PROPOSED CURRICULUM AND SYLLABUS FOR
DIPLOMA COURSE IN
ARCHITECTURE

SYLLABUS
(THIRD SEMESTER)

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION

PREPARED BY:
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MOUSUMI GUPTA, WOMEN’S POLYTECHNIC CHANDERNAGORE
SHARMISTHA DAS, SILIGURI GOVT. POLYTECHNIC
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THEORY OF STRUCTURES

Subject Code: ARCH/3/T1/TOS
Course offered in: Third Semester
Course Duration: 17 weeks
Full Marks: 100

OBJECTIVE
On satisfactory completion of the course, the students should be in a position to:

(i) analyse simple pin-jointed frame & truss structures;
(ii) tackle simple problems of retaining walls regarding stress intensity at the base and its stability;
(iii) understand the load carrying criteria of columns with respect to length and shape;
(iv) draw Shear Force and Bending Moment diagrams of two-span continuous beams using Clapeyron’s Theorem of Three Moments and Slope deflection method;
(v) solve the problems of cantilever as well as simply supported beams in simple loading conditions.

MODULAR DIVISION OF THE SYLLABUS

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MODULE</th>
<th>TOPIC</th>
<th>CONTACT PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<td>PIN JOINTED STRUCTURES</td>
<td>14</td>
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<td></td>
<td>2</td>
<td>COLUMNS &amp; STRUTS</td>
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<td>B</td>
<td>3</td>
<td>TWO SPAN CONTINUOUS BEAMS</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>FIXED BEAMS</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>PROPPED CANTILEVER</td>
<td>6</td>
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CONTACT PERIODS: 45  INTERNAL ASSESSMENT: 6  TOTAL PERIODS: 51

EXAMINATION SCHEME

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MODULE</th>
<th>OBJECTIVE QUESTIONS</th>
<th>SUBJECTIVE QUESTIONS</th>
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<td>TO BE ANSWERED</td>
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<td>MARKS PER QUESTION</td>
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<td>1 x 20 = 20</td>
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<td>ANY FIVE, TAKING</td>
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<td>AT LEAST ONE FROM EACH GROUP</td>
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<td>B</td>
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<td>THREE</td>
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DETAIL COURSE CONTENT

GROUP – A  24 PERIODS

1.0 PIN JOINTED STRUCTURES

1.1 Concept of a Frame: Perfect, Redundant & Deficient — Plane frames & Space frames — Different types of end supports of frames — Concept of statically determinate & indeterminate structures

1.2 Assumptions made in finding the forces in the members of a perfect frame

1.3 Different methods of finding the forces in the members of perfect frames (cantilever and simply supported) subjected to loadings by: — (a) graphical method, (b) method of joints

1.4 Numerical problems

2.0 COLUMNS & STRUTS

2.1 Problems for finding critical load by Euler’s formula for various kinds of end conditions for columns of: rectangular, circular, symmetrical and asymmetrical sections

2.2 Rankine–Gordon formula for critical load for various end conditions (no proof) — Related problems

2.3 BIS Code formula (statement only)

(a) in addition to above it carries an uniformly distributed super imposed load on top of back fill.

3.1 Problems for finding minimum base width

GROUP – B  21 PERIODS

3.0 TWO SPAN CONTINUOUS BEAMS

3.1 To draw Shear Force and Bending Moment diagrams for two equal spans carrying — (a) uniformly distributed load over whole span, and, (b) equal point load at centre of each span; using Clapeyron’s Theorem of Three Moments (no proof).
3.2 Simple problems.

4.0 **FIXED BEAMS**

To draw Shear Force and Bending Moment diagrams for — (a) uniformly distributed load over whole span, and, (b) point load at any intermediate point within the span

5.0 **PROPPED CANTILEVER**

To find out prop reaction for rigid and elastic prop by — moment area method — To draw Shear Force and Bending Moment diagrams for — (a) uniformly distributed load (partly and fully throughout the span), and, (b) point load at any intermediate position in the span.

**REFERENCE BOOKS**

1. STRENGTH OF MATERIALS / S. Ramamurtham & R. Narayanan / Dhanpat Rai & Sons, Delhi
2. STRENGTH OF MATERIALS / M. Chakraborty / S. K. Kataria & Sons, Gurunanak Market, Delhi
3. THEORY OF STRUCTURES / R. S. Khurmi
4. TREATISE OF STRUCTURAL MECHANICS / SOME MUKHERJEE
5. ANALYSIS OF STRUCTURES VOL. I / V. N. Vazirani & M. M. Rathwani / Khanna Publishers, Delhi

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**HISTORY OF ARCHITECTURE — I**

Subject Code: ARCH / 3 / T2 / HOA1
Course offered in: Third Semester
Course Duration: 17 weeks
4 lecture contact periods per week
Full Marks: 100

**OBJECTIVE**

On satisfactory completion of the course, the students will understand the typical features of the:

(i) architecture of ancient Egypt and that of West Asia;
(ii) Classical European architecture of Greece & Rome and be able to compare the same;
(iii) evolution of Church Architecture through the Medieval European times to the Renaissance period covering the change of features during the Early Christian, the Byzantine, the Romanesque and the Gothic periods with special reference to the evolution of plan and corresponding evolution of construction technique of the systems of spanning.

**MODULAR DIVISION OF THE SYLLABUS**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MODULE</th>
<th>TOPIC</th>
<th>CONTACT PERIODS</th>
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<tr>
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<td>ARCHITECTURE OF THE ANCIENT WEST ASIA</td>
<td>6</td>
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<tr>
<td>B</td>
<td>3</td>
<td>ARCHITECTURE OF THE CLASSICAL GREECE</td>
<td>10</td>
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<tr>
<td>C</td>
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<td>EARLY CHRISTIAN ARCHITECTURE</td>
<td>3</td>
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<tr>
<td></td>
<td>6</td>
<td>BYZANTINE ARCHITECTURE</td>
<td>4</td>
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<tr>
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<td>7</td>
<td>ROMANESQUE ARCHITECTURE</td>
<td>7</td>
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<tr>
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<td>8</td>
<td>GOTHIC ARCHITECTURE</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>RENAISSANCE ARCHITECTURE</td>
<td>7</td>
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CONTACT PERIODS: 60
INTERNAL ASSESSMENT: 8
TOTAL PERIODS: 68

**EXAMINATION SCHEME**

<table>
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<th>GROUP</th>
<th>MODULE</th>
<th>OBJECTIVE QUESTIONS</th>
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<td>TO BE SET</td>
<td>TO BE ANSWERED</td>
<td>MARKS PER QUESTION</td>
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- 3 -
DETAILED COURSE CONTENT

GROUP - A THE ANCIENT WEST 12 PERIODS

Module 1 ARCHITECTURE OF THE ANCIENT EGYPT 6
Belief in after-life, powerful priesthood, abundant labour — leading to — TOMB ARCHITECTURE, MONUMENTAL SCALE — Detail study of the (i) GREAT PYRAMID OF CHEOPS, GIZA: section showing entrance, subterranean chamber, queen’s chamber, grand gallery – king’s chamber, air-shaft; (ii) GREAT TEMPLE OF AMUN, KARNAK, THEBES — Brief idea about the MASTABAS, ROCK-Hewn TOMBs, PYLONS, OBELISKS AND SPHINX

Module 2 ARCHITECTURE OF THE ANCIENT WEST ASIA 6
Plentiful supply of soil in the alluvial plains of Tigris & Euphrates, knowledge of kiln-fire, scarcity of stone & timber, availability of bitumen from natural springs — leading to — ubiquity of MUD BRICK (SUN-DRIED & KILN-FIRED) LAID IN BITUMEN — Constraints imposed by the structural demands of brick vaulting, knowledge of true arch — leading to — ARCUATED ARCHITECTURE — Detail study of the (i) ZIGGURAT OF UR: core of mud brick covered with a skin of convex brickwork, weeper holes

GROUP - B THE CLASSICAL EUROPEAN ARCHITECTURE 20 PERIODS

Module 3 ARCHITECTURE OF THE CLASSICAL GREECE 10
Abundance of high quality limestone & marble, scarcity of hardwood, restriction on building spanning; expression of direct democracy; Mediterranean climate — leading to — COLUMNSAR & TRABEATED ARCHITECTURE, HUMAN SCALE, EXTROVERT SPACE — ORDERS: DORIC, ICONE, CORINTHIAN — Elements of urban architecture: ACROPOLIS AT ATHENS with brief idea about AGORA, STOA, BOULEUTERION, THEATRE, ODEION, STADIUM, HIPPODROME AND GYMNASIA (definitions with names of two examples each) — Detail study of the PARTHENON, THE TEMPLE TO ATHENA with emphasis to its (a) Elevation: facade treatment, proportion (Golden section, optical correction); (b) Plan: PRONAOS, NAOS & STATUE AND OPISTHODROME OR EPINOA.

Module 4 ARCHITECTURE OF THE CLASSICAL ROME 10
Introduction of FIRED BRICK, use of IMPROVED MORTAR analogous to modern concrete, judicious use of different quality of stone, STUCCO & MARBLE VENEERING; knowledge of TRUE ARCH, BARREL & CROSS VAULTS, CUPOLA AND COFFER CEILING; expression of mastery of the Imperial Empire; financial resources from conquests — leading to — ARCUATED ARCHITECTURE, MONUMENTAL SCALE, GRANDEUR, INTROVERT SPACE — ORDERS added: TUSCAN and COMPOSITE OR ROMAN — Comparative proportions of the Classical Orders — Brief idea about the TEMPLES, FORUM, BASILICAS, THERMAE & BALNEAE, THEATRE, AMPHITHEATRE, CIRCUSES, TRIONPHAL ARCHES & COLUMNS, AQUEDUCTS & BRIDGES (definition with names of two examples each) — Detail study of the PANTECHON, ROME with emphasis to section through its great dome.

GROUP - C THE EVOLUTION OF CHURCH ARCHITECTURE 28 PERIODS

Module 5 EARLY CHRISTIAN ARCHITECTURE 3
Acceptance of Christianity by Constantine, need for enclosed religious congregational space; lack of resources & skilled craftsmen, adaptation of existing building elements — leading to — BASILICAN CHURCHES — Detail study of the BASILICA OF ST. PETER, ROME with emphasis to its Plan: SINGLE AXIS FROM ENTRANCE TO THE APSE THROUGH NAVE & AISLE

Module 6 BYZANTINE ARCHITECTURE 4
Knowledge of placing a DOME over a regular polygonal plan with PENDENTIVES, TWO AXES — leading to — Orthodox Churches with square plan, enclosing nave & aisle in the shape of GREEK CROSS, use of large opening creating radiant interior — Detail study of the HAGIA SOPHIA, CONSTANTINOPLE

Module 7 ROMANESQUE ARCHITECTURE 7
Consolidation of Papal hierarchy; desire to articulate, to stress or underline every structural division in order to produce unified compositions; continuing development of STONE VAULTING into GROINED SYSTEMS — leading to — development of church plan as a LATIN CROSS with addition of TRANSEPTS, extension of aisles carried
round APSIDAL SANCTUARY to form AMBULATORY, FIGURATIVE & NON-FIGURATIVE SCULPTURES designed and integrated with structure & construction — Detail study of the PISA CATHEDRAL & CAMPANILE.

**Module 8  ** GOTHIC ARCHITECTURE  
Medieval age, supremacy of religion, desire to create lofty towered cathedrals, mystic interiors; knowledge to cut & shape stone, entire structure conceived as framework of organised coherent system of POINTED ARCHES & VAULTS — leading to — rectangular church plans with high PINNACLES, dramatic external massing of light & shadow, TRACERY admitting defused light, reduction of structural function of wall to a minimum — Detail study of the NOTRE DAME, PARIS with emphasis to its (a) Plan showing NAVE & CHOIR and, (b) transverse section showing POINTED ARCH, FLYING BUTTRESS, NAVE ARCADE & TRIFORIUM.

**Module 9  ** RENAISSANCE ARCHITECTURE  
Reformation movement in Christianity, decline of temporal power of the Church; revival of classical learning resulting in symbolism, plain forms of church with uncluttered interiors — STUCCO widely used for decorative interiors — Increasing refinement and systematisation of architectural drawing — Detail study of the CATHEDRAL OF ST. PETER, ROME in plan & section — BAROQUE: movement, spatial invention, drama and freedom of detail — Detail study of PIAZZA OF ST. PETER, ROME in plan.

**REFERENCE BOOKS**
2. The Story of Architecture FROM ANTIQUITY TO THE PRESENT / Jan Gympel / KÖNEMANN (Pb)
3. CRASH COURSE IN ARCHITECTURE / Eva Howarth / Caxton Editions

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**MATERIALS & METHODS OF CONSTRUCTION – I**

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course offered in</th>
<th>Duration</th>
<th>3 lecture contact periods per week</th>
<th>Full Marks</th>
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<td>Third Semester</td>
<td>17 weeks</td>
<td></td>
<td>100</td>
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**OBJECTIVE**

On satisfactory completion of the course, the students will: —

(i) understand the characteristics of good building stone & brick, and, the general principles to be followed in stone & brick masonry construction;

(ii) have idea regarding the common clay products like burnt clay hollow brick, clay tiles, terracotta, porcelain, stoneware and earthenware glazing;

(iii) have idea regarding the characteristics of good timber and understand the properties & uses of common wood products like veneer, plywood, fibreboard, particle board, block board, batten board and laminated board;

(iv) understand the properties and use of common available varieties of iron & steel, and, that of non-ferrous metals aluminium and brass, as building materials;

(v) understand the properties, merits, demerits and use of different types of plastics and commercially available forms of glass as building material;

(vi) have knowledge regarding different types of doors & windows, and, different building hardware for fixing & fastening them.
MODULAR DIVISION OF THE SYLLABUS

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<th>GROUP</th>
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<th>TOPIC</th>
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<tr>
<td>A</td>
<td>1</td>
<td>STONE MASONRY</td>
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<td>CLAY PRODUCTS: BRICK MASONRY</td>
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<td>WOOD &amp; WOOD PRODUCTS</td>
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<td>7</td>
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<td>BUILDING HARDWARE</td>
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<td>DOORS</td>
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<td>11</td>
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CONTACT PERIODS: 45   INTERNAL ASSESSMENT: 6   TOTAL PERIODS: 51

EXAMINATION SCHEME

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<tr>
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<th>MODULE</th>
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<tbody>
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<tr>
<td>B</td>
<td>9, 10</td>
<td>10</td>
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DETAIL COURSE CONTENT

GROUP - A MATERIALS 30 PERIODS

1.0 STONE MASONRY
1.1 Classification of Rocks: Igneous, Sedimentary, Metamorphic (Definitions with examples)
1.2 Characteristics of good building stone
1.3 Technical terms associated with stone masonry
1.4 General principles to be followed in stone masonry
1.5 Types of stone masonry: (i) Rubble work, (ii) Ashlars (Concepts only)

2.0 CLAY PRODUCTS – BRICK MASONRY 6
2.1 Technical terms associated with brickwork — Sizes of bricks
2.2 Classification of bricks
2.3 General principles to be followed in brickwork
2.4 Bonds in brickwork: English, Flemish and CBRI

3.0 OTHER CLAY PRODUCTS 4
3.1 Burnt-clay hollow brick (definitions and uses)
3.2 Clay tiles: Flat & curved pan tiles – Half-round country tiles – Mangalore tiles (definitions and uses)
3.3 Terracotta – Porcelain – Stoneware – Earthenware – Glazing (definitions and uses)

4.0 WOOD AND WOOD PRODUCTS 4
4.1 Classification of trees: Exogenous & Endogenous — Structure of timber
4.2 Characteristics of good timber — names of commonly used good quality timber
4.3 Defects in timber
4.4 Wood products: Veneer – Plywood – Laminated board – Block board – Batten board – Composite boards – Fibreboard – Particleboard (definitions and uses).

5.0 FERROUS METALS – IRON & STEEL 3
5.1 General characteristics of metals: Ductility – Elasticity – Malleability – Toughness - Weldability
5.2 Definitions, comparison of average chemical composition with specific reference to carbon content and properties of pig iron, cast iron, wrought iron, mild steel (plain carbon steel), alloy steel (hard steel), HYSD and high tensile steel

6.0 **NON-FERROUS METALS – ALUMINIUM & BRASS**
6.1 Properties and mention of different uses of Aluminium
6.2 Properties and mention of different uses of Brass

7.0 **PLASTICS**
7.1 Properties, merits & demerits of plastics
7.2 Various types of plastics – PVC, Epoxy, Polyvinyl acetate, Polystyrene phenolic, Polypropylene — their applications as building materials.

8.0 **GLASS**
8.1 Definition of glass
8.2 Principal constituents of glass: silica, sodium or potassium carbonate (or sulphate), lime, lead, manganese dioxide, pigments, cullet
8.3 Classification of glass based on composition: Soda lime glass – Potash lime glass – Potash lead glass – Boro-silicate glass (properties & uses)
8.4 Classification of glass according to commercial forms: Sheet glass – Plate glass – Obscured glass – Wired glass – Structural glass – Laminated glass – Glass wool – Foam glass (properties & uses)

**GROUP - B CONSTRUCTION**

9.0 **BUILDING HARDWARE**
9.1 Fixing and fastening for doors and windows: Nails – Screws – Hinges – Bolts – Rivets – Handles

10.0 **DOORS**
10.1 Types of doors based on operation (concepts only): Swing door – Revolving door – Sliding door – Sliding-folding door – Collapsible door – Rolling shutter door – Fire door
10.3 Doors of steel (in detail): Rolling shutter door
10.4 Doors of aluminium (in detail): Swing door – Sliding door

11.0 **WINDOWS**
11.1 Types of windows based on operation (concepts only): Fixed window – Casement window – Sliding window – Pivoted window – Louvered (or Venetian) window – Bay window – Clerestory window – Corner window – Dormer window
11.2 Windows of timber (in detail): Panelled & glazed timber casement window
11.3 Windows of steel (in detail): Glazed fixed & casement steel window
11.4 Windows of aluminium (in detail): Sliding aluminium window

**REFERENCE BOOKS**
2. The Construction of Buildings Volume 1, 2, 3, 4 & 5 / R. Barry / English Language Book Society
3. A Text Book of Materials and Construction / TTTI
5. Building Construction / Sushil Kumar / Standards Publishers Distributors, Delhi
**Building Services & Equipments — I**

**Subject Code**: ARCH / 3 / T4 / BSE1  
**Course offered in**: Third Semester  
**Duration**: 17 weeks  
**Full Marks**: 100

**Objective**
On satisfactory completion of the course, the students should be in a position to understand the basic principles of the water supply system, sanitation & drainage system, and, the materials, fittings & appliances of the water supply and drainage systems.

**Modular Division of the Syllabus**

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
<th>Contact Periods</th>
<th>Faculty</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Water Supply</td>
<td>12</td>
<td>ARCH, CE</td>
</tr>
<tr>
<td>2</td>
<td>Sanitation &amp; Drainage</td>
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<td>ARCH, CE</td>
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<td>3</td>
<td>Materials, Fittings &amp; Appliances</td>
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<td>ARCH, CE</td>
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**Contact Periods**: 45  
**Internal Assessment**: 6  
**Total Periods**: 51

**Examination Scheme**

<table>
<thead>
<tr>
<th>Module</th>
<th>Objective Questions</th>
<th>Subjective Questions</th>
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<tr>
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<tr>
<td>3</td>
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<td>ANY FIVE, TAKING AT LEAST ONE FROM EACH MODULE</td>
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</table>

**Detail Course Content**

**Module - 1 Water Supply**

1.1 **Water Supply: Sources & Requirements**


1.2 **Water Treatment**

Screening — Plain Sedimentation — Coagulation & Sedimentation — Filtration — Disinfection — Softening — Aeration [Definitions & Sequence only]

1.3 **System & Period of Water Supply**

Direct & Indirect System — Constant or Continuous & Intermittent Supply

1.4 **Design of Water Distribution Systems**


1.5 **Storage of Water & Downtake Distribution Pipes**

Requirement for storage — Quantity to be stored — Materials used — Underground & Overhead Reservoirs — Downtake Taps (Cold Water Drops)

**Module - 2 Sanitation & Drainage**

2.1 **Sanitation Requirements**

Wash Basins (flat-back) — Cleaner’s Sink — Drinking Water Fountain — Water Closets (WC): Squatting type (Indian style) & Sitting type (European style) — Urinal — Male: Bowl type (flat back or
angle back), Slab type, Stall type – FEMALE: Squatting plate type — FLUSHING CISTERNs — BATHS — SHOWERS — NUMBER OF SANITATION REQUIREMENTS for ‘residences’, ‘office buildings’, ‘cinemas & theatres’, ‘hotels’, ‘restaurants’, ‘hostels’ — LAYOUT DRAWINGS: students should be able to read orthographic & isometric projections of toilets-kitchens-WCs etc (supplied by the teachers) fitted with the above mentioned sanitations

2.2 HOUSE DRAINAGE PIPES
SOIL PIPE (SP): Main Soil Pipe (MSP), Branch Soil Pipe (BSP) — WASTE PIPE (WP): Main Waste Pipe (MWP), Branch Waste Pipe (BWP), Rain Water Pipe (RWP) — MAIN SOIL WASTE PIPE (MSWP), BRANCH SOIL WASTE PIPE (BSWP) — VENTILATING PIPE (VP): Main Ventilating Pipe (MVP), Branch Ventilating Pipe (BVP), Drain Ventilating Pipe (DVP), Anti Siphonage Pipe (ASP) — VENT PIPE — JUNCTION PIPE [Definitions only]

2.3 PLUMBING SYSTEM
TWO-PIPE system — ONE-PIPE system — SINGLE STACK system — PARTIALLY VENTILATED SINGLE STACK system — CHOICE OF PLUMBING SYSTEM

2.4 TRAPS
Trap: Water seal, Essentials of a good trap, Causes of loss or breaking of water seal — CLASSIFICATION OF TRAPS: Based on shape (P, Q, S); Based on use/ location (Floor trap, Gully trap, Intercepting trap, Grease trap, Silt trap)

2.5 CHAMBERS
INVERT — COLLECTION CHAMBER — GULLY CHAMBER — INSPECTION CHAMBER — MANHOLE — DROP MANHOLE — INCEPTOR MANHOLE OR INTERCEPTOR MANHOLE — MANHOLE CHAMBER [Definitions & sketches only]

2.6 DESIGN CONSIDERATIONS FOR DRAINAGE SYSTEM
SEWAGE: soil waste, waste water (sullage), storm water (rain water) — SOLID REFUSE — CHANNEL — DRAIN — DRAINAGE — SEWER — SEWERAGE — AIMS OF DESIGNING A DRAINAGE SYSTEM & REALIZATION OF THE SAME — SYSTEMS OF SEWAGE DISPOSAL: Dry or conservancy system (earth closets, trench latrines, bore-hole latrines, sanitary latrines); Water carriage or drainage system — SIZING OF RAINWATER PIPES FOR ROOF DRAINAGE — QUANTITY OF SEWAGE: DWF — SYSTEMS OF DRAINAGE: Separate system, Combined system, Partially separate system — CIRCULAR & EGG-SHAPED SEwers

2.7 DISPOSAL OF SEWAGE FROM ISOLATED BUILDINGS
SEPTIC TANK: sludge & scum — DESIGN CONSIDERATIONS: capacity (detention period, sludge removal, consumption of water) – shape & dimensions; inlet & outlet; baffle wall; cover & manholes; ventilation; lining — DISPOSAL OF SEPTIC TANK EFFLUENT: CHLORINATION CHAMBER — SOAK PIT (LINED & UNLINED); DISPERSION CHAMBER — DISPERSION TRENCH

2.8 INFORMATION TO BE PROVIDED IN SUBMISSION PLANS

MODULE - 3 MATERIALS, FITTINGS & APPLIANCES 6 PERIODS

3.1 PIPE MATERIALS

3.2 JOINTING OF PIPES
Names of different type of joints for different pipe materials with detail reference to SPIGOT & SOCKET JOINTS, FLANGED JOINTS AND CEMENT MORTAR JOINTS — LAGGING OF PIPES

3.3 VALVES, COCKS, TAPS, FIRE HYDRANTS & OTHER FITTINGS
VALVES: Air valves or air relief valves, Reflux valves or check valves or non-return valves or flap valves or foot valves, Safety valves or pressure relief valves, Sluice valves or gate valves or stop valves, Scour valves or wash-out valves or blow-off valves, Mixing valves — STOP COCKS — TAPS: Bib taps, Self-closing taps — FIRE HYDRANTS — FITTINGS: Bends or elbows, Tees, Crosses, Wyes, Reducers, Increasers, Flanges, Caps, Plugs, Back Nuts [Definitions, sketches & applications]

REFERENCE BOOKS
1. SP 7 (5) : 2005 NATIONAL BUILDING CODE OF INDIA GROUP 5 – PART IX PLUMBING SERVICES / Bureau of Indian Standards
2. A Text Book of Water Supply and Waste Engineering / TTTI

- 9 -
SESSIONAL COURSES OFFERED IN 3RD SEMESTER, PART - II

PROFESSIONAL PRACTICE - I

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course offered in</th>
<th>Course Duration</th>
<th>1 lecture contact period</th>
<th>Full Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH / 3 &amp; 4 / S1 / PP1</td>
<td>Third Semester</td>
<td>17 weeks</td>
<td>per week</td>
<td>50</td>
</tr>
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</table>

COURSE & EXAMINATION SCHEDULE

<table>
<thead>
<tr>
<th>NAME OF THE COURSES</th>
<th>COURSES OFFERED IN</th>
<th>MARKS ALLOTTED</th>
</tr>
</thead>
</table>

OBJECTIVE

On satisfactory completion of the course, the students will be in a position to prepare individual photo-documentation report of a traditional or contemporary building belonging to a particular period, style or influence after an educational tour.

CONTACT PERIODS: 15  
INTERNAL ASSESSMENT: 2  
TOTAL PERIODS: 17

AutoCAD LAB

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Course offered in</th>
<th>Full Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCH / 3 &amp; 4 / S2 / ACAD</td>
<td>Part – II</td>
<td>100</td>
</tr>
</tbody>
</table>

OBJECTIVE

AutoCAD, developed by the AutoDesk Inc., is the most popular PC-CAD system available in the market. Over one million people in 80 countries around the world use AutoCAD to generate various kinds of drawings. In 1997 the market share of AutoCAD grew to 78%, making it the worldwide standard for generating drawings. Also, AutoCAD’s open architecture has allowed third-party developers to write application software that has significantly added to its popularity. This course is compatible to the latest version of AutoCAD.

On satisfactory completion of the course AutoCAD Lab (Group – A), the students should be in a position to solve two dimensional drafting and design problems by being able to use AutoCAD commands to make a
drawing, create text, dimension a drawing, hatch patterns and make & insert symbols. They will also be able to plot drawings.

On satisfactory completion of the course AutoCAD Lab (Group – B), the students should be in a position to draw isometric drawings, create three-dimensional objects & solid models and render the same, view the solids thus created from changing positions, and, will be able to establish link with other application software to embed objects into it.

### COURSE & EXAMINATION SCHEDULE

<table>
<thead>
<tr>
<th>NAME OF THE COURSES</th>
<th>COURSES OFFERED IN</th>
<th>MARKS ALLOTMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AutoCAD LAB (GROUP – A)</td>
<td>THIRD SEMESTER</td>
<td>Continuous Internal Assessment of 50 Marks is to be carried out by the teachers throughout the two semesters where marks allotted for assessment of sessional work undertaken in each semester is 50. DISTRIBUTION OF MARKS: FIRST SEM. – LAB. NOTEBOOK - 25 SECOND SEM. – LAB. NOTEBOOK 25</td>
</tr>
<tr>
<td>AutoCAD LAB (GROUP – B)</td>
<td>FOURTH SEMESTER</td>
<td>External Assessment of 50 Marks shall be held at the end of the second semester on the entire syllabus of AutoCAD lab (Parts – A &amp; B). One assignment per student from any one of the assignments done is to be performed. Assignments are to be set by lottery system. DISTRIBUTION OF MARKS: LAB. NOTEBOOK – 20; ON SPOT JOB – 20; VIVA-VOCE – 10.</td>
</tr>
</tbody>
</table>

### AutoCAD Lab (Group – A) (For Third Semester)

Course offered in
Part – II First Semester
Course Duration
17 weeks
2 lecture and 3 sessional contact periods per week

### Modular Division of the Syllabus

<table>
<thead>
<tr>
<th>MODULE</th>
<th>TOPIC</th>
<th>LECTURE</th>
<th>SESSIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GETTING STARTED – I</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>GETTING STARTED – II</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>DRAW COMMANDS</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>EDITING COMMANDS</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>DRAWING AIDS</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>CREATING TEXT</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>BASIC DIMENSIONING</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>INQUIRY COMMANDS</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>EDITING DIMENSIONS</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>HATCHING</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>BLOCKS</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>PLOTTING DRAWINGS</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>PRACTICE WITH COMPLETE DRAWING</td>
<td>-</td>
<td>15</td>
</tr>
</tbody>
</table>

CONTACT PERIODS: L-30 & S-45 = 75
INTERNAL ASSESSMENT: 10
TOTAL PERIODS: 85

### Detail Course Content

**Module 1**  **Getting Started – I**  **3 lecture & 2 sessional periods**
Starting AutoCAD – AutoCAD screen components – Starting a drawing: Open drawings, Create drawings (Start from scratch, Use a template & Use a wizard) – Invoking commands in AutoCAD – Drawing lines in AutoCAD – Co-ordinate systems: Absolute co-ordinate system, Relative co-ordinate system – Direct distance method – Saving a drawing: Save & Save As – Closing a drawing – Quitting AutoCAD

**Module 2**  **Getting Started – II**  **3 lecture & 2 sessional periods**
Opening an existing file – Concept of Object – Object selection methods: Pick by box, Window selection, Crossing Selection, All, Fence, Last, Previous, Add, Remove – Erasing objects: OOPS command, UNDO / REDO commands – ZOOM command – PAN command, Panning in real time – Setting units – Object snap, running object snap mode – Drawing circles

Module 3  DRAW COMMANDS  3 LECTURE & 5 SESSIONAL PERIODS

Module 4  EDITING COMMANDS  2 LECTURE & 5 SESSIONAL PERIODS

Module 5  DRAWING AIDS  3 LECTURE & 2 SESSIONAL PERIODS

Module 6  CREATING TEXT  2 LECTURE & 2 SESSIONAL PERIODS
Creating single line text – Drawing special characters – Creating multiline text – Editing text – Text style

Module 7  BASIC DIMENSIONING  3 LECTURE & 2 SESSIONAL PERIODS
Fundamental dimensioning terms: Dimension lines, dimension text, arrowheads, extension lines, leaders, centre marks and centrelines, alternate units – Associative dimensions – Dimensioning methods – Drawing leader

Module 8  INQUIRY COMMANDS  3 LECTURE & 2 SESSIONAL PERIODS

Module 9  EDITING DIMENSIONS  2 LECTURE & 2 SESSIONAL PERIODS
Editing dimensions by stretching – Editing dimensions by trimming & extending – Editing dimensions: DIMEDIT command – Editing dimension text: DMTEDIT command – Updating dimensions – Editing dimensions using the properties window – Creating and restoring Dimension styles: DIMSTYLE

Module 10  HATCHING  2 LECTURE & 2 SESSIONAL PERIODS
BHATCH, HATCH commands – Boundary Hatch Options: Quick tab, Advance tab – Hatching around Text, Traces, Attributes, Shapes and Solids – Editing Hatch Boundary – BOUNDARY command

Module 11  BLOCKS  2 LECTURE & 2 SESSIONAL PERIODS
The concept of Blocks – Converting objects into a Block: BLOCK, _BLOCK commands – Nesting of Blocks – Inserting Blocks: INSERT, MINSERT commands – Creating drawing files: WBLOCK command – Defining Block Attributes – Inserting Blocks with Attributes – Editing Attributes

Module 12  PLOTTING DRAWINGS IN AUTOCAD  2 LECTURE & 2 SESSIONAL PERIODS
PLOT command – Plot Configuration – Pen Assignments – Paper Size & Orientation Area – Plot Rotation & Origin – Plotting Area – Scale

Module 13  PRACTICE WITH COMPLETE DRAWING  15 PERIODS
Each student is required to prepare a set of orthographic projections of a building designed by himself / herself in the Part - I Second Semester in the subject "BASIC DESIGN" or of any other design approved by the teacher-in-charge.
OBJECTIVE
On satisfactory completion of the course, the students will be able to: —
(i) understand the Basic Principles of Scigraphy;
(ii) draw scigraphy on the orthographic projections of three dimensional objects like right regular solids, buildings etc.;
(iii) understand the Basic Principles of Perspective Projection;
(iv) draw one & two point perspective projections of simple interior spaces like a living room, an office interior, a kitchen, a toilet etc with scigraphy showing all furniture & fixtures;
(v) draw two point perspective projections of exteriors of buildings showing landscaping elements, cars and human figures.

COURSE & EXAMINATION SCHEDULE

<table>
<thead>
<tr>
<th>SUBJECT CODE</th>
<th>NAME OF THE COURSES</th>
<th>COURSES OFFERED IN</th>
<th>MARKS ALLOTTED</th>
</tr>
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<tbody>
<tr>
<td>ARCH / 3 &amp; 4 / S3 / SAGR</td>
<td>Architectural Graphics (S) (Group – A)</td>
<td>THIRD SEMESTER</td>
<td>Continuous internal assessment of 75 marks is to be carried out by the teachers throughout the two semesters where marks allotted for assessment of sessional work undertaken in 3rd semester is 35 &amp; 4th semester is 40. External assessment of 75 marks shall be held at the end of the Part – II Second Semester on the entire syllabus of Architectural Graphics (Parts – A &amp; B). DISTRIBUTION OF MARKS: DRAWING SHEETS – 50, VIVA-VOCE – 25.</td>
</tr>
<tr>
<td>ARCH / 4 / T5 / AGR</td>
<td>Architectural Graphics</td>
<td>FOURTH SEMESTER</td>
<td>A four-hour examination of 100 marks will be held during the Part – II Second Semester examinations on the entire syllabus.</td>
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MODULAR DIVISION OF THE SYLLABUS

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MODULE</th>
<th>TOPIC</th>
<th>CONTACT PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>BASIC PRINCIPLES OF SCIOGRAPHY</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>ORTHOGRAPHIC PROJECTIONS OF POINTS AND STRAIGHT LINES WITH SCIOGRAPHY</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>ORTHOGRAPHIC PROJECTIONS OF LAMINA WITH SCIOGRAPHY</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>ORTHOGRAPHIC PROJECTIONS OF RIGHT REGULAR SOLIDS WITH SCIOGRAPHY</td>
<td>24</td>
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<tr>
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<td>5</td>
<td>ORTHOGRAPHIC PROJECTIONS OF BUILDINGS WITH SCIOGRAPHY</td>
<td>15</td>
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<tr>
<td>B</td>
<td>6</td>
<td>BASIC PRINCIPLES OF PERSPECTIVE PROJECTION</td>
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<td>7</td>
<td>TWO-POINT PERSPECTIVE PROJECTIONS OF SIMPLE RIGHT REGULAR SOLIDS</td>
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<td>60</td>
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<td></td>
<td>C</td>
<td>TWO-POINT PERSPECTIVE PROJECTIONS OF COMBINATION OF SOLIDS</td>
<td>12</td>
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<tr>
<td></td>
<td>D</td>
<td>ONE-POINT PERSPECTIVE PROJECTION OF INTERIORS</td>
<td>8</td>
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<tr>
<td></td>
<td></td>
<td>TWO-POINT PERSPECTIVE PROJECTIONS OF INTERIORS</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>E</td>
<td>PERSPECTIVE VIEW OF EXTERIORS (for Architecture only) OR PERSPECTIVE VIEW OF INTERIORS (for Interior Decoration, Handicrafts &amp; Furniture Design only)</td>
<td>20</td>
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<tr>
<td></td>
<td>F</td>
<td>TUTORIAL FOR 3RD SEMESTER</td>
<td>15</td>
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<tr>
<td></td>
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<td>TUTORIAL FOR 4TH SEMESTER</td>
<td>15</td>
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CONTACT PERIODS: 150  INTERNAL ASSESSMENT: 20 PERIODS  TOTAL PERIODS: 170
SCHEME FOR THE FOUR HOUR FOURTH SEMESTER EXAMINATION

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MODULE</th>
<th>OBJECTIVE QUESTIONS</th>
<th>SUBJECTIVE QUESTIONS</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>TO BE SET</td>
<td>TO BE ANSWERED</td>
</tr>
<tr>
<td>A</td>
<td>1, 2, 3, 4, 5</td>
<td>FOR 9 MARKS</td>
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</tr>
<tr>
<td>B&amp;C</td>
<td>6, 7, 8, 9</td>
<td>FOR 8 MARKS</td>
<td>COMBINATION OF QUESTIONS VARYING FROM 1 OR 2 MARKS</td>
</tr>
<tr>
<td>D</td>
<td>10, 11, 12</td>
<td>FOR 4 MARKS</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>13</td>
<td>FOR 4 MARKS</td>
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</tr>
</tbody>
</table>

DETAIL COURSE CONTENTS (FOR THIRD SEMESTER)

GROUP – A  BASICS OF SCIOGRAPHY  47 PERIODS

Module 1  BASIC PRINCIPLES OF SCIOGRAPHY  1
TERMINOLOGIES: Altitude – Azimuth – Sun Path – Angle of Incidence of Solar Ray — METHODS OF SCIOGRAPHY

Module 2  ORTHOGRAPHIC PROJECTIONS OF POINTS AND STRAIGHT LINES WITH SCIOGRAPHY  3

POINTS in different quadrants- LINES: Parallel to both the planes – Perpendicular to one plane & parallel to the other – Inclined to one or both the planes

Module 3  ORTHOGRAPHIC PROJECTIONS OF LAMINA WITH SCIOGRAPHY  4
LAMINA: Triangular – Rectangular – Square – Pentagonal – Hexagonal – Circular in perpendicular & oblique positions

Module 4  ORTHOGRAPHIC PROJECTIONS OF RIGHT REGULAR SOLIDS WITH SCIOGRAPHY  24
(a) Regular Polyhedra – Prisms – Pyramids – Solids of Revolution (Cylinder & Cone) IN SIMPLE POSITIONS
(b) Any two of the above mentioned SOLIDS IN SUCH COMBINATION THAT ONE CASTS SHADOW ON THE OTHER, being positioned concentrically and in isolation

Module 5  ORTHOGRAPHIC PROJECTIONS OF BUILDINGS WITH SCIOGRAPHY  15
SITE PLAN and ROAD SIDE ELEVATION of a Building with Sciography in a suitable scale; the plan & elevation of the building may be supplied by the teacher concerned or may be the one designed by the student in the subject BASIC DESIGN in Part –I Second Semester

GROUP – B  BASICS OF PERSPECTIVE PROJECTION  37 PERIODS

Module 6  BASIC PRINCIPLES OF PERSPECTIVE PROJECTION  1
RECOLLECTION OF THE TERMINOLOGIES: Ground Plane (GP) – Picture Plane (PP) – Station Point (S) –Horizon Plane (HP) – Central Plane (CP) – Ground Line (GL) – Horizon Line (HL) – Axis of Vision (AV) – Centre of Vision (CV) – Vanishing Point (VP) — METHODS OF PERSPECTIVE PROJECTION: One-point, Two-point and Three-point

Module 7  TWO-POINT PERSPECTIVE PROJECTIONS OF SIMPLE RIGHT REGULAR SOLIDS  12
Regular Polyhedra – Prisms – Pyramids – Solids of Revolution (Cylinder & Cone) IN SIMPLE POSITIONS — DRAWN AT THREE POSITIONS OF THE SOLID WITH RESPECT TO THE PP: (i) touching, (ii) in front, and, (iii) behind

SCHEDULE OF PLATES

ARCHITECTURAL GRAPHICS (GROUP – A) THIRD SEMESTER

<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>TITLE OF SHEET</th>
<th>SHEET SIZE</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>ORTHOGRAPHIC PROJECTIONS OF POINTS &amp; STRAIGHT LINES &amp; LAMINA WITH SCIOGRAPHY based on Modules II</td>
<td>HALF IMPERIAL</td>
</tr>
<tr>
<td>2.</td>
<td>ORTHOGRAPHIC PROJECTIONS OF LAMINA WITH SCIOGRAPHY based on Modules III</td>
<td>HALF IMPERIAL</td>
</tr>
<tr>
<td>3.</td>
<td>ORTHOGRAPHIC PROJECTIONS OF RIGHT REGULAR SOLIDS WITH SCIOGRAPHY based on Module IV (A)</td>
<td>HALF IMPERIAL</td>
</tr>
</tbody>
</table>
ORTHOGRAPHIC PROJECTIONS OF RIGHT REGULAR SOLIDS WITH SCIOGRAPHY based on Module IV (B)  
ORTHOGRAPHIC PROJECTIONS OF A BUILDING WITH SCIOGRAPHY based on Module V  
TWO-POINT PERSPECTIVE PROJECTIONS OF SIMPLE RIGHT REGULAR SOLIDS based on Module VII  

REFERENCE BOOKS
1. Geometrical Drawing for Students / L. H. Morris  
2. Manual of Rendering with Pen and Ink / Robert W. Gill / Thames and Hudson  
3. Art of Perspective Drawing / Simon Graco

WORKING DRAWING – I
Subject Code  
ARCH / 3 & 4 / S4 / SWKD1  
Course offered in Part – II  
Full Marks 150

COURSE & EXAMINATION SCHEDULE
<table>
<thead>
<tr>
<th>NAME OF THE COURSES</th>
<th>COURSES OFFERED IN</th>
<th>MARKS ALLOTTED</th>
</tr>
</thead>
<tbody>
<tr>
<td>WORKING DRAWING – I (GROUP – A)</td>
<td>THIRD SEMESTER</td>
<td>Continuous internal assessment of 75 marks is to be carried out by the teachers throughout the two semesters where marks allotted for assessment of sessional work undertaken in 3rd semester is 35 &amp; 4th semester is 40.</td>
</tr>
<tr>
<td>WORKING DRAWING – I (GROUP – B)</td>
<td>FOURTH SEMESTER</td>
<td>External assessment of 75 marks shall be held at the end of the Part – II Second semester on the entire syllabi of Working Drawing – I (Groups - A &amp; B).</td>
</tr>
</tbody>
</table>

DISTRIBUTION OF MARKS:
- Drawing sheets – 50
- Viva-voce – 25

WORKING DRAWING – I (GROUP – A) FOR THIRD SEMESTER
Course offered in Third Semester  
Course Duration 17 weeks  
4 sessional & 1 tutorial contact periods per week

OBJECTIVE
On satisfactory completion of Group – A of the course, the students will be in a position to prepare working drawings of the following types of doors & windows, drawn manually: —
(i) single and double shutter timber panel doors with schedule;
(ii) hollow and solid core timber flush doors with schedule;
(iii) aluminium glazed doors with schedule;
(iv) timber glazed & panelled casement window;
(v) mild steel fixed & openable glazed casement window;
(vi) aluminium sliding window.

MODULAR DIVISION OF THE SYLLABUS
<table>
<thead>
<tr>
<th>SHEET NO.</th>
<th>TITLE</th>
<th>CONTACT PERIODS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SINGLE &amp; DOUBLE SHUTTER TIMBER PANEL DOORS WITH &amp; WITHOUT BEADING</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>HOLLOW &amp; SOLID CORE TIMBER FLUSH DOORS</td>
<td>12</td>
</tr>
<tr>
<td>3</td>
<td>ALUMINIUM GLAZED DOOR</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>DOUBLE SHUTTER TIMBER GLAZED &amp; PANELLED CASEMENT WINDOWS</td>
<td>12</td>
</tr>
<tr>
<td>5</td>
<td>METAL CASEMENT WINDOWS</td>
<td>12</td>
</tr>
<tr>
<td>TUTORIALS</td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>

CONTACT PERIODS: 75  
INTERNAL ASSESSMENT: 10  
TOTAL PERIODS: 85

DETAILED COURSE CONTENTS
Sheet No. 1 SINGLE & DOUBLE SHUTTER TIMBER PANEL DOORS WITH & WITHOUT BEADING  
Topic A: DOUBLE SHUTTER TIMBER PANEL DOOR WITH BEADING WITH SCHEDULE*  
Topic B: SINGLE SHUTTER TIMBER PANEL DOOR WITHOUT BEADING WITH SCHEDULE*
Following drawings of each of the above: —
(i) SECTIONAL PLAN showing width of masonry & clear opening, inside outside, sizes of frames stile & panel thickness (in 1:50 scale); 
(ii) FRONT ELEVATION showing height of masonry & clean opening, door clearance, width of top, bottom & lock rails, position of lock & hinge handles, fastened bolt (in 1:50 scale); 
(iii) SECTIONAL ELEVATION showing above (in 1:50 scale); 
(iv) (a) Typical detail showing fixing of frame to wall, stile, panel with beading; (b) same as above without beading; (c) overlapping of shutters (in 1:2 scale).

**Sheet No. 2**  **HOLLOW & SOLID CORE TIMBER FLUSH DOORS**

**Topic A:** SINGLE SHUTTER TIMBER HOLLOW CORE FLUSH DOOR WITH SCHEDULE*

**Topic B:** SINGLE SHUTTER TIMBER SOLID CORE WITH SCHEDULE*

Following drawings of each of the above: —
(i) SECTIONAL PLAN — same as panel door except panel showing core (in 1:50 scale); 
(ii) FRONT ELEVATION — same as panel door (in 1:50 scale); 
(iii) SECTIONAL ELEVATION — same as panel door (in 1:50 scale); 
(iv) (a) Typical detail — showing same as panel door (except panel) with hollow cover; 
(b) Same as above with solid core (both removing a part of Venetian).

**Sheet No. 3**  **ALUMINIUM GLAZED DOOR (WITH SCHEDULE*)**

Following drawings of each of the above: —
(i) SECTIONAL PLAN – same as panel door, except panels(in 1:50 scale) 
(ii) FRONT ELEVATION – same as panel door, except panels (in 1:50 scale) 
(iii) SECTIONAL ELEVATION - same as panel door, except panels (in 1:50 scale) 
(iv) (a) Typical details sectional plan – same as panel door; 
(b) Vertical sectional detail of fixing glass with aluminium frame (in 1:2 scale)

* Schedule of the above doors (Sheet nos. 1, 2 & 3) will include masonry opening, frame size, shutter details viz. size of stile, top, bottom & lock rail, panel thickness, remarks specifying no. of shutter, material, specification handle, bolt, hinge, lock.

**Sheet No. 4**  **DOUBLE SHUTTER TIMBER GLAZED & PANELLED CASEMENT WINDOWS**

Following drawings of each of the above: —
(i) SECTIONAL PLAN showing width of masonry & clear opening, inside outside, size of frame, stile, thickness of glass ( in 1:50 scale); 
(ii) FRONT ELEVATION – Showing height of masonry & clean opening, width of sash bar, handle fastener, bolt, hinge (1 : 50 scale); 
(iii) SECTIONAL ELEVATION – Showing same as above (in 1 : 50 scale); 
(iv) (a) Typical detail showing fixing of frame with wall, stile with glass panel; 
(b) Vertical section of joining glass with sash bar (in 1:2 scale).

**Sheet No. 5**  **METAL CASEMENT WINDOWS**

**Topic A:** FIXED & OPENABLE GLAZED MILD STEEL CASEMENT WINDOW

Following drawings of each of the above: —
(i) Sectional plan; 
(ii) Front elevation; 
(iii) Sheet elevation (1:10); 
(iv) Detail showing: (a) overlapping of shutter with mullion; (b) joining of frame to wall; (c) fixing of glass to sash bar; 
(v) Determination of Z, T & I section (1:1).

**Topic B:** SLIDING ALUMINIUM WINDOW

Following drawings of each of the above: —
(i) Section plan; 
(ii) Front elevation; 
(iii) Sectional elevation showing all the menu; 
Detail – Same as above and section of channel.
ARCHITECTURAL DESIGN & DRAWING – I

Subject Code
ARCH / 3 & 4 / S5 / SADI

Course offered in
Part – II

Full Marks
250

<table>
<thead>
<tr>
<th>SUBJECT CODE</th>
<th>NAME OF THE COURSES</th>
<th>COURSES OFFERED IN</th>
<th>MARKS ALLOTTED</th>
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<tr>
<td>ARCH / 3 &amp; 4 / S5 / SAD1</td>
<td>ARCHITECTURAL DESIGN &amp; DRAWING (S) – I (GROUP – A)</td>
<td>THIRD SEMESTER</td>
<td>Continuous internal assessment of 75 marks is to be carried out by the teachers throughout the two semesters where marks allotted for assessment of sessional work undertaken 3rd semester is 35 &amp; in 4th semester is 40. Distribution of marks for Design problem is 50 &amp; Time Sketch is 25. External assessment of 75 marks shall be held at the end of the Part – II Second Semester on the entire syllabi of Architectural Design &amp; Drawing(S) – I (Groups – A &amp; B). Distribution of marks: Drawing Sheets – 50, Viva-voce – 25.</td>
</tr>
<tr>
<td>ARCH / 4 / T6 / ADD1</td>
<td>ARCHITECTURAL DESIGN &amp; DRAWING – I</td>
<td>FOURTH SEMESTER</td>
<td>A six-hour examination of 100 marks is to be held during the Part – II Second Semester examinations on the syllabus of &quot;Architectural Design &amp; Drawing (s) – I (Group – A)”. Out of 2 questions set; any 1 is to be answered. The 2 internal assessments of 3 hours duration each are to be taken on the same syllabus. The Municipal Building Rules and the National Building Code of India, are allowed during the examinations.</td>
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</table>

COURSE & EXAMINATION SCHEDULE

ARCHITECTURAL DESIGN & DRAWING (S) – I (GROUP – A)

Course offered in
Third Semester

Course Duration
17 weeks

4 sessional & 1 Tutorial contact periods per week

OBJECTIVE

On satisfactory completion of Group – A of the course, the students should be in a position to:—

(i) understand the definitions of basic terminologies related with architectural design;
(ii) develop the architectural design of a small single or two-storied structure in sketch-wise phases;
(iii) draw the developed architectural design.

MODULAR DIVISION OF THE SYLLABUS

<table>
<thead>
<tr>
<th>MODULE</th>
<th>TOPIC</th>
<th>CONTACT PERIOD</th>
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<td>DEFINITIONS OF BASIC TERMINOLOGIES</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>ARCHITECTURAL DESIGN</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>ARCHITECTURAL DRAWING</td>
<td>30</td>
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<tr>
<td></td>
<td>TUTORIALS</td>
<td>15</td>
</tr>
</tbody>
</table>

CONTACT PERIODS: 75  INTERNAL ASSESSMENT: 10  TOTAL PERIODS: 85

DETAIL COURSE CONTENT

Module 1  DEFINITIONS OF BASIC TERMINOLOGIES  2

Module 2  ARCHITECTURAL DESIGN  28
Architectural design of any one of the following topics in sketch-wise phases keeping in mind the provisions of the CMC bye-laws regarding “Open Spaces” and “Parking Space”: —

Cafeteria, a primary health centre with about 16 beds, primary school, restaurant, small bank, small post office or any other topic of equivalent weightage.
While evolving the design, ideas should be given regarding the following:

(a) Site analysis which basically deals with ‘location’, ‘orientation’, ‘access’ and ‘parking’;
(b) Influence of materials on form of architecture

**MODULE 3 ARCHITECTURAL DRAWING**

The design should be presented through a set of architectural drawings in a suitable scale consisting of at least the following sheets:

(a) site layout showing approach roads to the site, internal road approaching the designed space(s), open parking spaces (if any), planting and landscaping;
(b) plans showing furniture layout, parking spaces (if any), planting and landscaping (wherever applicable);
(c) elevation(s);
(d) minimum two sectional elevations cutting at least the toilet(s), stairs and any other service area (if any).

The drawings should be suitably rendered in pen and ink or colour or any other suitable medium on opaque sheets.