

## 9. RESOURCE REQUIREMENT:

### 9.1 Physical Resources:

#### 9.1.1 Total Space Requirements

The total space for lecture room, tutorial rooms and drawing halls is work out by using following formula as per AICTE norms for all five disciplines i.e. civil, electrical, mechanical, automobile engineering and architectural assistantship.

$$N = (Ns/Cs)(H/Hw)(1/fu) \text{ where}$$

N = Number of rooms required for each type.  
N may be number of class rooms(Nc),  
Number of tutorial rooms (Nt) or  
Number of drawing halls (Nd)

Ns = Total Number of students in all years/semesters/disciplines

Cs = Class size (Number of studednts)

H = Number of hours per week of class room, lecture, tutorial or drawing as the case may be

Hw = Number of working hours per week

Fu = Utilisation factor (taken as 0.75)  
Number of class rooms Nc = 10  
Number of Tutorial rooms Nt = 2  
Number of Drawing Halls Nd = 6

Space for Laboratories and workshops may be worked out as per AICTE norms(1995).

Note: A separate space and infrastructure for Art Studio is recommended for Architectural Assistantship department.

### 9.1.2 Equipment requirement:

#### 1. Name of Laboratory: Drafting Studio

Sr No	Particulars	Qty.	Tentative Cost (Rs)
1.1	Adjustable drafting machines, AO size with drafter and adjustable, revolving stools	20	80,000
1.2	Soft board panels for pining drawing 4'x 8', 3/4" thick	04	2,000
1.3	Rapidograph pens (set of 8 pens) (Rotering)	04	10,000
1.4	Set up templates (for lettering, furniture, sanitary, geometric forms, kitchen, electric symbols)	04 each	1,600
1.5	Drawing instrument box (Stadtler) set of 12 pieces	04 set	2,000
1.6	Beam compass 36" long	04	400
1.7	Miscellaneous drawing equipment: Scales, french curves, different kind of colours (water, oil and poster) brushes of different sizes, coloured inks, clutch pencils, razors, mixing Pallets, cutters for model making, vanishing stick, spray gun, drawing sheets etc.	LS	5,000
<b>Total</b>			<b>1,01,000</b>

#### 2. Name of Laboratory/Workshop : Art Studio

2.1	Donkey 1' x 3' with stand for sketch book	20	12,000
2.2	Wooden platform (revolving) for life study	01	1,500
2.3	Still life stand	02	1,000
2.4	Reflector with stand	02	5,000
2.5	Draperies for still life and model drawing	LS	2,500
2.6	Still life objects made of different materials	LS	5,000
2.7	Other miscellaneous items like: Calligraphy pen set, instrument box, inking pens, french curves, scissors, steel rules, mount cutters, pencils, erasers, sketch pens, brushes and papers, inks drawing pins, palettes etc.	LS	20,100
<b>Total</b>			<b>47,100</b>

### 3. Name of Laboratory/Workshop : Materials and Building Museum

Sr No	Particulars	Qty.	Tentative Cost (Rs)
3.1	Different types of bricks		
3.2	Different types of building stones		
3.3	Different types of sands		
3.4	Different types of paints and distempers		
3.5	Different types of wood		
3.6	Different types of wood products		
3.7	Different types of glass samples		
3.8	Different types of fasteners and adhesives		
3.9	Different types of sanitary wares		
3.10	Samples of plumbing, fixtures to be installed as working prototypes	LS	1,00,000
3.11	Samples of electric wires and conducting materials		
3.12	Samples of electric fixtures and fittings		
3.13	Samples of floor finishes and wall finishes		
3.14	Samples of different roofing materials		
3.15	Samples of false ceiling fixtures and finishes		
3.16	Samples of acoustics materials		
3.17	Samples of thermal insulating materials		
3.18	Samples of building hard ware		
3.19	Models, charts and other teaching aids		
<b>Total</b>			<b>1,00,000</b>

### 4. Name of Laboratory/Workshop: Workshops

#### Carpentry Shop

4.1	Jig saw, 300 mm x 300 mm with 1/2 horse power motor	1	4,500
4.2	Wood planner, 2 horse power, 440 volts, width of plank 300 mm and length of table 1100 mm	1	15,000
4.3	Drilling machine, bench type 600x4000 rpm, size of table 250x250 mm	1	8,000
4.4	Universal wood working machine - 14 in one	1	1,50,000
4.5	Bench grinder	1	5,000
4.6	Carpentry work benches 4'x8'	10	20,000
4.7	Chain and chiesel mortising machine	1	25,000

<b>Sr No</b>	<b>Particulars</b>	<b>Qty.</b>	<b>Tentative Cost (Rs)</b>
4.8	Wood turning lathe	1	10,000
4.9	Vertical sander	1	10,000
4.10	Carpentry hand tools, vices, holds, gauges and measuring tools	LS	35,000
4.11	Cutters, saws, blades for Acrylic Model Making	LS	10,000
<b>Welding Shop</b>			
4.11	Oil cooled arc welding transformer, 3-phase with standard accessories	1	4,000
4.12	M-4 Bench Spot welder	1	5,000
4.13	Oxy-acetylene gas welding set	1	12,000
4.14	Brazing equipment and accessories	1	5,000
<b>Painting Shop</b>			
4.15	Spray painting gun with a small compressor	1	5,000
4.16	Miscellaneous painting brushes and materials	LS	500
<b>Electrical Shop</b>			
4.17	General hand tools i.e. Screw driver sets, pliers, wrenches, tweezers, workshop scissors, hand drill machine, chisel, hammers	LS	5,000
4.18	Different types of wires, conduits, batteries, switches and other fixtures, testers, soldering iron	LS	10,000
<b>Total</b>			<b>3,39,000</b>
<b>5. Name of Laboratory/Workshop : Building Yard</b>			
5.1	The material required for Building Yard is mostly bricks, stones, cement, sand, mason tools, mild steel rods and timber planks	LS	5,000
<b>Total</b>			<b>5,000</b>

**6. Name of Laboratory/Workshop : Survey Laboratory**

<b>Sr No</b>	<b>Particulars</b>	<b>Qty.</b>	<b>Tentative Cost (Rs)</b>
6.1	Metric Chain 20 m length and set of arrows as per IS 1492	08	1,600
6.2	Metallic tape 20 m length in leather case and winding device as per IS 1492	06	1,200
6.3	Ranging rods made of conduit pipe 30 mm dia painted white and black with iron shoe	25	2,500
6.4	Optical square, prism type as per IS 7009	06	1,200
6.5	Prismatic Compass as per IS 1957 100m diameter made of brass	06	4,200
6.6	Plane table with all accessories as per IS 2539	06	7,200
6.7	Dumpy level as per IS 9613, Telescope lens 300 mm with plate bubble	06	13,200
6.8	Levelling staff, telescope type, 4m long	05	5,000
6.9	Transit vernier theodolite telescope lens 150-210 mm magnification 25 to 30 x Minimum focusing distance 1.5 m	02	20,000
<b>Total</b>			<b>56,100</b>

**7. Name of Laboratory/Workshop : Computer Laboratory**

7.1	Intel Pentium-4 @ 1.4 GHz, Mother Board D 850 GB,400 Mhz FSB, Intel 850 Chipset, Ultra 100 ATA, 256 MB RDRAM, AGP Card, 4 MB RAM 20 GB ULTRA ATA 100, 7200 RPM, IDE HDD, 1.44 MB 3.5" FDD, 52 x CDROM drive with MM kit, Multimedia Key Board, Mouse Logitech, Modem, 15" Color Monitor Digital, Dual Speed 10/10 Mbps Fast Ethernet CARD, Pair of Speakers, Integrated video and audio ISO 9002 certified, Y2K Certified or the latest high speed and high memory PC systems		
7.2	Laser Printer HP 1200 series or Equivalent UPS 0.652 Kw (one for each system)		
7.3	Software: DOS Wordprocessor, Spread sheet Storyboard, Autocad	LS	3,00,000

<b>Sr No</b>	<b>Particulars</b>	<b>Qty.</b>	<b>Tentative Cost (Rs)</b>
7.4	Video LCD Projector	1	2,40,000
7.5	Computer Furniture	10	20,000
<b>Total</b>			<b>6,60,000</b>

**8. Name of Laboratory/Workshop : Reprographic & AV Cell**

8.1	Electronic stencil cutting machine (with 2 speeds 300/600 rpm 230V)	01	30,000
8.2	Photocopier (1.5 kw, 240 V, 50 Hz, warm Uptime 60 sec, 240 paper capacity 2000 sheets)	01	90,000
8.3	Duplicating machine electric operated	01	20,000
8.4	Overhead Projector (240 V, 650 W, focal length 254 mm at f/2.86, lens dia 90mm)	01	5,000
8.5	TV & VCR with remote control set	01	40,000
8.6	Automatic slide projector (240 W)	01	5,000
8.7	Ammonia printing machine with auto time switch	01	8,000
8.8	Glass Top Tracing Table	01	3,000
8.9	Edge binding machine, trimming machine and large stapler	LS	2,000
8.10	Drawing Sheet (4 Nos)	LS	12,000
<b>Total</b>			<b>2,15,000</b>

**NOTE:**

In addition to above laboratories, in respect of physics, chemistry, applied mechanics, strength of materials, general engineering, workshops, Computer Centre etc will be required for effective implementation of the course. Provision for overhead projector, TV with VCR facility, slide cum strip projector, 16 mm film projector, photocopier, PC-XT facilities, duplicating machines, drafting machines etc has also to be made.

### **9.3 Furniture Requirement**

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course

### **9.4 Human Resources Development:**

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE

## **10. RECOMMENDATIONS FOR EFFECTIVE IMPLEMENTATION OF CURRICULUM**

The workshop group strongly recommended the following for effective implementation of curriculum:

1. While imparting instructions, stress should be laid on the development of practical skills in the students for preparing detailed drawings and free hand noting of observation in a sketch book.
2. Field visits be organized as and when required to clarify the concepts and principles involved in the teaching of different subjects
3. Extension lectures from professionals drawn from field should be organized to impart instructions in specialized areas
4. Theory should be taught keeping in view its relationship/application in the practical work
5. The intake to this course should be limited to 20 and efforts should be made to develop confidence in the students to get some experience with good architects for two to three years and then start their own architectural practice. Teachers are expected to nurture self-employment amongst students.
6. Teachers should generate competitiveness among students for the development of professional skills and good work done by students should be exhibited.
7. Teacher should take working drawings from field and provide practice to students in reading these drawings
8. Hobby clubs and other co-curricular activities be promoted to develop creativity in the students
9. Teachers should keep themselves updated with latest developments in the field/profession and efforts should be made to plan faculty development programmes and its implementation in a phased manner for professional career development of the faculty.
10. In the courses involving drawing/design work, the teachers should try to encourage the students to reproduce the assignments, specially in the second and final year, in the computers.

## 11. LIST OF PARTICIPANTS

The following experts participated/contributed in the revision of curriculum for diploma programme in **Architectural Assistantship** during the workshop for revision of subjects of first year for Haryana state held on 28 – 29 May, 2003 at National Institute of Technical Teachers' Training and Research, Chandigarh.

<b>From Field/Industries/Institutions of Higher Learning</b>	
1.	Prof. Anil Kumar, Professor & Head, Department of Architecture, Chhotu Ram State College of Engineering, Murthal, Haryana
2.	Shri Ajay Monga, Lecturer, Department of Architecture, Chhotu Ram State College of Engineering, Murthal, Haryana
3.	Col. Harbhajan Singh, Structure Consultant, Manimajra, Chandigarh
4.	Shri MR Dua, Ex-HOD, Manimajra, Chandigarh
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21.	Dr. KM Rastogi, Professor & Head Curriculum Development Centre
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The following experts participated/contributed in the revision of curriculum for diploma programme in <b>Architectural Assistantship</b> ) during the workshop for revision of complete Curriculum for Haryana state held from 29 – 30 October, 2003 at National Institute of Technical Teachers’ Training and Research, Chandigarh.	
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