architect must bring to bear of his work. This demands appropriate skills, understanding and knowledge and a deep commitment to professed ideals. Addressing Architectural Design as a comprehensive creative process, this programme is based on the following broad intentions:

a) To stimulate sensitivity and unveil creative talents.

b) To reinforce intellectual capabilities and develop proficiency in professional skills to enable graduates to competently pursue alternative careers, within the broad spectrum of architecture.

c) To provide opportunities to students to try out the role they will eventually play as responsible members of society, under supervision and interactive guidance.

The program aims at attaining a high level of excellence in Architectural Design. To this end, the design course is seen as the core of the programme with supportive inputs from courses in other streams viz., the Humanities, the Technological and the Professional, built upon a strong foundation of enabling skills in communications and data processing. The emphasis is on the development of faculties of discernment and decision-making with the aid of both objective information and subjective attitudes, based on reason.

Given the complexities of present-day design projects, the architect’s role is that of a team Leader and coordinator of the input of specialists in various specific disciplines. He needs to possess a sound knowledge of all aspects of modern building technology to be able to draw up an integrated framework for activities of the other members of the team, to direct them and to assume overall responsibility for the collective effort. This is manifested in the courses in the Technological and professional streams.
RULES OF EXAMINATION FOR THE BACHELOR OF ARCHITECTURE
The rules of examinations shall be as approved by the EC on 16TH December, 2009.

EXTERNAL JURY SUBJECTS
DESIGN/THESIS STUDIOS/BUILDING CONSTRUCTION/LABORATORIES

Subjects

<table>
<thead>
<tr>
<th>Bachelor of Architecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphics I and II Exam.</td>
</tr>
<tr>
<td>Building Construction IV</td>
</tr>
</tbody>
</table>

LIST OF COURSES

<table>
<thead>
<tr>
<th>DESIGN STREAM</th>
<th>Architectural Design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AD-I, AD-2, AD-3, AD-4, AD-5, AD-6, AD-7, AD-8 (Training), AD-9, AD-10</td>
</tr>
<tr>
<td></td>
<td>IE</td>
</tr>
<tr>
<td>Theory of Design</td>
<td>TD-2, TD-4, TD-5, TD-6</td>
</tr>
<tr>
<td>TECHNOLOGY STREAM</td>
<td>Building Construction</td>
</tr>
<tr>
<td></td>
<td>IE</td>
</tr>
<tr>
<td></td>
<td>IO</td>
</tr>
<tr>
<td>Building Science &amp; Services</td>
<td>BS-2, BS-3, BS-4, BS-5, BS-6, BS-7</td>
</tr>
<tr>
<td>- Climatology</td>
<td>BS-2</td>
</tr>
<tr>
<td>- Water &amp; Waste Mgmt.</td>
<td>BS-3</td>
</tr>
<tr>
<td>- Electrical Instals</td>
<td>BS-4</td>
</tr>
<tr>
<td>- Lighting &amp; Accoustic</td>
<td>BS-5</td>
</tr>
<tr>
<td>- Ventilation, Commun. &amp; Security Systems</td>
<td>BS-6</td>
</tr>
<tr>
<td>- Integrated Energy Mgmt.</td>
<td>BS-7</td>
</tr>
<tr>
<td>PROFESSIONAL STREAM</td>
<td>Building Management</td>
</tr>
<tr>
<td>- Surveying &amp; Levelling</td>
<td>BM-1</td>
</tr>
<tr>
<td>- Specs. &amp; Contracts</td>
<td>BM-5</td>
</tr>
<tr>
<td>- Quantities &amp; Estmn.</td>
<td>BM-6</td>
</tr>
<tr>
<td>- Building Economics</td>
<td>BM-7</td>
</tr>
<tr>
<td>- Project Management</td>
<td>BM-9</td>
</tr>
<tr>
<td>Professional Practice</td>
<td>BM-10</td>
</tr>
<tr>
<td></td>
<td>IE</td>
</tr>
<tr>
<td></td>
<td>IO</td>
</tr>
<tr>
<td></td>
<td>IE</td>
</tr>
<tr>
<td>COURSES OF STUDY</td>
<td>ARCHITECTURAL DESIGN</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>HUMANITIES</td>
<td>History of Architecture</td>
</tr>
<tr>
<td>Theory of Settlements</td>
<td>TP-3, TP-5, TP-6, TP-7</td>
</tr>
<tr>
<td>Art Appreciation</td>
<td>AA-3, AA-4</td>
</tr>
<tr>
<td>ENABLING SKILLS</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Graphics &amp; Communication</td>
<td></td>
</tr>
<tr>
<td>Computer Applications</td>
<td>XC-1, XC-2</td>
</tr>
<tr>
<td>OPTIONS</td>
<td>Electives</td>
</tr>
<tr>
<td>Project Report/Seminar</td>
<td>PRX, SRX</td>
</tr>
<tr>
<td>Architectural Thesis</td>
<td>ADT</td>
</tr>
</tbody>
</table>
2. **THEORY OF DESIGN: Stage I**

The courses in Design Theory aim to evolve a conceptual frame work for intelligent appreciation of architecture and to develop a vocabulary for discussing design ideas. The structure of the courses consists of set of lectures and prescribed reading followed by group discussions and seminars.

**FIRST YEAR, SECOND SEMESTER SYLLABUS**

**TD-2**

The genesis of indigenous architecture, its geographical and cultural sign posts. Evolution of ideals and design principles in modern architecture. Influences governing the formation of attitudes as a prelude to the act of design. The translation of design ideas into architectural expression.

**SECOND YEAR, FOURTH SEMESTER SYLLABUS**

**TD-4**

Architecture as a socially useful discipline. The concept of measuring, function, style, type, social purpose and ideology, The relationship of architecture to the sciences, arts, economics and politics. Study of selected writing, and buildings in monumental and vernacular scales. Man-made design at all levels including objects of daily use.

**THIRD YEAR, FIFTH SEMESTER SYLLABUS**

**TD-5**

Design Methodology :- Design as a multi-variety problem solving process. Theories of Program and Function, thinking techniques, information processing and research methods, generators of creativity, design matrices and system integration.

**THIRD YEAR, SIXTH SEMESTER SYLLABUS**

**TD-6**

Design Evaluation and Criticism: Value judgments in design, Appreciation of designer’s skills, theories of perception and variability of perception. Theoretical issues in contemporary architectural though, Seminars on the works of selected Indian and International architects and related topics.
3. **BUILDING CONSTRUCTION**

This course is designed to expose students to the process of building construction, the components of buildings and the materials, skills and equipment used in shaping them. The emphasis is on familiarisation by direct handling and observation. Students shall be encouraged to acquire a taste for good workmanship and quality products.

The course is visualised as having three essential components viz. a lecture course in materials and methods of construction, a building workshop which may be conducted within the School and at specific venues outside and a construction studio wherein principles and practices shall be applied to the production of meaningful working details and drawings. The construction studio will be integrated with the Architectural design studio wherever possible.

**Stage I**

**FIRST YEAR, FIRST SEMESTER SYLLABUS**

BC-1  Historical evolution of building material and Construction method. Introduction to primary building elements, walls, piers, foundations, roofs, bricks, stone and block masonry their properties and manufacture. Studio exercises in brick bonding foundation details, wall details up to plinth level. Workshop in brick laying, setting-out, mudblocks, etc.

**FIRST YEAR, SECOND SEMESTER SYLLABUS**

BC-2  Introduction to secondary elements door, windows, railing and sunshades etc. timber sawing and seasoning, timber products, roof tiles, and sheets, studio exercise on door and window details, timber trusses and miscellaneous joinery, workshop, in carpentry and joinery, fixing of frames in masonry, simple wall and floor finishes.

**SECOND YEAR, THIRD SEMESTER SYLLABUS**

BC-3  Introduction to specialized elements such as staircases, built-in-furniture, show windows, sliding and folding doors, paneling and external paving, gets, grills etc. Studio exercises related to metal windows, partitions, mezzanines and cabinetry. Workshop in steal welding and forging, shuttering, bar bending and concreting, painting and laminating.

**SECOND YEAR, FOURTH SEMESTER SYLLABUS**

BC-4  Investigation of materials, techniques and details related to vernacular architecture as studied in AB-3. Exploration of alternatives. Studio programme to be integrated with AB-7. Workshops in appropriate and innovative materials and construction at various research institutions and building centres.

**THIRD YEAR, FIFTH SEMESTER SYLLABUS**

BC-5  Introduction to the problems or large scale industrial, commercial and institutional buildings such as basements, large span roof, rooflights, false ceilings and floors, cavity walls curtain walls and renovation and strengthening of existing structures. Studio exercise related to industrial structure comprising of some of the above components, workshop on shoring, underpinning, dewatering, waterproofing, erection and cladding.

**THIRD YEAR, SIXTH SEMESTER SYLLABUS**

BC-6  Investigation of hi-tech material and technologies related to interior finishing and detailing, exterior finishes etc. Studio Programme to be integrated with AD-6. Workshop on sanitary and plumbing installations, finishing works.
Stage II

FOURTH YEAR, SEVENTH SEMESTER SYLLABUS
BC-7  Studio programme integrated with AD-7. Production of a set of detailed working drawings.

FIFTH YEAR, NINTH SEMESTER SYLLABUS
4. **THEORY OF STRUCTURES**

The objectives of the course is to develop is the students a feel for structural principles and they relates to building design. Essentially, the students should be able to conceive structure as a system that forms space and that architecture and structures cannot be conceived independently. In current architectural practices, structural engineering is a specialist discipline. The architect therefore should be able to appreciate his consultant’s concerns and make an informed choice regarding the most appropriate structural system for his building. He should have a reasonable understanding of its operational and economic implications.

The course is visualized as having three essential components viz., a lecture series introducing concepts, a studio in which those will be applied in demonstrative exercises to determine elements and preparing drawings for the same, and laboratory studies for testing of structural material and systems models.

**Stage I**

**FIRST YEAR, FIRST SEMESTER SYLLABUS**

**TS-1** Concept of direct force mechanism in structures, tension and compression. Equilibrium of forces, concept of structure and tie. Composition and resolution of forces. Concept of loads as forces, response as deformation, stress and strain, Hook’s Law. Concept of Euler’s load, phenomena of buckling, short and long columns, masonry walls and piers, and design using slenderness ratio and monogram method.

Laboratory verification of Booke’s Law destructive testing of brick and brick-mortar combinations. Study of models using ties, struts and membranes only.

**FIRST YEAR, SECOND SEMESTER**

**TS-2** Concept of direct force and bending mechanism. Concept of force applied as displaced from the point of support. Bending moment and shear force. Behaviour of homogeneous material in response of direct and bending forces. Theory of simple bending and principles of super-position, distribution of shear and bending stress. Beam as a structural element. Design of steel and timber beams. Concept of compound stresses as material response to a set of applied forces. Analysis and design of masonry structures subject to direct and bending forces.

**SECOND YEAR, THIRD SEMESTER**

**TS-3** Concept of arch, vault and dome as direct stress members alimenting bending. Development of advanced arches that take direct forces and bending also. Design and drawings of simple trusses in steel and timber, riveted, welded and bolted joints. Laboratory studies in truss design and model formation, and testing to failure.

**SECOND YEAR, FOURTH SEMESTER**


Laboratory testing of concrete samples and RCC beams.

**THIRD YEAR, FIFTH SEMESTER SYLLABUS**

THIRD YEAR, SIXTH SEMESTER SYLLABUS


Stage II

FOURTH YEAR, SEVENTH SEMESTER SYLLABUS

TS-7 Structure System Studies, Synthesis of force systems to create structure systems Vector active, surface-active and built-active systems. Shells and folded plates, Virendeal Trusses, Space structures, High-rise and large-span structures. Pre-stressing and post-tensioning.
5. **BUILDING SCIENCE & SERVICES**

The objective of the course is to provide a wide exposure to environmental support systems as they apply to human habitat. The subjects covered shall be under two basic aspects of (i) climate and environmental control and (ii) water and waste management. These will be studied as areas of energy consumption, with special emphasis on alternative and appropriate methods of energy use and its conservation through innovative operational management.

The course will be supported by a theoretical background of environment, ecology and human settlements as studied in Theory of Settlements courses TP-3 and TP-6. Integration with the workshops in Building Construction will be sought at various stages.

**Stage I**

**FIRST YEAR, SECOND SEMESTER SYLLABUS**

BS-2 Climatology and Thermal Control. Global climatic factors, thermal comfort, heat gain and loss, u-values for well and roofs, solar geometry, shading devices, solar heating and cooling, passive systems.

**SECOND YEAR, THIRD SEMESTER SYLLABUS**


**SECOND YEAR, FOURTH SEMESTER SYLLABUS**


**THIRD YEAR, FIFTH SEMESTER SYLLABUS**

BS-5 Lighting and Acoustics. Day lighting, Indian design sky and calculations based thereon, artificial lighting, illuminance and glare, lighting systems, design and choice of luminaries, architectural lighting and special effects. Basic acoustical concepts, sound insulation and transmission, absorption, reverberation time, noise control and attenuation.

**THIRD YEAR, SIXTH SEMESTER SYLLABUS**

BS-6 Ventilation, Communications and Security Systems. Principles of air-cooling and air-conditioning, their implications on architectural form and details, systems and equipment. Lifts, escalators and conveyors, inter-communication, monitoring devices, fire protection and alarm system.

**Stage II**

**FOURTH YEAR, SEVENTH SEMESTER SYLLABUS**

BS-7 Integrated Energy Management. The energy crisis, renewable & non-renewable energy sources. Waste recycling, energy recovery techniques, integrated systems for non-potable water supply and sewage treatment, scavenging. Social forestry, fodder and the nitrogen chain, strategies and technological for a developmental needs, incremental extension of urban services and their management.
6. **BUILDING MANAGEMENT**
This course deals with the entire gamut of activities concerned with the implementation process subsequent to the preparation of the design and construction drawings. The sequence shall begin with the framing of work specifications and progressively lead to concepts of scheduling construction management and project planning.

**Stage I**

**FIRST YEAR, FIRST SEMESTER SYLLABUS**
BM-1 Surveying and Leveling Tools and equipment for land surveying. Interpretation and preparation of contour maps. Exercises in layout of buildings and checking the same at site.

**THIRD YEAR, FIFTH SEMESTER SYLLABUS**
BM-5 Specifications & Contracts. Methods of specification writing, typical space for building works, implications of variations and incomplete specifications, impact on building costs. Types of contracts, tenders, relative merits, general conditions and commercial terms. Studio exercises related to specifications for a small building project. Standard CPWD specifications, Scheduled and Non-scheduled items.

**THIRD YEAR, SIXTH SEMESTER SYLLABUS**
BM-6 Quantities & Estimation. Types of areas, types of estimates, methods of taking out quantities, modes of measurement, preliminary and detailed estimates, plinth area rates and cost indices, rates of labour and material, rate analysis, CPWD schedule of rates.

**Stage II**

**FOURTH YEAR, SEVENTH SEMESTER SYLLABUS**
BM-7 Building Economics, Fundamental economic concepts and analysis, cost control, cash-flow analysis, cost projections, cost-benefit, financing, feasibility. Estate investments and returns, rentals, easement, valuation, law relating to properties and buildings.

**FIFTH YEAR, NINTH SEMESTER SYLLABUS**
BM-9 Introduction to Project Management. Project Planning, feasibility studies, project report, project financing, Project organisation, process and structure and personnel selection, responsibilities of the project manager. Project implementation, Site investigations, layout, site organisation, networking techniques, PERT/CPM, LOD, time-cost analysis, value engineering, Project monitoring, cost control, manpower management, safety and labour laws.

**FIFTH YEAR, TENTH SEMESTER SYLLABUS**
8. **HISTORY OF ARCHITECTURE**

The course is designed to arouse in the student a sense of curiosity and to sharpen his powers of observation. The importance of the timelessness of architecture shall be emphasized. Students shall undertake a chronological study of world architecture with emphasis on the Indian sub-continent and a comparison of the different stages of developments in India and other parts of the world. The architectural study is to be linked with the social developments of civilizations, geographical and geological factors, materials and structures etc. The course shall include sketching and understanding of historical buildings, historical analyses and measured drawings.

**Stage I**

**SECOND YEAR, THIRD SEMESTER SYLLABUS**


**SECOND YEAR, FOUR SEMESTER SYLLABUS**


**SECOND YEAR, FIFTH SEMESTER SYLLABUS**

HA-5 The advent of Islam into India, Architecture of early Islamic Delhi and the regional variations. Influences of Islamic ideas on secular and religious architecture in India. The Mughal period in India, Renaissance in Italy, the spread of renaissance and Baroque in Europe.

**SECOND YEAR, SIXTH SEMESTER SYLLABUS**

The courses aims at familiarizing the student with the social, economic and organizational perspectives at the national, regional and local levels as a context in which his architectural product is likely to be placed. This will also provide the necessary background for making informed choices for further studies in related specialized disciplines. Special reference to the problems of urbanization in India, and global environmental concerns.

Stage I
SECOND YEAR, THIRD SEMESTER SYLLABUS

TP-3 Sociology. Man, Environment & Sociology. Rural society, village community, traditional patterns and trends of change. The concept of social stratification, urbanism, urbanization and modernization. Concept of social structure, cultural and social institutions. Distinctive nature of a sociological approach. Relationship between social structure and spatial structure.

THIRD YEAR, FIFTH SEMESTER SYLLABUS


THIRD YEAR, SIXTH SEMESTER SYLLABUS


Stage II

FOURTH YEAR, SEVENTH SEMESTER SYLLABUS

10. ART APPRECIATION

The course is considered as a medium for understanding architecture as one of the principal arts in the patheon of human creativity. The flowering of aesthetic sensibilities and a taste for the visual and sensory appeal of physical form. The emphasis is to make students into connoisseurs of art rather than consummate artists themselves.

Stage I

SECOND YEAR, THIRD SEMESTER
AA-3 History of Art. Art through the ages, architecture as art, milestones in art from the prehistoric, Paleolithic, Neolithic, classical, medieval, renaissance and modern periods. Indian art heritage, Indus valley to the present day.

SECOND YEAR, FOURTH SEMESTER
AA-4 Art consciousness. Aesthetics, perception, symbolism, expression, style, fashion, appropriateness and values. Critical appraisal of examples from the visual as well as performing arts. Seminar Course.

The following courses are classified under the stream of enabling skills which shall help students in finding methods of learning, problem solving and expression of ideas, relevant to all subjects in the curriculum. They will introduce students to the full range of possibilities with simple exercises in their application. The students are expected practice extensively with a view to their own personal improvement till a satisfactory standard is achieved.

11. MATHEMATICS: Stage I
FIRST YEAR, FIRST SEMESTER SYLLABUS
XM-1 Differentiation, maxima and minima, integration, menstruation, centroids and moment of inertia, simple differential equations, Geometric mapping, cartography, matrix algebra, vector algebra.

12. WORKSHOP
FIRST YEAR, FIRST SEMESTER SYLLABUS
WS-1 Develop a hands on approach, skills of working with different materials and the ability to choose an appropriate material as and when required for presentation or design purposes. Working with model making materials like thermocol, paper, wire etc. Basic workshop techniques for carpentry and joinery, sheet metal work, fabrication and foundry as an extension to Building Construction course.
13. **GRAPHICS : Stage I**  
**FIRST YEAR, FIRST SEMESTER**  
XG-1 Basic Architectural Drawing. Freehand and mechanical drawing appropriate to architectural applications. Projections, symbols, lettering, conventions; values in drawn lines, tone, texture, colour and light, sciagraphy. Indoor and outdoor sketching.  
**FIRST YEAR, SECOND SEMESTER**  
**SECOND YEAR, THIRD SEMESTER**  
XG-3 Architectural Presentation Techniques. Three-dimensional views, cut-away views, architectural rendering and model making in different media, colour presentation, optics and kinetics, Life drawing, Art lettering.  
**SECOND YEAR, FOURTH SEMESTER**  
XG-4 Advanced Business Presentation. Multi-media presentation, Reprographic techniques, print-making, architectural photography, Audio-visual projection, animated graphics. Business graphics appropriate for illustration of reports and as accompaniments for seminars.  

14. **COMPUTER APPLICATIONS IN ARCHITECTURE : Stage I**  
**FIRST YEAR, FIRST SEMESTER**  
XC-1 Introduction to computers as an analytical tool. Hardware and software. Computer languages, basic operations and applications such as word-processing and database management, simple computer programming.  
**FIRST YEAR, SECOND SEMESTER SYLLABUS**  

The following courses are classified under optional subjects wherein the exact course content will vary depending on the students’ choice, their interests and the interests of the School as an institution. It is possible that, consistent with the school’s commitments from time to time, certain themes may be permitted and students encouraged to choose their subject matter, for study or research, accordingly.
15. **ELECTIVES : Stage II**

Electives courses shall be offered on the basis of availability of expertise both within the faculty as well as from outside. The endeavour shall be to offer a wide variety for students to choose from commensurate with their abilities and interests.

16. **PROJECT REPORT / DISSERTATION : Stage II**

PRX Project Report is intended to keep the students in touch with academic world while they are out of the School and doing field training in professional offices or construction sites. The students are expected to choose topics which are of special interest to them and prepare a report after research.

The topics shall be whetted by a Project Co-ordinator. The topics may be related to the work done during the training period and on certain occasions certain topics may be assigned by the school in as much they would form a part of a major research project which the school may be handling at that time.

17. **SEMINAR: Stage II**

SRX The Seminar shall be a research paper on a subject of theoretical nature on any aspect of architecture. This may or may not be related to the thesis topic. The overall supervision shall be by a Seminar Co-ordinator to be Appointed from within the faculty and the individual guidance shall be provided by experts in the subject, preferably from within the faculty but in exceptional cases, if found expedient in the opinion of the Co-ordinator, outside experts may be appointed.

The thrust of the seminar shall be on achieving a thorough understanding of the topic of study and on the ability to present it to an intelligent and critical guidance.

18. **ARCHITECTURAL THESIS : Stage II**

ADT The Architectural Thesis is the culmination of the development of the student’s knowledge, attitudes and skills over the course of studies in architecture. It is an occasion for exercising conscious choices in the field, based on the student’s personal abilities and inclinations, and for testing out his commitment. The student, in consultation with the faculty, is expected to demonstrate through an imaginative approach, his expertise in effecting positive changes in our built environment.