



Farah, Mathura

Student Handout

for

2ND Yr, Odd Semester (2014-15)

School of Architecture

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U. P. TECHNICAL UNIVERSITY, LUCKNOW

Ordinances for

Bachelor of Architecture Programme

[Approved by Academic Council in its meeting dated 21st Feb. 2007]

(Effective from the Session – 2007-08)

1. ADMISSION

- 1.1. Admission to the first semester of the B.Arch. will be made as per the rules formulated by the 'Academic Council' of the U.P. Technical University, Lucknow.
- 1.2. No admissions will be made at any other stage in the subsequent semesters of the course, except in accordance with ordinance nos. 19 and 20.
- 1.3. The students may be admitted directly by the institutions, to the first semester of B.Arch., in accordance with the norms/rules/directions issued by the U.P. Technical University and the U.P. State Government from time to time, against the seats left vacant after counselling.

2. ELIGIBILITY

- 2.1 (a) No candidate, with less than 50% marks in aggregate, shall be admitted to the architecture course unless he/she has passed an examination at the end of new 10+2 scheme of Senior School Certificate Examination or equivalent with Mathematics as a subject of examination of the 10+2 level.
- (b) The candidates possessing three year Diploma in Architecture (10+3) recognised by Central Govt./State Govt. provided the candidates passed the Diploma Examination with minimum 50% marks in aggregate.

The selection of the candidate must be through 'aptitude Test.'

- 2.2 No lateral admission to second year of B.Arch. course is permitted.

3. DURATION

- 3.1. The duration of the undergraduate programme leading to the award of Bachelor of Architecture (B.Arch.) shall be of five years with each academic year comprising of the two semester.
- 3.2. Teaching for each semester shall be held, atleast, for the minimum number of working days as prescribed b the U.P. Technical University, Lucknow.
- 3.3. A student failing twice in first year (I and II semester combined) and, ineligible for the carry over system (Ordinance 11) shall be not permitted to continue his/her any studies further.

Provided further that if a student wishes to continue third time in First year he/she may be allowed on the terms and conditions laid down by the University for such permission, but the maximum time allowed for completing the course will remain the same as in clause 3.4.

- 3.4. Each student shall be required to pass the full course within a maximum period of eight years from his/her admission to first year. If a candidate, at any stage, is found to be unable to complete his full course of five years in the stipulated period of eight years, he shall not be allowed to continue his course any further.

4. ATTENDANCE

- 4.1.Each student is normally required to attend all the lectures, tutorials and, the studio classes in every subject, as also the curricular and co-curricular activities. However, for each subject a minimum attendance of 75% will be necessary. The Principal/Director of the Institute may condone the absence, on medical reasons, further, upto a maximum 15% limit. No further relaxation in attendance will be admissible. Thus, a student must have atleast 60% attendance in every subject.
- 4.2.A student who fails to achieve the prescribed minimum attendance as per the provisions of article 4.1, in any subject, shall not be allowed to appear at the semester examinations and, shall be deemed to have been detained.
- 4.3.The attendance of student shall be reckoned from the date of his/her registration of the student in his class.

5. CURRICULUM :

The entire curriculum of five years will be divided into ten semesters and shall include lectures, tutorials, seminars, educational tours and final thesis, as detailed in

the 'Scheme of Teaching and Examinations'. The Seventh semester of B.Arch. programme shall be devoted to Practical Training in established and recognized professional organizations as approved, by the Principal/Head of Department of architecture of college where the student is enrolled, in accordance of the regulations/executive instructions issued by the University from time to time.

6. CHANGE OF BRANCH :

No student shall be allowed to change his/her branch to join the programme of B.Arch. at any stage after his/her admission to the first semester.

7. EXAMINATION :

7.1 A Student's performance will be evaluated for the 'SESSIONALS' through continuous assessment in the form of Class-Tests, Assignments, and Viva-Voce/Practical etc. A 'SEMESTER EXAMINATION' shall, also, be held at the end of each semester for all the subjects by means of written theory papers, practicals, viva-voce and the defence of thesis or by means of any combination of these methods.

7.2 The distribution of marks for the Sessional, Theory, Practical/ Viva-Voce, and Thesis etc. for the Semester Examination shall be as per the prescribed 'Scheme of Teaching and Examination.'

7.3 The maximum marks for each subject shall consist of marks allotted for 'Semester Examination' and 'Sessionals' work.

8. QUALIFYING STANDARDS

8.1 **Sessionals:** A student shall be required to obtain a minimum of 50% of the allotted maximum marks for the 'Sessionals' in each subject of every semester, as also for the Thesis of 10th semester, to pass in the 'Sessionals' of the said subject of the concerned semester. The provision of grace marks as per ordinance no. 9 shall not be invoked to enable a student to pass in the 'Sessionals'.

8.2 **Theory:** A student shall be required to obtain a minimum of 45% of the allotted maximum marks for the 'Theory' of a subject to pass in that subject at the 'Semester Examination'. For such a subject where, 'Viva-Voce/Practical' is also conducted in addition to theory examination, the computation of the pass marks (45% marks) shall take into account the combined marks of 'Theory and 'Practical/Viva-Voce' examination.

- 8.3 **Practicals/Viva-Voce:** For the subjects in which only ‘Practical/Viva-Voce’ is conducted, a student shall be required to obtain a minimum of 50% of allotted maximum marks for the ‘Practical/Viva-Voce’ of the said subject to pass. Similarly, 50% of allotted maximum marks for the ‘Practical/Viva-Voce’ of the Thesis in 10th semester will be required to pass the Thesis. The provision of grace marks as per ordinance no. 9 shall not be invoked to enable a student to pass in the ‘Practical/Viva-Voce’ of any subject, including the thesis at the 10th semester.
- 8.4 **Aggregate:** A student will be required to obtain a minimum of 50% marks in aggregate of the ‘Sessionals’, ‘Theory’, ‘Practical/Viva-Voce’ examination and ‘General Proficiency’ to pass the examination, in conjunction with the provisions of article no. 10.2.

9. GRACE MARKS

- 9.1 A student who does not satisfy, on his own, the qualifying standards prescribed in article no. 8.2 can be awarded ‘**Grace marks**’ not exceeding a maximum limit of 10 marks, which may be distributed among any number of subjects covered under ordinance 8.2 and the practical training of VII Semester.
- 9.2 The provisions of article no. 9.1 will be applied, only, if the result of a student could improve as per article no. 10.5.

10. PROMOTION RULES

- 10.1 A Student not satisfying the requirement of qualifying standards, at any semester, as per the article no. 8.1, shall be detained from appearing at the Semester examination. Such a student will have to repeat the academic year, as a regular student, with the next batch of students.
- 10.2 The result of examinations for the ‘Autumn Semester’ and the ‘Spring Semester’ shall be combined to determine if a candidate can be promoted to next higher class of the five years course.
- 10.3 A student satisfying all the standards as provided in ordinance no. 8 shall be declared to have ‘**Passed**’ the academic year and promoted to the next higher class.
- 10.4 A student not satisfying all the criteria of qualifying standards of ordinance no. 8 in conjunction with the provisions of article no. 10.2, but failing in not more than 04 subjects limited of a maximum of 400

examination marks of both the semesters of a class taken together shall be declared to have been 'Promoted with carry over papers' (PCP) and, will be governed by Ordinance no. 11. A student so declared as PCP will have to clear the carry over papers, as and when the examination of the concerned semester is held next.

- 10.5 A student not satisfying all the criteria of qualifying standards of ordinance no. 8 in conjunction with the provisions of article no. 10.2, and has invoked the provisions of ordinance no.9, shall be declared as 'PASS' with Grace marks and shall be promoted to the next higher class.
- 10.6 The students who are not covered by provisions of article no. 10.1 to 10.5 shall be declared to have 'Failed'. Such students will be required to repeat both the semesters of the said class, either as a 'regular student' or as an 'ex-student', in accordance with the ordinance no.12

11. PROMOTION UNDER CARRY-OVER SYSTEM

- 11.1 A candidate covered under article no. 10.4 shall become eligible for provisional promotion to the next higher class of the course and, shall get chance to clear the said 'Carry over papers' in the next examination of the concerned semester, under a carry-over system.
- 11.2 A candidate shall not be promoted to third year or fourth year or fifth year if he/she fails to satisfy the requirements of clause 8.1, 8.2 and 8.3 in more than 4 subjects limited of a maximum of 400 examination marks cumulatively in previous years.
- 11.3 Marks obtained by a student to clear his/her carry over paper shall replace the original marks.

12. EX-STUDENTSHIP

- 12.1 A student opting to clear his/her examinations as an ex-student shall be required to inform the college, in writing, within 15 days of start of the next academic session.
- 12.2 An ex-student shall be required to appear at the 'Theory' and 'Practical/viva-voce' examination of all the subjects, of both the semesters, of the concerned class. However, the marks, for the

‘Sessionals’ of all the subjects and ‘General Proficiency’ in the earlier regular attempt, shall be retained as obtained by him.

- 12.3 If a student opts to repeat the academic year, as a regular student, the new marks awarded to him for ‘Sessionals’ and ‘General Proficiency’ will replace the old marks obtained by him in the earlier attempt.

13. RESULTS :

- 13.1 The examination result of a student for the ‘Autumn semester’ of his class shall be declared to indicate his performance and ‘carry over papers’, while the result of the ‘Spring semester’ will be declared separately, which will also indicate the status of his promotion to the next higher class in accordance with the ordinance no. 10.

- 13.2 For the award of merit scholarship, the result of the class as per article no. 10.2 shall be considered. It will exclude all such students who have been declared as Promoted with carry over papers/Pass with grace and provisionally promoted under article nos. 10.4 and 10.5.

- 13.3 The ‘Final result’ for the award of degree shall be prepared on the basis of the cumulative performance of a student by computing the marks with weightage to marks obtained by him in each semester, as noted in the following table-

Class	Total Marks	Weightage	
		In Percentage	Numerical
First Year	2000	10%	200
Second Year	2000	10%	200
Third Year	2000	20%	400
Fourth Year	2000	20%	400
Fifth Year	2000	40%	800
Grand Total			2000

14. AWARD OF DIVISION :

- 14.1 The division to a student shall be awarded on the basis of his/her ‘Final result’ at the end of the final semester, computed in accordance with article no 13.3.

- 14.2 A student will be said to have secured the **‘First division’ with ‘Honours’** if he/she has obtained 75% or more marks in the ‘Final result’, provided he/she has passed all the classes, in first attempt, and without invoking the grace marks as per the ordinance no.9 **and the candidates at first two top positions amongst First Div. with Honours only will be awarded medals viz. Gold and Silver respectively in order of merit.**
- 14.3 A student will be said to have secured the **‘First division’** if he/she has obtained 60% or more marks in the ‘Final result’.
- 14.4 A student will be said to have secured the ‘Second division’ if he has passed the examination of all the classes and obtained the minimum qualifying marks as per ordinance no. 8 but has secured less than 60% marks in the ‘Final result’.

15. AWARD OF GENERAL PROFICIENCY MARKS:

15.1 The marks for ‘General Proficiency’ will be awarded, by the Proctorial Board of the Institute, keeping in consideration the performance of a student in the co-curricular & extra curricular activities, general discipline in the following manner:

- (i) Co- curricular & Extra-curricular activities (Games, Sports, Cultural and Literary activities etc.) 60%
[to be awarded by the Officer-Incharge, Extra- curricular activities]
- (ii) Discipline (Inside and Outside Institution/College campus) 40%
[to be awarded by the Officer Incharge, Discipline]

15.2 There is no minimum qualifying marks for ‘General Proficiency’. However, the marks awarded for ‘General Proficiency’ will be added for the purpose of declaring result of every semester.

16. PRACTICAL TRAINING

16.1 Each student will be required to proceed on ‘Practical training’ for the VII semester after appearing at the VI semester examination. The Principal/Head of Department of Architecture of the concerned institute will approve the office of the ‘Practical training’ for the student.

16.2 The marks for Practical training will be awarded to each student in accordance with the Regulations and Guidelines issued separately by the U.P.Technical University.

17. THESIS EXAMINATION

17.1 The 'Thesis' of every student in the final semester will be evaluated, on thesis presentation by the student, through viva-voce examination by the panel of the jury, in accordance with the Regulations issued separately.

17.2 The jury shall include four external members and one internal member from the faculty, in addition to the chairman. Out of the four external jury members, at least three must be present to complete the proceedings of the jury.

17.3 A student who fails in the thesis evaluation will be allowed to resubmit the modified thesis after a minimum period of two months with due approval of the Principal/Head of the Department of the concerned Institution.

18. UNFAIR MEANS AT EXAMINATION

18.1 The cases of students using 'Unfair means' at the examinations shall be dealt with in accordance with the Rules of the University, and provisions of U.P.Public Examination (Prevention of Unfair means) Act, as enforced for the time being.

19. MIGRATION

Migration of student from one Institute to other will not be allowed unless it falls within the policy directives of the U.P.Government and the U.P.Technical University.

20. POWER TO AMEND THE ORDINANCES

The 'Academic Council' shall have the powers to relax, amend any or all the provisions of these Ordinances, subject to the approval of the 'Executive Council' of the University.

[Approved by Academic Council in its meeting dated 21st Feb. 2007]
(Effective from the session 2007-08)

U. P. TECHNICAL UNIVERSITY, LUCKNOW
Ordinances for
BACHELOR OF ARCHITECTURE PROGRAMMES

B. ARCH. SEMESTER – III
NAR – 301, ARCHITECTURAL DESIGN - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESSMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	5	30	70	100	75	25	100	200	6	6 + 3 HRS.

OBJECTIVES

- To familiarize students with a simplest residential unit.
- Understanding the use of traditional indigenous materials & construction systems in basic building forms.
- Comprehension of arrangement / organization of spatially/ functionally similar units resulting in varied outdoor spaces.
- To assimilate the modifying spatial qualities of indoor & outdoor spaces due to varying configurations.

Module-1 Study

Lecture on concept of vernacular & lessons to be learnt.
 Detailed study of a vernacular settlement remarkable for its spatial quality, material, and construction technology usage should be characteristic for that region.

Module-2 Analysis

Lectures on Elements of Space making like Floor, Wall, Door, Window, Column, Stairs, and Roof.

Analysis of the selected settlement in light of their spatial roles and consequently the design considerations.

Lectures on the spatial attributes of the resultant open & built of the vernacular and lessons to be learnt from the study & their juxtaposition.

Analysis of the selected settlement with relationship to human scale, activity, space & form & other parameters pertaining to spatial aspects.

Module-3 Design & Application through Case Studies

Lecture on interpreting spatial configuration for specific design programme.
 Configuration / array of multiple repetitive units of preferably on single floor organized on basis of functional, geometric and visual order.

SUGGESTED STUDIO EXERCISES

1. Detailed drawings for the settlements.
2. Analysis drawings on basis of selected parameters underlining lessons learnt.
3. Design of buildings like Residence, Panchayatbhawan, Ashrams, Hostels, Tourist Cottages, Primary School etc.
4. Study tours to relevant rural/urban destinations for primary documentation.

REFERENCE BOOKS

1. Ching, Francis D.K. Form Space & Order.
2. Rappoport, Amos. House Form & Culture.
3. Oliver, Paul. Shelter & Form.
4. Fathy, Hasan. Natural energy & vernacular architecture.
5. Housing projects by GeofferyBawa, Charles Correa, B.V. Doshi among others.

B. ARCH. SEMESTER – III
NAR – 302, CONSTRUCTION & MATERIALS – III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	4	25	50	75	50	25	75	150	6	3 HRS.

OBJECTIVES

- To acquaint the students to building materials such as Roof Coverings, Floorings, Variety of glasses Ceramics, and Hardware.
- To familiarize the students with construction techniques for use of the above materials in building works.
- To familiarize the student with the basic building construction practices on site/yard.

SECTION – A, BUILDING MATERIALS AND SCIENCES

Module-1 Roof Coverings (Conventional)	Clay Tiles (Country, Allahabad, Mangalore tiles etc.), Stone Slating, Shingles, Thatch.
Module-2 Floor & Floor Finishes	Brick, Cement Concrete, Stone, Terrazzo, Chequered Tile, Ceramic Tile, Vitrified Tiles, Wooden.
Module-3 Glass & Ceramics	Glass - Translucent, Transparent and Special glasses, Glass bricks. Ceramics - Terracotta, Faience, Fireclay, Stoneware, Earthenware, Vitreous China, Porcelain.
Module-4 Hardware	Hinges, Handles, Knobs, Bolts, L-drops, Locks, Stoppers, Stays, Silencers, Chain guards, Closers, Catchers, Knockers etc. in various materials. Patch fittings for glazed shutters.

LIST OF ASSIGNMENTS (Market Surveys, Seminars & Report)

1. To study the availability, constituents, properties, manufacturing processes, storage, transportation and applications of above mentioned materials.
2. To visit tile, glass, ceramic, hardware etc. factories for better understanding and submit report.

WORKSHOP/CONSTRUCTION YARD PRACTICE & SITE EXPOSURE

Module-5 Workshop/Construction Yard Practice	Practicing in construction yard / workshop by making the examples of reinforced brickwork, variety of flooring, fixing of dado, timbering of shallow trenches etc. and doors samples.
Module-6 Site Exposure	Exposure to building construction practices on site of various items of work from foundation to roof and finishes.

LIST OF ASSIGNMENTS

1. To study the various tools, equipments used in floor finishing works.
2. To study the various tools, equipments used in glass works.
3. To construct examples of reinforced brickwork and variety of flooring in construction yard. Also, preparation of scaled model of door in workshop.
4. To survey construction work on site and submit report.

SECTION – B, BUILDING CONSTRUCTION TECHNOLOGY

Module-1 Reinforced Brickwork	Reinforced brick piers, lintels, slabs and projections.
Module-2 Door (Timber)	Types and details of Panelled door shutters and Mosquito proof door shutter.
Module-3 Window / Ventilator (Timber)	Types of Windows / Ventilators and details of glazed window and ventilator shutters and frames.
Module-4 Floor / Skirting	Complete process of laying of floor and skirting - Brick, Cement Concrete, Mosaic and Terrazzo floors.
Module-5 Floor/ Dado	Laying and fixing of Stone slabs, Chequered Tile, Ceramic tiles, Vitrified tiles and Wooden (parquet and plank) on subfloors and walls.
Module-6 Temporary Timbering	Timbering of shallow trenches.

CONSTRUCTION PLATES

1. To understand Reinforced brick piers, lintels, slabs and projections.
2. To understand variety of Panelled door shutters and their details in timber.
3. To understand Mosquito proof door shutter and its details in timber and jaali.
4. To understand variety of windows & ventilators and the details of window frame and glazed shutter in timber and glass.
5. To understand laying of above mentioned floors and fixing of above tiles on floors and walls.
6. To understand Timbering of shallow trenches in various soil types.

APPROACH

- The students would be familiarized with vernacular terminology as prevalent in this part of the country.
- The emphasis will be construction details as applicable to Indian climatic conditions.
- Site visits and market surveys will be an integral part of sessional work.

REFERENCE BOOKS

1. McKay, W.B., "Building Construction Volume I, II, III and IV", Longmans, 1955.
2. Ching, Francis D. K. and Adams, Cassandra, "Building Construction Illustrated", Wiley and Sons, 2000.
3. The Construction of Buildings – Barry Volume I, II, III and IV
4. Chudley, Roy, "Construction Technology", Longman, 2005.
5. Building Construction_Mitchell (Elementary and Advanced)
6. Rangwala, S. C., "Building Construction", Charotar Publishing House, 2007
7. Building Construction-Bindra & Arora.
8. Punmia B. C., Jain A. J., and Jain A.J., Building Construction, Laxmi Publications, 2005.
9. Mitchell's Structure & Fabric-II
10. Don A. Watson, Construction Materials and Processes, McGraw Hill Co.
11. Building Materials by SC Rangwala: Charotar Pub. House, Anand
12. M. Gambhir, Neha Jamwal, Building Materials Products, Properties and Systems, Tata McGraw Hill Publishers, New Delhi, 2011.
13. R.K. Gupta, Civil Engineering Materials and Construction Practices, Jain brothers, New Delhi, 2009.
14. National Building Code of India (Latest Edition), Bureau of Indian Standards.
15. Engineering Materials-Deshpande.
16. Engineering Material-Roy Chowdary
17. Designing with models – Criss. B. Mills.
18. Morris, M., "Architecture and the Miniature: Models", John Wiley and Sons, 2000.
19. Mills, Criss B., "Designing with Models: A Studio Guide to Making and Using Architectural Models", Thomson and Wadsworth, 2000.
20. Raghuwanshi, B.S., "A Course in Workshop Technology - Vol. I and II", Dhanpat Rai and Co, 2001.

B. ARCH. SEMESTER – III
NAR – 303, ARCHITECTURAL STRUCTURES - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	3	3 HRS.

OBJECTIVES:

- To understand the analysis of indeterminate structures and their application in structural design and analysis.

Module-1	Fixed & Continuous Beams and Portal Frames	Introduction, Analysis of continuous beams and portal frames, Reactions at the supports, Effects of sinking of supports.
Module-2	Fixed & Continuous Beams and Portal Frames (continued)	Analysis of continuous beams and portal frames by 3M equation, Slope deflection method, Moment distribution method, Consistent deformation method.
Module-3	Elastic Theorems & Energy Principles	Introduction, Potential energy, General principles, Principles of superposition.

REFERENCE BOOKS

1. Nautiyal B. D., "Introduction to Structural Analysis", B.H.U.
2. Punmia P. C., "Strength of Materials & Mechanics of Structures".
3. Khurmi R. S., "Strength of Materials".
4. Senol Utku, "Elementary Structural Analysis".
5. Rama Armarutham S., "Strength of Materials".
6. C.K. Wang, "Theory of Structures".

B. ARCH. SEMESTER – III
NAR – 304, ARCHITECTURAL DRAWING - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	2	2	15	35	50	50	0	50	100	6	3 HRS.

OBJECTIVES

- To develop greater perception of complex Architectural forms and buildings.
- To develop the skill of making perspectives of complex buildings and Rendering them in different media.
- To develop or upgrade an understanding about AutoCAD 3D, as an important tool for drafting, designing, analyzing and representation of the drawings in a desired manner.

SECTION – A, ARCHITECTURAL DRAWING (MANUAL)

Module-1 Shades and Shadows	Values in Shades and shadows. Constructing plan shadows (point, line and plane). Constructing shadows in elevations (point, line and plane). Short –cut methods for Constructing shadows. Presentation techniques in Sciography.
Module-2 Presentation	Introduction to different textures and finishes in plan and elevation. Graphical representation of furniture, automobiles, human figure etc. in plans and elevation and 3-Dimension. Preparation of presentation drawings of small buildings, through Plans, Elevation, Section, Site plan etc., using various rendering techniques and media, incorporating sciography for creating three dimensioned effect.

SECTION – B, ARCHITECTURAL DRAWING (COMPUTER)

Module-1 Work with 3D Models	Launching AutoCAD 3D, Using application menus, Create 3D models, Modify 3D solids and surfaces , Create sections and 2D drawings from 3D models.
Module-2 Setting Up and Using the 3D Drafting Tool	Types of 3D drafting tools, 3D keyboard commands, Materials and textures, Reference other drawing files, Link and embed data (OLE), Work with data in other formats and exporting 3D model to various software's.
Module-3 Using and Exploring 3D Models	Specify 3D views, Define a 3D view with a camera, Create preview animations, Create motion path animations, Creating a simple 3D mesh, Editing faces and edges, Creating mesh surfaces, Converting meshes to solids, Editing surfaces.
Module-4 Effective Presentation	Layer management, Exporting 3D to work in other software. Plotting and publishing the drawing in modal space and paper space.

REFERENCE BOOKS

1. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.
2. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, NY 1975
3. IH. Morris, Geometrical Drawing for Art Students - Orient Longman, Madras, 2004.
4. Introducing AutoCAD and AutoCAD LT - George Omura
5. Mastering AutoCAD – George Omura
6. AutoCAD 2013 and AutoCAD LT 2013 “BIBLE” - Ellen Finkelstein

B. ARCH. SEMESTER – III
NAR – 305, ARTS AND GRAPHICS - III

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	0	2	15	35	50	50	0	50	100	3	3 HRS.

OBJECTIVES

- To develop an appreciation of Indian Arts & Crafts among the Students.
- To strengthen the skill of architectural rendering.
- To develop the skills to design smaller elements of building.

SECTION – A, ARTS AND GRAPHICS

Module-1 History of Indian Art Lectures on outline History of Indian Art, from earliest times to Mauryan Period.

Module-2 History of Indian Art Gupta Period to Mughal Period.

Module-3 History of Indian Art Company Style (British Period).

SECTION – B, DESIGN

Module-4 Design of various objects Designing of gate, grill, railing, jaali, in suitable materials.

DRAWING PLATES

1. Rendering in different media, works of masters of Modern Architecture.
2. Rendering of interior and exterior perspectives of students own design projects.
3. Enlargement and rendering in Ink the Indian Decorative Motifs.
4. Designing and drawing of gate, grill,railing, jaali, in suitable materials.

LIST OF ASSIGNMENTS (Field Exercises & Workshop Activities)

1. To understand the techniques of fabrication and fixing details of gate, grill, railing, jaali, in suitable materials.

REFERENCE BOOKS

1. ABC of Indian Art- J.F.BLACKER.
2. A concise History of Indian Art - ROY C. CRAVEN.
3. Maurya and Post Maurya Art- NIHAR RANJAN RAY
4. The Story of Indian Art- S.K. Bhattacharya

B. ARCH. SEMESTER – III
NAR – 306, ARCHITECTURAL SERVICES – II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	50	0	50	100	2	3 HRS.

OBJECTIVES

- To understand the basic principles of physics of electricity and light.
- To make them enable to draw the electrical layout with appropriate cross section of wires and illuminance calculations for residences.
- To know the characteristics and applications of the different types of modern lamps and luminaires.
- To familiarize the student with electrical bye laws as per NEC/BIS.

SECTION – A, ELECTRICAL

Module-1 Electrical

Introduction –

Terminology and architectural symbols (as per NBC/NEC) for electric installations in buildings.

Need to generate and save electricity, transmission and distribution of electricity (single and three phases), procuring service connection.

Familiarization to various lighting accessories, wires and cables, metering, distribution panels / boards etc. for single and three phase supply.

Guidelines for installation of fittings.

Design of simple electrical circuits –

Introduction to simple light and fan circuits.

System of connection of appliances and accessories e.g. series and parallel connection, joint box system, looping-in system.

Systems of wiring –

Basic considerations.

Various types of internal wiring systems e.g. cleat, casing and capping, batten and conduit (surface & concealed).

Protection of electrical installation and human life –

Basic considerations.

Protection against excess current, short circuit earth fault and protection against electric shock.

Introduction to various types of protection devices e.g. switches, fuses and circuit breakers.

Need for earthing of domestic fittings and appliances, earthing and its relation with soil resistivity, earth electrodes, earth wires.

Load assessment and selection of appropriate cross section of the conductor.

SECTION – B, ILLUMINATION

Module-2 Illumination

Introduction –

Terminology and unit.

Light and its characteristics – scattering, propagation, transmission, reflection, absorption, refraction and dispersion of light. Electromagnetic spectrum and visible radiation.

Illumination –

Types of illumination schemes e.g. Ambient, Task, Focal and Decorative etc. lighting.

Design considerations for illumination Schemes.

Methods for lighting calculation – Watts per square meter, Light flux and Point to point method.

Sources of light (Electrical)–

Familiarization and understanding of electrical sources of light e.g.

Thermal radiators - Incandescent, Halogen.

Discharge lamps- Low pressure (fluorescent, compact fluorescent, sodium, cold cathode neon), High pressure (mercury, metal halide, sodium).

New technologies - LED, Fiberoptics.

Luminaries –

Types of Luminaries – Indirect, Semi-indirect, General diffusing, Semi-direct and Direct.

SECTION – C, APPLICATION

Module-3 Electrical Drawing

The understanding of electrical needs for individual spaces e.g. Living room, Dining room, Bed room, Kitchen, Toilet, Staircases, and Corridors etc.

The electrical layout drawing for a residence.

Module-4 Field / Market Surveys

Familiarization to types of electrical luminaries available in market, manufactured by various brands e.g. Recessed mounted luminaries, Spot / Projectors, Surface mounted luminaries, Decorative luminaries, Pendant luminaries, Free-floor-standing luminaries, Uplights, Trunking lighting systems, Down Lights.

REFERENCE BOOKS

1. National Building Code of India.
2. National Electrical Code.
3. Raina K.B. & Bhattacharya S.K., Electrical Design estimating and costing, New Age International (P) Limited, New Delhi, 2004.
4. Rudiger Ganslandt & Harald Hofmann, Handbook of Lighting Design, Druckhaus Maack, Lüdenscheid, 1992.
5. Kevin Kelly & Kevin O'Connell, Interior Lighting Design - A Student's Guide.

B. ARCH. SEMESTER – III
NAR – 307, HISTORY OF ARCHITECTURE – II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	1	0	15	35	50	50	0	50	100	3	3 HRS.

OBJECTIVES

- To inform about the development of Indian architecture and its contextual and traditional aspects.
- To understand architecture as evolving within specific cultural contexts including aspects of politics, society, religion and climate
- To gain knowledge of the development of architectural form with reference to technology, style and character in various aspects of Hindu architecture.
- To comprehend and analyze spatial character, scale, and structure through historical and traditional built heritage.
- To comprehend and relate to the theoretical basis of historical and traditional Hindu architecture.

Module-1	Indus Valley civilization	Town planning principles, cultural ethos, economy exemplified with examples from Mohenjodaro and Harappa.
Module-2	The Aryan civilization	With its emphasis on the Vedic town plan, its motifs and patterns. The brick altars and their significance.
Module-3	Buddhist Architecture	Typology of lats, eddicts, stupas, viharas, and chaityas, both in rock-cut or otherwise. The techniques used for rock-cut spaces and free standing built masses. The spatial and functional connotations.
Module-4	Buddhist Theory	The Buddhist philosophy and its imprint in built space.
Module-5	Hindu Architecture- Indo-Aryan	The evolution of the temple form, evolution of the shikhara in north India. The three schools of architecture—the Gujarat, the Khajuraho, and the Orrisan styles. Comparison in spatial attributes, scale and detail.
Module-6	Hindu Architecture- Dravidian	The evolution of the vimana and the contributions of the Chalukyas, the Pallavas, the Pandyas and the Cholas. The contributions of the Nayaks to the temple cities. The city morphology, spatial diversity and planning criteria.
Module-7	Hindu Theory	Hindu philosophy and its imprint in temples/traditional houses and other built structures. Mandala and the geometric grid in temple plans. The proportional theory in temple elevation.
Module-8	Jain Architecture	The temple cities of Palitana, Mount Abu and Girnar.
Module-9	Jain Theory	The Jain philosophy and its imprint in built form. The Jain mandalas.
Module-10	Measured Drawing	Measured Drawing of a historical precinct.

REFERENCE BOOKS

1. Stella Kramrisch, The Hindu temple, Volume 1 & 2, Motilal Banarsidass Publications, 1996.
2. Percy Brown, Indian Architecture (Buddhist and Hindu period), D.B.Taraporewala Sons & co Pvt. Ltd. 1965
3. Volwahren, Andreas, Living Architecture
4. Satish Grover, The Architecture of India- Volume 2, Vikas, 1980.
5. Henri Stierlin, Anne Stierlin, Hindu India: from Khajuraho to the temple city of Madurai, Taschen, 1998.
6. James Fergusson, History of Indian & Eastern Architecture, 2007
7. C. Batley, Design Development of Indian Architecture, John murray, London, 1934.
8. A. Cunningham, Archaeological Survey of India, Vol. I – XXIII, Simla, Calcutta, 1903-30.
9. M. Edwards, Indian temples & Palaces, Paul Hamlyn, London.
10. Christopher Tadgell, Indian & South Asia: The Buddhist & Hindu Tradition, Ellipses, 1998.
11. Surendra sahai, Indian architecture, Prakash books, 2006.
12. Ernest Binfield Havell, Indian Architecture, J. Murray, 1913.
13. Benjamin Rowland, The Art & Architecture of India: Buddhist, hindu, jain. Penguin books, 1953.
14. K.V,Soundra Rajan, Indian Temple Styles: the personality of Hindu Architecture.
15. Giles Henry Rupert Tillotson (ed.), Paradigms of Indian architecture: Space & Time in Representation & Design, Psychology Press, 1998.
16. Adam hardy, Indian temple Architecture- form & transformation, Abhivav Publications, 1995.

B. ARCH. SEMESTER – III
NAR – 308, RESEARCH - II

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	15	35	50	0	0	0	50	2	-

OBJECTIVES

- Understanding basic principles of any research with special reference to architectural research and applications.

Module-1	Introduction	Aspects of Analysis of an Architectural project
Module-2	Technical Writing	Critical Appreciation of a Project: Analyzing on the basis of site, Built Form and Space, Spatial Organization, Materials and Techniques, Elements and Special Characteristics, Activity Pattern.
Module-3	Book Reviews	Review of Book with presentation of the précis.

LIST OF ASSIGNMENTS

1. Review of an architectural book/books prescribed by subject teacher.
2. Report on ongoing architectural project.

REFERENCE BOOKS

1. Raman Meenakshi and Sharma Sangeeta, “Technical Communications – Principles and Practices”, Oxford University Press, New Delhi.
2. Fundamentals of Design

B. ARCH. SEMESTER – III
NAR – 309, CLIMATOLOGY

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
1	1	0	10	15	25	25	0	25	50	2	3 HRS.

OBJECTIVES

- Acquainting the students with human thermal comfort as an essential function of a building, its analysis & use in Architecture.
- To familiarize students with the elements constituting climate and their role in creating responsive designs.
- Understanding the characteristics of varied tropical climates and expected responses of buildings in specific climate types
- To utilize existing traditional/vernacular/ historical structures in the city as case study to learn the various attributes of climate & the desirable responses.

Module-1	Introduction to climate	Importance of climate in architecture. Factors affecting climate. Elements of climate: solar radiation, temperature, wind, humidity & precipitation and their measurement.
Module-2	Climate types	Climate types all over the world. Tropical climate: climate zones, their characteristics & responses of the traditional/ vernacular. Micro Climate & Site Climate.
Module-3	Human thermal comfort	Study of body's heat production & heat loss, comfort zone, bio-climatic chart, effective temperature isopleths etc. Various models of Thermal Comfort: Static & Adaptive Mode, thermal indices & their applicability.
Module-4	Solar chart	Understanding the solar position of a place, azimuth, altitude, incidence, using shadow angle protractor for designing shading devices.
Module-5	Daylight	Natural lighting, glare, day light factor & factors affecting day-lighting in various space types, principles of day-lighting in tropics.
Module-6	Ventilation & Air Movement	Requirement, size & position of openings, Air-flow pattern inside & outside buildings.
Module-7	Orientation	Orientation of buildings in relation to sun & wind.

LIST OF ASSIGNMENTS (Field Exercises & Drawings)

1. Understanding tools & instruments utilized for measurement of climatic elements using the climatology lab & meteorological department.
2. Documenting local case studies of vernacular/ traditional/ historical buildings for understanding their responses to prevailing climate.
3. Collecting data of temperature, humidity, radiation light & wind for specific cities and making solar charts, bio-climatic charts & Mahoney tables for the same.

REFERENCE BOOKS

1. Koinesberger, O. Tropical climate.
2. Krishan, Arvind. Climate Responsive Architecture.
2. Brown, G.Z. Sun Wind & Light.
3. Olgyay, V. design with Climate.
4. Yeang, Ken. Designing with Nature: The Ecological basis for Architecture Design.
5. Works of Architects like HasanFathy, B.V. Doshi, Charles Correa, Ken Yeang, Sanjay Puri, among others to understand responses of varied designers to the existing environment.

B. ARCH. SEMESTER – IIIAUC-001- *Human Value & Professional Ethics/*AUC-002- *Cyber Security*

PERIODS			EVALUATION SCHEME						SUBJECT TOTAL	CREDITS	DURATION OF THEORY PAPER
LECTURE	TUTORIAL	PRACTICAL/ STUDIO	SESSIONAL ASSESMENT			ESE					
			CT	TA	TOTAL	THEORY	VIVA	TOTAL			
2	0	0	15	10	25	50	-	75	75	-	-

*Human values & Professional Ethics /Cyber Security will be offered as a compulsory audit course for which passing marks are 30% in End Semester Examination and 40% in aggregate.

Hardayal Technical Campus, Mathura
Academic Calendar
(Odd Semester) 2014-15

S. No.	Particulars	Dates
1	Registration	11-16 August 2014
2	Independence Day Holiday	15 August 2014
3	Janmashtami Holiday	18 August 2014
4	Commencement of Classes	19 August 2014
5	Display and submission of Attendance	13 September 2014
6	Last date of submission of the list-1 of Students having poor attendance to the Director	15 September 2014
7	Dispatch of Attendance of Students to Parents	18 September 2014
8	Last Date of submission of question papers to the examination cell	20 September 2014
9	Class Test-1	22-25 September 2014
10	Last date to show evaluated answer scripts to the students	29 September 2014
11	Last date to submit the list-1 of weak students to the Director	30 September 2014
12	Last date of Submission of CT-1 Marks	30 September 2014
13	Gandhi Jayanti Holiday	2 October 2014
14	Dussehra Holiday	3 October 2014
15	Bakreed Holiday	6 October 2014
16	Dispatch of Progress Report of Students to Parents	11 October 2014
17	Fresher's Function	To Be Declared
18	Submission and Display of Attendance	18 October 2014
19	Last date of submission of the list-2 of Students having poor attendance to the Director	18 October 2014
20	Dispatch of Attendance of Students to Parents	20 October 2014
21	Deewali Holidays	23-25 October 2014
22	Last Date of submission of question papers to the examination cell	26 October 2014
23	Class Test-2	28 Oct- 1 Nov 2014
24	Mohrram Holiday	4 November 2014
25	Last date to show evaluated answer scripts to the students	6 November 2014
26	Last date of submission of list-2 of weak students to the Director	7 November 2014
27	Submission of CT- 2 Marks	8 November 2014
28	Dispatch of Progress Report of Students to Parents	11 November 2014
29	Sports Fest	To Be Declared
30	Cultural Activities	To Be Declared
31	Distribution of Typed Question Bank and Notes	20 November 2014
32	Course Completion	20 November 2014
33	Course Revision	21-25 November 2014
34	Display of Attendance	
35	Last Date of submission of question papers to the examination cell	24 November 2014
36	PUT/CT-3	26-29 November 2014
37	Last Date for Submission of Internal Marks	4 December 2014
38	End Semester Exams	As per UPTU Schedule
39	Practical Exams	As per UPTU Schedule
40	Semester Break	To be declared

Note: Any change may be made in calendar due to any reason.