REVISED CURRICULUM

FOR

DIPLOMA PROGRAMME

IN

ARCHITECTURAL ASSISTANTSHIP

FOR THE STATE OF HIMACHAL PRADESH

Prepared by:-

Composite Curriculum Development Centre
Directorate of Technical Education,
Vocational & Industrial Training, Sundernagar(H.P.)

In Consultation with *:*

National Institute of Technical Teachers' Training and Research, Sector 26, Chandigarh 160 019

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CONTENTS

FIRST SEMESTER

SECOND SEMESTER

THIRD SEMESTER

FOURTH SEMESTER

FIFTH SEMESTER

SIXTH SEMESTER

FOREWORD

Globalization, liberalization and privatization have been sweeping the developing world over the last few decades. They have removed barriers of distances, state boundaries, culture, language etc. for trade and commerce, so that a person or a firm with superior quality product and services can reach any where in the world, trade and prosper. Emergence of Indian multinationals viz. Infosys, Tata etc. is evidence to this phenomenon. This has resulted into an era where the moto of "survival of the fittest" works. We as a country have been exposed to the competition of ever lasting nature, affecting our society, industry as well as individuals. Moreover it has broken monopolistic trade practices that industries use to enjoy before.

Coupled with globalization are advancements in science and technology affecting economical and socio-political systems at various levels viz. international, continental, national and regional. The emergence of new bodies of knowledge has been posing a great threat to existing manufacturing and related trade practices. There is a visible growth drift from manufacturing sector to service sector giving rise to knowledge economy.

The knowledge economy, a recently known term uses knowledge as a major resource for national growth in production and services, and in increasing its Gross Domestic Product. The economy where emphasis is laid on new ideas instead of exploiting labour, where life-long learning is preferred over traditional learning, where inter-disciplinary research is promoted resulting into short product development cycle.

Under such circumstances the importance and requirement of technical manpower that is well-qualified and equipped with higher order competencies has increased manifold. Such a manpower is being considered as "Human Capital" globally and the countries based on knowledge economy are treating it (Human Capital) as a prime resource to compete at international level and for keeping an edge over the others.

Under prevailing situation where India is emerging as a global economy, technical education of our country has a great role to play. The polytechnics in the country are supposed to cater to national need of human capital at middle level managers by way of developing diploma graduates having requisite technical as well as generic skill sets. This is the only way through which we can realize our dream of becoming knowledge society by 2020.

Composite Curriculum Development Centre (CCDC) of directorate has been extending expert services to polytechnic education system of the. It has track record of precisely sensing contemporary techno-socio-politico-economical context, and deriving aims and objectives of a given programme and finally design its curriculum for its implementation for satisfying societal need.

This curriculum document is the result of the judicious/exhaustive exercise undertaken by CCDC considering the prevailing context as stated above. In order to meet the present day need of our national human capital, a course on Generic Skill Development is appropriately introduced in this curriculum of diploma programme along with other requisite changes in various technical courses.

It is now upto the managers of the technical education system to transform this scheme into reality by planning, developing and implementing learning experiences at various levels.

The attention of all concerned educational managers is solicited to strive hard and convert this plan into reality. I wish them good luck.

S. S. Guleria HAS
Director
Technical Education, Vocational & Industrial Training,
Sundernagar, Himachal Pradesh.

PREFACE

Curriculum Document is a comprehensive plan or a blue print for developing various curriculum materials and implementing given educational programme to achieve desired and formally pre-stated educational objectives. Moreover it (the document) is the output of exhaustive process of curriculum planning and design, undertaken by the implementers under the expert guidance of curriculum designer.

Technical Education Department of Himachal Pradesh has undertaken restructuring of the diploma programmes offered by the polytechnics in the State. Consequently H.P. State Board of Technical Education assigned the project for revision of nine existing diploma programmes to this institute in the month of April 2007 with a view to update the courses and their contents as per employment needs of the world of work. A series of workshops were held in the months of April-May, 2007 and 1st Year curriculum of diploma programmes was handed over to the H.P. State Board of Technical Education for its implementation from July, 2007. Subsequently another series of workshops were held for the revision of 2nd and 3rd Year curriculum of all these courses during September – December 2007.

While working out the detailed contents and study and evaluation scheme, the following important elements have been kept in mind:

i) Major employment opportunities of the diploma holders

ii) Modified competency profile of the diploma holders with a view to meet the changing needs due to technological advancement and requirements of various employment sectors.

iii) Vertical and horizontal mobility of diploma passouts for their professional growth

iv) Pragmatic approach in implementing all the curricula of diploma programmes in engineering and technology in the state of H.P.

The document is an outcome of the feedback received from industry/field organizations of different categories viz. small, medium and large scale which offer wage employment for the diploma passouts. In every stage of planning and designing of this curriculum, suggestions and advice of experts representing industry, institutions of higher learning, research organizations etc. were sought. Moreover, the representative sample of polytechnic faculty from H.P. state, who are the actual implementors of these programmes were drawn for the revision to ensure seamless curriculum implementation. The document contains the study and evaluation scheme and detailed subject/course contents for all the three years to enable the H.P. Polytechnics to implement revised curriculum to achieve the desired objectives.

We have taken cognizance of recommendation of experts both from industry and academic institutions and have adequately incorporated segments of Entrepreneurship Development, Environment and Safety Awareness, Industry Oriented Practice Based Minor and Major Projects, Industrial Training etc. Time has specifically been allocated for undertaking extra-curricular activities. Emphasis has been laid on developing and improving communication skills in the students for which Communication Lab has been introduced during the first year itself.

We hope that this revision will prove useful in producing competent diploma holders in the state of Himachal Pradesh. The success of this curriculum depends upon its effective implementation and it is expected that the managers of polytechnic education system in Himachal Pradesh will make efforts to create better facilities, develop linkages with the world of work and foster conducive and requisite learning environment as prescribed in the curriculum document.

It is hoped that if implemented in its true spirit this curriculum will certainly improve the quality of Architectural Assistantship diploma pass outs from the polytechnics of Himachal Pradesh.

Er. P.P. Sharma
Head(CCDC)

DIPLOMA PROGRAMME IN ARCHITECTURE ASSISTANTSHIP
(For the State of Himachal Pradesh)

1. SALIENT FEATURES

1)	Name of the Programme	:	Diploma Programme in **Architectural Assistantship**
2)	Duration of the Programme	:	Three years (Six Semesters)
3)	Entry Qualification	:	10 +
4)	Intake	:	30
5)	Pattern of the Programme	:	Semester Pattern
6)	Number of Semesters	:	Six
7)	Ratio between theory and Practical	:	40 : 60

8) **Industrial Training**:
Six weeks of industrial training is included after IV semester during summer vacation. Internal assessment out of 50 marks and external assessment out of another 50 marks are added in 5th semester. Total 100 marks are allotted to industrial training.

Distribution of Marks:

- Daily diary and reports of training- 50 Marks
- Viva Voce (External) - 50 Marks

9) **Ecology and Environment** :
As per Govt. of India directives, an awareness camp on Ecology and Environment has been incorporated during second semester.

10) **Entrepreneurship Development**:
An Entrepreneurial Awareness Camp and a full subject on Generic Skill and Entrepreneurship Development has been incorporated in the scheme.

11) **Student Centred Activities:**
A provision of 3-4 hrs per week has been made for organizing Student Centred Activities for overall personality development of students. These activities will comprise of co-curricular activities such as expert lectures, games, hobby classes like photography, painting, singing etc. seminars, declamation contests, educational field visits, NCC, NSS and cultural activities etc.

2. GUIDELINES

2.1 GUIDELINES FOR ASSESSMENT OF STUDENT CENTRED ACTIVITIES (SCA)

Distribution of 25 marks for SCA will be as follows:

i. 5 Marks shall be given for general behaviour

ii. 5 Marks for attendance shall be based on the following distribution:

1.	Less than 75%	Nil
2.	75-79.9%	3 Marks
3.	80-84.9%	4 Marks
4.	Above 85%	5 Marks

iii. 15 Marks shall be given for the Sports/NCC/Cultural and Co-curricular activities/other activities after due consideration to the following points:

1. For participation in sports/NCC/Cultural/Co-curricular activities at National or above level, shall be rewarded with minimum of 10 marks
2. For participation in sports/NCC/Cultural/Co-curricular activities at Inter-polytechnic level, shall be rewarded with minimum of 08 marks
3. For participation in two or more of the listed activities, 5 extra marks should be rewarded

2.2 GUIDELINES FOR INTERNAL ASSESSMENT

- The distribution of marks for Internal Assessment in theory subjects and drawing shall be made as per the following guidelines:
  - i. 60% of internal assessment shall be based on the performance in the house tests. At least three such tests shall be conducted during the semester out of which at least one house test should be conducted. 30% weight age will be given to house test and 30% to class test(One best out of two).
  - ii. 20% marks shall be given to home assignments, class assignments, seminars etc.
  - iii. 20% marks shall be given for attendance/punctuality in the subject concerned.
- The distribution of marks for Internal Assessment in practical subjects shall be made as per the following guidelines:

i. 60% marks shall be awarded for performance in practical

ii. 20% marks shall be given for Report/Practical book and punctuality in equal proportion.

iii. 20% marks shall be for Viva-voce conducted during the practical.

3 **Employment Opportunities:-**

Job Opportunities in following areas are visualized for diploma holders in Architectural Assistantship:-

Employment with:

- Private enterprises consisting of firms of Architects or Engineering
- State Department of Architecture
- Boards and Corporations
- Military Engineering Services,
- Self Employment as Architect

4. COMPETENCY PROFILE OF DIPLOMA HOLDERS IN ARCHITECTURE ASSISTANTSHIP

Keeping in mind the job Opportunities of diploma holders in Architecture Assistantship, the Programme is aimed at developing following competencies in term of Knowledge and skills in the students:-

1. Understanding of principles of Applied Sciences for developing scientific temple.

2. Development of Communication and interpersonal skill for effective functioning in the world of work

3. Knowledge of principles of management and entrepreneurship to manage recourses optimally

4. knowledge of basic Engineering Sciences such as Theory of Structure, Theory of Design, Workshop Practice, Ecology and Environment and computer Applications.

5. Knowledge of free hand sketching and lettering, Working Drawing, Sketching Architectural Design, Model Making, Estimating and Specification Writing, Building materials available in market, Building Construction, Building Byelaws and municipal drawing.

6. Knowledge of use of Computer in preparation of Drawings

5. Driving Curriculum Areas From Competency Profile.

Sr. No.	Competency Profile	Curriculum Areas
1.	Understanding of principles of Applied Sciences for developing scientific temple.	- Applied Sciences - Applied Mathematics
2.	Development of Communication and interpersonal skill for effective functioning in the world of work	- English and Communication Techniques - I & II - Language Laboratory
3.	Knowledge of principles of management and entrepreneurship to manage recourses optimally	- Architectural Professional practices - Estimating Specification Writing
4.	knowledge of basic Engineering Sciences such as Theory of Structure, Theory of Design, Workshop Practice, Ecology and Environment and computer Applications.	- Theory of Design - Theory of Structure - Workshop Practice - Climatologic, Environment and Ecology - Computer Fundamentals - Structural Design - I & II - Surveying
5.	Knowledge of free hand sketching and lettering, Working Drawing, Sketching Architectural Design, Model Making, Estimating and Specification Writing, Building materials available in market, Building Construction, Building Byelaws and municipal drawing.	- Sketching Lettering and Printing - Graphic Presentation - I & II - Building Construction - I, II , III & IV - Building Material - I & II - Working Drawing - I, II , III & IV - Building Bye Laws - Model Making - Interior Design
6.	Knowledge of use of Computer in preparation of Drawings	- Computer Graphics - I & II - Architectural Graphics

6. HORIZONTAL AND VERTICAL ORGANISATION OF THE SUBJECTS

Sr. No.	Subjects	Distribution in Hours per week in Various Semesters					
		I	II	III	IV	V	VI
1.	English and Communication Skills	5	5	-	-	-	-
2.	Applied Mathematics	4	4	-	-	-	-
3.	Applied Sciences	4	-	-	-	-	-
4.	Sketching Lettering & Printing	8	-	-	-	-	-
5.	Graphics Presentation-I	8	6	-	-	-	-
6.	Building Material	3	3	-	-	-	-
7.	Workshop Practice	4	-	-	-	-	-
8.	Building Construction	-	7	7	7	7	-
9.	Theory of Design	-	3	-	-	-	-
10.	Architectural Design	-	7	7	7	8	-
11.	History of Architecture	-	-	3	3	-	-
12.	Surveying	-	-	6	-	-	-
13.	Building Services	-	-	3	-	-	-
14.	Working Drawing	-	-	6	7	8	-
15.	Basic Computer Application	-	-	4	-	-	-
16.	Climatology Environment & Ecology	-	-	-	3	-	-
17.	Theory of Structures	--	-	-	3	-	-
18.	Model Making	-	-	-	3	-	-
19.	Computer Graphics	-	-	-	4	4	6
20.	General Skill & Entrepreneurship Dev.	-	-	-	-	-	-
21.	Structural Design	-	-	-	-	3	2
22.	Industrial Training		-	-	-	-	-
23.	Estimating & Specification Writing	-	-	-	-	-	4
24.	Architectural Professional Practice	-	-	-	-	-	3
25.	General Skill & Entrepreneurship Devp.	-	-	-	-	3	
26.	Major Project		-	-	-	-	12
27.	Basics of Management	-	-	-	-	-	3
28.	Practice in Communication Skills	-	-	-	-	-	2
29.	Elective	-	-	-	-	3	3
30.	Students Centre Activites	4	5	4	3	4	5
Total		**40**	**40**	**40**	**40**	**40**	**40**

1. STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN ARCHITECTURAL ASSISTANTSHIP (HIMACHAL PRADESH)

FIRST SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO	SUBJECTS	STUDY SCHEME **Hrs/Week**		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	**Pr**	**Th**	**Pr**	**Tot**	**Th**	**Hrs**	**Pr**	**Hrs**	**Tot**	
1.1	*English and Communication Skills – I	3	2	30	20	**50**	100	3	50	3	**150**	**200**
1.2	Applied Mathematics - I	4	-	50	-	**50**	100	3	-	-	**100**	**150**
1.3	Applied Sciences	4	-	50	-	**50**	100	3	-	-	**100**	**150**
1.4	Sketching Lettering & Printing	2	6	-	50	**50**	100	4	-	-	**100**	**150**
1.5	Graphics Presentation-I	-	8	-	50	**50**	100	4	-	-	**100**	**150**
1.6	Building Material-I	3	-	50	-	**50**	100	3	-	-	**100**	**150**
1.7	Workshop Practice	-	4	-	50	**50**	-	-	50	3	**50**	**100**
#Student Centred Activities		-	4	-	-	**-**	-	-	-	-	**-**	**-**
Total		**16**	**24**	**180**	**170**	**350**	**600**		**100**		**700**	**1050**

* Common with other diploma programmes

\# Will comprise of co-curricular activities like games, hobby clubs, including photography, seminars, declamation contests, extension lectures, educational field visits, N.C.C., NSS, cultural activities etc.

SECOND SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO.	SUBJECTS	STUDY SCHEME Hrs/Week		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	**Pr**	Th	**Pr**	**Tot**	**Th**	**Hrs**	**Pr**	**Hrs**	**Tot**	
2.1	*English and Communication Skills - II	3	2	30	20	50	100	3	50	3	150	**200**
2.2	Applied Mathematics – II	4	-	50	-	50	100	3	-	-	100	**150**
2.3	Graphics Presentation-II	-	6	-	50	50	100	4	50++	3	150	**200**
2.4	Building Material-II	3	-	50	-	50	100	3	-	-	100	**150**
2.5	Building Construction-I	1	6	-	50	50	100	4	50++	3	150	**200**
2.6	Theory of Design	3	-	50	-	50	100	3	-	-	100	**150**
2.7	Architectural Design-I	1	6	-	100	100	100	4	50++	4	150	**250**
2.8	#Student Centred Activities	-	5	-	-	-	-	-	-	-	-	**-**
Total		**15**	**25**	**180**	**220**	**400**	**700**	**24**	**200**	**13**	**900**	**1300**

* Common with other diploma programmes

\# Will comprise of co-curricular activities like games, hobby clubs, including photography, seminars, declamation contests, extension lectures, educational field visits, N.C.C., NSS, cultural activities etc.

++ Viva-Voice only.

THIRD SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO.	SUBJECTS	STUDY SCHEME Hrs/Week		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	**Pr**	Th	**Pr**	**Tot**	**Th**	**Hrs**	**Pr**	**Hrs**	**Tot**	
3.1	Building Construction-II	1	6	-	50	50	100	4	50++	3	150	**200**
3.2	History of Architecture-I	3	-	50	-	50	100	3	-	-	100	**150**
3.3	Architectural Design-II	1	6	-	100	100	100	6	50++	3	150	**250**
3.4	Surveying	2	4	20	30	50	100	3	50	3	150	**200**
3.5	Building Services	3	-	50	-	50	100	3	-	-	100	**150**
3.6	Working Drawing-I	-	6	-	50	50	100	4	-	-	100	**150**
3.7	Basic Computer Application	-	4	-	50	50	-	2	50	3	50	**100**
#Student Centred Activities		-	4	-	25	25	-	-	-	-	-	**25**
Total		**10**	**30**	**120**	**305**	**425**	**600**	**25**	**200**	**12**	**800**	**1225**

* Common with other diploma programmes

\# Will comprise of co-curricular activities like games, hobby clubs, including photography, seminars, declamation contests, extension lectures, educational field visits, N.C.C., NSS, cultural activities etc.

++ Viva-Voice only.

FOURTH SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO.	SUBJECTS	STUDY SCHEME Hrs/Week		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	Pr	Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot	
4.1	Climatology Environment & Ecology	3	-	50	-	50	100	3	-	-	100	**150**
4.2	Building Construction-III	1	6	-	50	50	100	4	50++	3	150	**200**
4.3	History of Architecture-II	3	-	50	-	50	100	3	-	-	100	**150**
4.4	Architectural Design-III	1	6	-	50	50	100	4	50++	3	150	**200**
4.5	Building Byelaws and Working Drawing-II	2	5	50	50	100	50+ 100	4	-	-	150	**250**
4.6	Theory of Structures	3	-	50	-	50	100	3	-	-	100	**150**
4.7	Model Making	-	3	-	100	100	-	-	50	3	50	**150**
4.8	Computer Graphics-I	-	4	-	100	100	-	-	50	3	50	**150**
#Student Centred Activities		-	3	-	25	25	-	-	-	-	-	**25**
Total		**13**	**27**	**200**	**375**	**575**	**650**	**21**	**200**	**12**	**850**	**1425**

\# Will comprise of co-curricular activities like games, hobby clubs, including photography, seminars, declamation contests, extension lectures, educational field visits, N.C.C., NSS, cultural activities etc.

* **Industrial Training** - *After examination of 4th Semester, the students shall go for training in a relevant industry/ In house training should be provided for a minimum period of 4 weeks and shall prepare a diary. It shall be evaluated during 5th semester by his/her teacher for 50 marks. The students shall also prepare a report at the end of training and shall present it in a seminar, which will be evaluated for another 50 marks. This evaluation will be done by HOD and lecturer incharge – training at the start of 5th Semester.*

++ Viva-Voice only.

FIFTH SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO.	SUBJECTS	STUDY SCHEME Hrs/Week		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	Pr	Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot	
5.1	Building Construction-IV	1	6	-	50	50	100	4	50++	3	150	**200**
5.2	Architecture Design-IV	1	7	-	100	100	100	6	50++	3	150	**250**
5.3	Working Drawing & Detailing-III	-	8	-	50	50	100	4	-	-	100	**150**
5.4	Structural Design-I	3	-	50	-	50	100	4	-	-	100	**150**
5.5	*General Skill & Entrepreneurship Development	3	-	50	-	50	100	3	-	-	100	**150**
5.6	Computer Graphics-II	-	4	-	100	100	-	-	50	3	50	**150**
5.7	Elective-I	-	3	-	50	50	-	-	50	3	50	**100**
5.8	Industrial Training	-	-	-	50	50	-	-	50	3	50	**100**
#Student Centred Activities		-	4	-	25	25	-	-	-	-	-	**25**
Total		**8**	**32**	**100**	**425**	**525**	**500**	**21**	**250**	**15**	**750**	**1275**

* The subject general skill & entrepreneurship development and basic of management(6th semester) have to be taught by lecturer, trained in the field of management.

** 100 marks for theory examination and 50 marks for drawing.

\# Will comprise of co-curricular activities like extension lectures, games, hobby clubs, including photography, seminars, declamation contests, educational field visits, N.C.C., NSS, Cultural Activities etc.

++ Viva-Voice only.

SIXTH SEMESTER (ARCHITECTURAL ASSISTANTSHIP)

SR. NO.	SUBJECTS	STUDY SCHEME Hrs/Week		MARKS IN EVALUATION SCHEME								Total Marks of Int. & Ext.
				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT					
		Th	**Pr**	Th	**Pr**	**Tot**	**Th**	**Hrs**	**Pr**	**Hrs**	**Tot**	
6.1	*Basics of Management	3	-	50	-	50	100	3	-	-	100	**150**
6.2	Computer Graphics-III	-	6	-	100	100	-	-	100	3	100	**200**
6.3	Structure Design-II	2	-	50	-	50	100	3	-	-	100	**150**
6.4	Architectural Professional Practice	3	-	50	-	50	100	3	-	-	100	**150**
6.5	Elective-II	3	-	50	-	50	100	3	-	-	100	**150**
6.6	Estimating & Specification Writing	4	-	50	-	50	100	4	-	-	100	**150**
6.7	Major Project	-	12	-	100	100	-	-	100	3	100	**200**
6.8	*Practice in Communication Skills	-	2	-	50	50	-	-	50	3	50	**100**
#Student Centred Activities		-	5	-	25	25	-	-	-	-	-	**25**
Total		**15**	**25**	**250**	**275**	**525**	**500**	**16**	**250**	**9**	**750**	**1275**

* Common with other diploma programmes

** 100 marks for theory examination and 50 marks for drawing.

\# Will comprise of co-curricular activities like games, hobby clubs, including photography, seminars, declamation contests, extension lectures, educational field visits, N.C.C., NSS, cultural activities etc.

9. INDUSTRIAL TRAINING OF STUDENTS

It is needless to emphasize further the importance of Industrial Training of students during their 3 years of studies at Polytechnics. It is industrial training, which provides an opportunity to students to experience the environment and culture of industrial production units and commercial activities undertaken in field organizations. It prepares student for their future role as diploma engineers in the world of work and enables them to integrate theory with practice. Polytechnics have been arranging industrial training of students of various durations to meet the above objectives.

This document includes guided and supervised industrial training of a minimum of 4 weeks duration to be organised during the semester break starting after second year i.e. after IV Semester examinations. The concerned HODs along with other teachers will guide and help students in arranging appropriate training places relevant to their specific branch. It is suggested that a training schedule may be drawn for each student before starting of the training in consultation with the training providers. Students should also be briefed in advance about the organizational setup, product range, manufacturing process, important machines and materials used in the training organization.

Equally important with the guidance is supervision of students training in the industry/organization by the teachers. A minimum of one visit per week by the teacher is recommended. Students should be encouraged to write daily report in their diary to enable them to write final report and its presentation later on.

An internal assessment of 50 and external assessment of 50 marks have been provided in the study and evaluation scheme of V Semester. Evaluation of professional industrial training report through viva-voce/presentation aims at assessing students understanding of materials, industrial process, practices in industry/field organization and their ability to engage in activities related to problem solving in industrial setup as well as understanding of application of knowledge and skills learnt in real life situations. The formative and summative evaluation may comprise of weightage to performance in testing, general behaviour, quality of report and presentation during viva-voce examination. It is recommended that such evaluations may be carried out by a team comprising of concerned HOD, teachers and representative from industry.

Teachers and students are requested to see the footnote below the study and evaluation scheme of IV Semester for further details.

2. *DETAILED CONTENTS OF* ARCHITECTURAL ASSISTANTSHIP *SUBJECTS*

1.1 ENGLISH AND COMMUNICATION SKILLS – I

L	T	P
3	-	2

RATIONALE

Language is the most commonly used medium of self-expression in all spheres of human life – personal, social and professional. A student must have a fair knowledge of English language and skills to communicate effectively to handle the future jobs in industry. The objective of this course is to enable the diploma holders to acquire proficiency, both in spoken (oral) and written language. At the end of the course, the student will be able to develop comprehension skills, improve vocabulary, use proper grammar, acquire writing skills, correspond with others and enhance skills in spoken English. It is expected that each polytechnic will establish a ***communication skill laboratory*** *for conducting practical's mentioned in the curriculum.*

DETAILED CONTENTS

1. **Facets of Literature** (14 hrs)
   - 1.1 Short Stories
     - 1.1.1 Homecoming – R.N. Tagore
     - 1.1.2 The Selfish Giant - Oscar Wilde
     - 1.1.3 The Diamond Necklace- Guy- De Maupassantt
   - 1.2 Prose
     - 1.2.1 I Have A Dream – Martin Luther King
     - 1.2.2 On Habits – A. G. Gardiner
     - 1.2.3 My struggle for An Education- Booker T Washington
   - 1.3 Poems
     - 1.3.1 Ozymandias – P.B. Shelley
     - 1.3.2 Daffodils – William Wordsworth
     - 1.3.3 Stopping by Woods on a Snowy Evening – Robert Frost

2. **Grammar and Usage** (10 hrs)
   - **2.1 Parts of speech**
     - 2.1.1 Nouns
     - 2.1.2 Pronouns
     - 2.1.3 Adjectives
     - 2.1.4 Articles
     - 2.1.5 Verbs
     - 2.1.6 Adverbs
     - 2.1.7 Prepositions
     - 2.1.8 Conjunction
     - 2.1.9 Interjection
     - 2.1.10 Identifying parts of speech
   - 2.2 **Pair of words (Words commonly confused and misused)**
     - 2.1 Tenses
     - 2.2 Correction of incorrect sentences
     - 2.3 One word Substitution

3. **Translation** (04 hrs)
   3.1 Glossary of Administrative Terms (English and Hindi)
   3.2 Translation from Hindi into English and English to Hindi.

4. **Paragraph of 100-150 words from outlines** (08 hrs)

5. **Comprehension** (04 hrs)
   Unseen passages of literacy, scientific, data/graph based for comprehension exercises

6. **Communication** (08 hrs)
   6.1 Definition, Introduction and Process of Communication
   6.2 Objectives of Communication

LIST OF PRACTICALS

1. Locating a Book in Library
2. How to look up words in a Dictionary: meaning and pronunciation of words as given in the standard dictionary using symbols of phonetics,
3. How to Seek Information from an Encyclopedia
4. Listening pre-recorded English language learning programme
5. Paper Reading before an audience (reading unseen passages)
6. Study of spelling Rules
7. Study of essentials of a Good Speech to respond and comprehend visual, oral themes, situations or stimulus and practice before select gathering
8. Exercises on use of different abbreviations
9. Greetings for different occasions
10. Introducing oneself, others and leave taking
11. Exercises on writing sentences on a topic

Note:

1. *The Text Book on "English and Communication Skills, Book-I By Kuldip Jaidka et. al. developed by NITTTR, Chandigarh is recommended to be used for teaching and setting-up the question papers.*
2. *A communication laboratory may be set up consisting of appropriate audio-video system with facility of playing CDs/DVDs and a video camera for recording the performance of each student with play back facility. A set of CDs from any language training organization e.g. British Council etc. may be procured for use of students.*
3. *Elements of body language will be incorporated in all practicals*
4. *The practical exercises involving writing may also be included in Theory Examination.*

RECOMMENDED BOOKS

1. *English and Communication Skills, Book-I By Kuldip Jaidka, Alwainder Dhillon and Parmod Kumar Singla, Prescribed by NITTTR, Chandigarh Published By Abhishek Publication, 57-59, Sector-17, Chandigarh*
2. *Essentials of Business Communication by Pal and Rorualling; Sultan Chand and Sons*
3. *The Essence of Effective Communication, Ludlow and Panthon; Prentice Hall of India*
4. *New Design English Grammar, Reading and Writing Skills by AL Kohli (Course A and course B), Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,*
5. *New Design English Reading and Advanced Writing Skills for Class XI and XII by MK Kohli and AL Kohli; Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,*
6. *A Practical English Grammar by Thomson and Marlinet*

7. *Spoken English by V Sasikumar and PV Dhamija; Tata McGraw Hill*
8. *English Conversation Practice by Grount Taylor; Tata McGraw Hill*
9. *Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi*
10. *Business Correspondence and Report Writing by RC Sharma and Krishna Mohan; Tata McGraw Hill Publishing Company Ltd. New Delhi*
11. *Communication Skills by Ms R Datta Roy and KK Dhir; Vishal Publication, Jalandhar*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	14	40
2	10	15
3	4	10
4	8	10
5	4	10
6	8	15
Total	**48**	**100**

Glossary of Administrative Terms

1.	Senior	वरिष्ठ
2.	Cashier	खजांची
3.	Consent	सहमती
4.	Earned Leave	जमा छुट्टी
5.	Under Consideration	विचार अधीन
6.	Criterion	कसौटी
7.	Staff	कर्मचारी
8.	Tenure	कार्यकाल
9.	Working Committee	कार्य समिति
10.	Estate	संम्पदा
11.	Self-Sufficient	आत्मनिर्भर
12.	Emergency	आपात्तकाल
13.	General Body	आम सभा
14.	Exemption	छूट
15.	Daily wages	दिहाडीदार
16.	Death-Cum Retirement	मृत्यु और निवरती
17.	Despatch Register	रवानगी रजिस्टर
18.	Despatch	रवानगी
19.	Stenography	आशुलिपिक
20.	Assurance	दिलासा
21.	Justify	सही साबित करना
22.	Superior	बढिया
23.	High Commission	उच्चायुक्त
24.	Simultaneous	साथ - साथ
25.	Precautionary	एहतिहाती
26.	Commanding Office	कमांडिग अफसर
27.	Negligence	लापरवाही
28.	Performance	पुरा करना
29.	Proof Reader	प्रुफ रीड़र
30.	Take Over	काम सभालना
31.	Timely Compliance	समय दौरान पुरा करना
32.	Responsibility	जिमेदारी
33.	Chief Justice	मुख्य न्यायधिश
34.	Disciplinary Action	अनुशासनिक कारवाई
35.	Efficiency Bar	दक्षता रोक
36.	Flying Squad	उड़न दस्ता
37.	Regret	खेद
38.	Inconvenience	असुविधा
39.	Ambiguous	अस्पष्ट
40.	Part Time	अशंकालीन
41.	Academy	अकादमी
42.	Disparity	असमानता
43.	Extraordinary	असाधारण
44.	Provisional	अस्थायी
45.	Income Tax	आयकर
46.	Bonafide	असली
47.	Acting in Official Capacity	बतौर अधिकारिक हैसियत
48.	Contractor	ठेकेदार
49.	On probation	परिवीक्षाधीन
50.	State	राज्य

51.	Administrator	प्रशासक
52.	Admission	प्रवेश
53.	Aforesaid	पूर्वोक्त, उपरोक्त
54.	Affidavit	शपथपत्र
55.	Agenda	कार्यसूची
56.	Alma Mater	विद्यालय जहां किसी व्यक्ति ने शिक्षा प्राप्त
57.	Appointing Authority	मनोनित अधिकारी
58.	Apprentice	शिल्पकारू
59.	Additional	अतिरिक्त
60.	Advertisement	विज्ञापन
61.	Assistant	सहायक
62.	Assumption of Charge	अधिकार ग्रहण करना
63.	Attested Copy	सत्यापित प्रति
64.	Chief Minister	मुख्यमन्त्री
65.	Clerical Error	लेखन सम्बन्धी भ्रम
66.	Code	कानून की किताब, गुप्त भाषा
67.	Corruption	नैतिक भ्रष्टाचार, खोटापन
68.	Craftsman	कारीगर
69.	Compensation	हरजाना
70.	Compensatory Allowance	क्षतिपूरक भत्ता
71.	Compile	संकलन करना, संग्रह करना
72.	Confidential Letter	गुप्त पत्र
73.	Chief Engineer	मुख्य अभिन्यता
74.	Data	स्वीकृत तत्तव (आंकड़े)
75.	Dearness Allowance	मंहगाई भत्ता
76.	Department	विभाग
77.	Dictionary	शब्द कोष
78.	Director	निदेशक, संचालन
79.	Director of Tech. Edu.	तकनीकी शिक्षा निदेशक
80.	Executive Engineer	अधिशासी अभियन्यता
81.	Employment Exchange	व्यवसाय केन्द्र
82.	Head Office	मुख्य कार्यालय
83.	Head Clerk	प्रधान लिपिक
84.	Indian Admn. Service	भारतीय प्रशासनिक सेवा
85.	Legislative Assembly	विधान सभा
86.	Officiating	स्थानापन्न
87.	Office Record	कार्यालय रिकार्ड
88.	Office Discipline	कार्यालय अनुशासन
89.	Polytechnic	बहुतकनीकी
90.	Temporary	अस्थायी
91.	Qualified	योग्यता प्राप्त
92.	Under Investigation	जांच अधीन
93.	Sub-treasury	उप-खजाना
94.	Target Date	लक्ष्य तिथि
95.	Technical Approval	तकनीकी मान्यता
96.	Verification	जांच पड़ताल
97.	Viva-voca	मौखिक परीक्षा
98.	Write off	बटटेखाते डालना
99.	Warning	चेतावनी
100.	Yours faithfully	भवदीय

1.2 APPLIED MATHEMATICS - I

L	T	P
4	-	-

RATIONALE

Applied Mathematics forms the backbone of engineering students. Basic elements of algebra, trigonometry, coordinate geometry have been included in the curriculum as foundation course. This course will develop analytical abilities to make exact calculations and will provide continuing educational base to the students.

DETAILED CONTENTS

1. **Algebra** (24 hrs)

1.1 Complex Numbers: Complex number, representation, modulus and amplitude. De-movier's theorem, its application in solving algebric equation.

1.2 Geometrical progression, its nth term and sum of n terms and to infinity. Application of Arithmetic progression and Geometrical progression to Engineering problem.

1.3 Partial fractions (linear factors, repeated linear factors

1.4 Binomial theorem (without proof) for positive integral index (expansion and general form); binomial theorem for any index (expansion without proof)

2. Trigonometry (20 hrs)

2.1 Concept of angles, measurement of angles in degrees, grades and radians and their conversions.

2.2 T-Ratios of Allied angles (without proof), Sum, difference formulae and their applications (without proof). Product formulae (Transformation of product to sum, difference and vice versa). T-Ratios of multiple angles, sub-multiple angles (2A, 3A, A/2).

2.3 Graphs of Sin x, Cos x, Tan x and e^x

3. **Differential Calculus** (20 hrs)

3.1 Definition of function; Concept of limits.

Four standard limits $\lim_{x \to a} \frac{x^n - a^n}{x - a}$,

$\lim_{x \to 0} \frac{\sin x}{x}$, $\lim_{x \to 0} \frac{a^x - 1}{x}$, $\lim_{x \to 0} (1+x)^{1/x}$

3.2 Differentiation by definition of x^n , sin x, cos x, tan x, e^x, $\log_a x$

3.3 Differentiation of sum, product and quotient of functions. Differentiation of function of a function.

RECOMMENDED BOOKS

1. *Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi*
2. *Engineering Mathematics by Vol. I & II by S Kohli, IPH, Jalandhar*
3. *Applied Mathematics by Dr. RD Sharma*
4. *Applied Mathematics, Vol. I & II by SS Sabharwal & Sunita Jain, Eagle Parkashan, Jalandhar*
5. *Comprehensive Mathematics, Vol. I & II by Laxmi Publications*
6. *Engineering Mathematics by Dass Gupta*
7. *Engineering Mathematics by C Dass Chawla, Asian Publishers, New Delhi*
8. *Comprehensive Mathematics, Vol. I & II by Laxmi Publications*
9. *Engineering Mathematics, Vol I, II & III by V Sundaram et al, Vikas Publishing House (P) Ltd., New Delhi*
10. *Engineering Mathematics by N.Ch.S.N Iyengar et.al, Vikas Publishing House (P) Ltd., New Delhi*
11. *Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd.,*
12. *Engineering Mathematics, Vol I & II by AK Gupta, MacMillan India Ltd., New Delhi*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	24	30
2	20	30
3	20	40
Total	**64**	**100**

1.3 APPLIED SCIENCES

L T P
4 - -

RATIONALE

Applied Sciences are very essential to develop scientific temper, continued learning skills and appreciation of physical and chemical changes of concern in the field of Architecture. This course covers elements of Applied Physics and Applied Chemistry and Applied Physics contains: units of measurements, force and motion, temperature and its measurement, Acoustics of buildings and fundamentals of light. Applied Chemistry part covers: metals, corrosion and its prevention, plastics, refractory and paints and varnishes.

Teachers while imparting instructions are expected to demonstrate various physical and chemical processes to clarify the concepts and principles involved in the course.

DETAILED CONTENTS

Part A - Physics:

1. Units of measurement in SI system. Dimensions and use of dimensional analysis. (3hrs)
2. - Force and motion - Newton's laws (4hrs)
   - Conservation of momentum; work and energy.
   - Forms of energy and conservation of energy; stress, strain, elastic module.
3. Spring mass system. Vibration of bodies; amplitude, frequency and energy of vibrations; free and forced vibrations, resonance, vibration of structural members. (6hrs)
4. Temperature and its measurement, liquid in glass thermometer, Bimetallic thermometer, Thermo-electric thermometer. (6hrs)
5. Expansion of solids, thermal stresses; specific heat and heat capacity and concept of thermal time lag in buildings; laws of thermodynamics; Principles of refrigeration and air conditioning systems; Humidity and its control. (6hrs)
6. Acoustics of buildings and simple calculation of reverberation times; principles of acoustic modeling, sources of sound. (6hrs)
7. Light as waves, solar energy, solar cells and green house effects; colour: primary colours, colour mixing. Radiant light flux, laminar intensity, illumination; light efficiencies; Standards of illumination. (3hrs)
8. Electromagnetic waves, Infrared and ultraviolet rays, Coated glasses and their characteristics. (3hrs)
9. Electrical nature of matter; molecular forces - cohesive and adhesive forces; application to water proofing and wetting. (3hrs)

Part B - Applied Chemistry

1. Raw materials and admixtures used in the manufacture of copper, aluminium, iron and steel. Manufacturing processes to be dealt in brief with flow diagrams. (4hrs)
2. Properties and uses of copper, aluminium, iron and steel. Corrosion: Meaning of corrosion, prevention of corrosion by various methods. (4hrs)
3. Plastics: Review of saturated and unsaturated hydrocarbons (Methane, ethane, Ethylene, Acetylene and Vinyl chloride etc) Condensation and polymerization. Thermosetting and thermo plastics. Cold setting and hot setting. However, emphasis should be given to name of common varieties of plastics and their uses. Adhesives and epoxy resins. (8hrs)
4. Refractories: Meaning of refractory material: General methods of manufacture of:
    a) Acid refractories
    b) Basic refractories

    (4hrs)
5. Paints and varnishes: Drying oil, pigment, drier, thinner. (4hrs)

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
Part-A		
1	3	4
2	4	6
3	6	8
4	6	8
5	6	8
6	6	6
7	3	8
8	3	6
9	3	6
PART-B		
1	4	8
2	4	8
3	8	8
4	4	8
5	4	8
Total	**64**	**100**

1.4 SKETCHING, LETTERING AND PRINTING

L T P
- - 8

RATIONALE

Free hand sketching, colouring and rendering, line sketching, shades and shadows, lettering and printing forms important components of Architecture discipline. This course aims at imparting desired skills in the above areas. Teachers are expected to lay considerable emphasis on practical work so that students attain sufficient skills in sketching, lettering and printing.

DETAILED CONTENTS

Following detailed exercises are recommended for this course:

1. **Free Hand Sketching Exercises:**
   - 1.1 Free hand sketching of simple geometrical surface (2 sheets)
   - 1.2 Free hand drawing of three dimensional geometrical objects (6 sheets: Cube, Cone, Prism, Pyramid, Cylinder, Sphere)
   - 1.3 Free hand drawing of a set of objects (2 sheets)
   - 1.4 Free hand sketching of simple buildings and landscaping (3 sheets)
   - 1.5 Free hand sketching of monuments, buildings and trees in different techniques and mediums (Pencil, pen ink, charcoal, coloured-inks, colours and crayous)

   (20)

2. **Colouring and Rendering Exercises**:
   - 2.1 Definition and perception of colour and colour materials
   - 2.2 Hue values and intensity, value scale, intensity scale and colour circle (2 sheets)
   - 2.3 Study of colours; Emotional effects of colours, warm and cool colours, receding and advancing colours; effect of light on colours, colour harmonies and contrasts
   - 2.4 Colour in nature, art and architecture
   - 2.5 Shades and shadows, indication of surroundings, sky, clouds, trees, human figures in pencil, ink, colour and crayous (4 sheets)

3. **Preparation of Forms and Ability to Think in the Round**:
   - 3.1 Simple exercises on murals (2 sheets)
   - 3.2 Mural design Exercises (10)

4. **Lettering Practice**:
   - 4.1 Ratio between height and width of letters and numerals, capitals and small(7:4 and 5:40) (2 sheets).
   - 4.2 Roman lettering, Gothic and Italics (3 sheets)
   - 4.3 Free hand lettering (1 sheet)
   - 4.4 Single line lettering (1 sheet)
   - 4.5 Broad pen lettering (1 sheet)
   - 4.6 Stylized lettering (1 sheet)
   - 4.7 Spacing
   - 4.8 Lettering with the help of Stencils (1 sheet) (30)

5. **Printing Practice:**

5.1 Tracing of a simple building drawing made

a) In Pencil (1 sheet)

b) In Ink (1 sheet)

5.2 Preparations of Blue Prints of tracing drawings prepared for the purpose(2 sheets/2 Prints).

5.3 Folding of the Blue Print to a standard file size. (Refer Fig. 5 Page 37 ISI Code No. IS: 962-1967)

(20)

NOTE: *At least one drawing sheet of lettering should be prepared in Hindi/Punjabi.*

1.5 GRAPHIC PRESENTATION-I

L T P
- - 8

RATIONALE

Graphic presentation forms a core subject for preparing perspective drawings, scale drawings, three dimensional views, furniture drawings and layouts. Therefore, this course aims at equipping the students with the skills of graphic presentation.

Teachers are expected to lay considerable stress on practical work so that student attain desired competencies for preparing good quality perspectives of interior and exterior of buildings in different media. Teachers are also expected to stress upon appropriate line work, properties, dimensioning, lettering, printing, colour rendering techniques, shades/shadows and sciography.

DETAILED CONTENTS

Chapter 1. **Introduction**:

1.1 Importance of Engineering Drawing
1.2 Definition of Plane Geometry, Solid Geometry
1.3 List of Drawing Instruments, Uses
1.4 Layout of Drawing Seats
1.5 Line, Lettering, Dimensioning (15)

Chapter 2. **Plane Geometry**:

a. **Geometrical Construction**:-
- Geometrical Terms
- Bisecting a Line, Arc and Angle
- Diving a straight line-circumference
- Construction of pentagon, Hexagon, Octagon etc.

b. **Scales**:-
- Representative fraction
- Types of Scales
- Plane Scale and Diagonal Scale

c. **Conic Section:-**
- Terminology- Ellipse, Parabola-Hyperbola, Rectangular Hyperbola-Construction (25)

Chapter 3. **Solid Geometry**

a. Northo Graphics Projections
- Theory of Projection, Orthographic Projection, V.P. and H.P. Front and Top View
- IST and Third Angle Projection

b. Projection of point, Line and Planes
c. Projection of Solids
d. Section of Solids
e. Development of Surfaces (35)

Chapter 4. **Isometric Projections and views**

- Terminology-Isometric Scale-I
- Box method, Co-Ordinate or offset method
- Four Centre method
- Isometric projection of Arcs (25)
- Simple problems of isometric view such as cube, box, step sty, interior of rooms

1.6 BUILDING MATERIALS -I

L T P
3 - -

RATIONALE

Diploma holders in Architectural Assistantship are supposed to prepare working drawings of buildings. Knowledge of building materials is very essential from the point of construction materials as well providing detailed specifications in the detailed drawings. Therefore, the course in building materials includes imparting basic knowledge in the properties and use of the important materials like; stones, bricks, lime, cement, paints, timber, exterior and interior finishes, glass, plastics, building hardware, roofing materials, additives and admixtures, adhesives etc.

Teachers are expected to demonstrate the samples of different materials, discuss their properties with particular reference to their use and appearance in particular situations depending upon climate and environmental conditions of the site where the materials are to be used. Students should be encouraged to collect samples of various materials and efforts should be made to maintain a good building material museum.

DETAILED CONTENTS

1. **Building Stones:**
   - 1.1 Utility of stones
   - 1.2 Classification of rocks
   - 1.3 Selection of stones for different building works
   - 1.4 Characteristics of good building stones
   - 1.5 Testing of stones
     - 1.5.1 Water absorption test
     - 1.5.2 Compressive strength test
     - 1.5.3 Durability test
   - 1.6 Natural bed of stones
   - 1.7 Common building stones
     - 1.7.1 Granite, Basalt and Trap, Sandstone, Lime-stone, Slate, Marble
     - 1.7.2 Composition, properties, uses and localities (6 Hrs)

2. **Bricks:**
   - 2.1 Classification of bricks
     - 2.1.1 Properties and uses of First Class, Second Class, Third Class and Over burnt bricks
   - 2.2 Characteristics of good brick
   - 2.3 Size and weight of a standard brick
   - 2.4 Composition of brick earth
   - 2.5 Test for burnt clay bricks
     - 2.5.1 Compressive strength test, water absorption test and Efflorescence Test
   - 2.6 Fire bricks, its properties, uses and availability (4 Hrs)

3. **Lime**:
   - Uses of lime, classification of lime
   - Setting action of fat lime and hydraulic lime
   - Field testing of lime
   - Visual examination
   - Storing of lime
   - Artificial hydraulic lime
   - 3.7 Important technical terms (4 Hrs)

4. **Cement:**
   - 4.1 Uses of cement
   - 4.2 Composition of Portland cement
   - 4.3 Setting and hardening of cement

4.4 Types of cement, their properties and uses
- 4.4.1 Ordinary Portland Cement (OPC)
- 4.4.2 Rapid Hardening Cement
- 4.4.3 High Alumina Cement
- 4.4.4 White Cement
- 4.4.5 Coloured Cement
- 4.4.6 Pozzolana Portland Cement
- 4.4.7 Sulphate Resisting Cement

4.5 Storage of Cement (6 Hrs)

5. **Mortar:**
   - 5.1 Function of mortar
   - 5.2 Preparation of cement mortar, lime mortar, lime cement mortar and their uses
   - 5.3 Proportion of mortar for different building works
   - 5.4 Different types of sand
   - 5.5 Bulking of Sand (6 Hrs)

6. **Concrete**:
   - 6.1 Mixing, placing and uses of lime concrete and cement concrete, aggregate and its grading
   - 6.2 Placing of concrete
   - 6.3 Compaction of concrete
   - 6.4 Curing of concrete
   - 6.5 Reinforced cement concrete (RCC)
     - 6.5.1 Necessity of providing reinforcement
     - 6.5.2 Properties of RCC (6 Hrs)

7. **Timber:**
   - 7.1 Characteristics and uses of common Indian timbers i.e. Sal, Deodar, Kail, Chir, Teak etc.
   - 7.2 Characteristics of hard wood and soft wood
   - 7.3 Defects in timber
   - 7.4 Characteristics of good timber
   - 7.5 Different methods of seasoning of timber (6 Hrs)

8. **Paints:**
   - 8.1 Water based paints
   - 8.2 Dry distemper
   - 8.3 Oil emulsion
   - 8.4 Cement paints
   - 8.5 Plastic emulsions
   - 8.6 Oil paints
   - 8.7 Varnishes
   - 8.8 Enamel
   - 8.9 Lacquers
   - 8.10 Stucco
   - 8.11 Tar and Bitumen Paint

   Their covering capacity, trade names, uses and availability. (6 Hrs)

9. **Paints:**

   Commercial Survey (For all the items 1 to 8)
   Tentative Cost
   Area Coverage
   Comparative of the Material on the basis of
   - Quality and Cost
   - Suitability to requirement (4 Hrs)

**** Market Survey should be carried out on holiday and after college hours.***

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	6	10
2	4	10
3	4	10
4	6	10
5	6	10
6	6	10
7	6	10
8	6	10
9	4	20
Total	**48**	**100**

1.7 GENERAL WORKSHOP PRACTICE

L	T	P
-	-	4

RATIONALE

This course aims at developing basic manual skills in carpentry, painting, polishing and masonry for creating necessary appreciation of the technology involved. Manual and machining skills of carpentry will also be helpful in making scaled models of buildings by using different materials. Hence this course.

DETAILED CONTENTS

A. Carpentry Shop:

1. Introduction to carpentry tools, machines and their application
2. Marking and sawing practice by using hand saw
3. Planning practice by using hand tools and wood planer
4. Chiseling practice by using hand tools
5. Exercises in preparation of joints i.e. lap joint, mortise and Tennon joint, Dovetail and glued joint
6. Exercises in development and preparation of simple models

B. Painting and Polishing Shop:

1. Exercises in preparation of surfaces before painting
2. Exercises in application of primer coat
3. Exercises in polishing wood items
4. Exercises in painting wooden and steel items

C. Masonry:

1. Exercise on handling of bricks, cement, sand and aggregate
2. Exercise on preparation of mortar
3. Exercise on laying of bricks in various bonds
4. Exercise on pointing and finishing.
5. Knowledge of various tools used by carpenter mason etc.

Note:- *3 Period to be taken at Mechanical workshop and 1 period to be taken in building construction lab.(Civil Engg. Deptt.)*

2.1 ENGLISH AND COMMUNICATION SKILLS - II

L	T	P
3	-	2

RATIONALE

Language is the most commonly used medium of self-expression in all spheres of human life – personal, social and professional. A student must have a fair knowledge of English language and skills to communicate effectively to handle the future jobs in industry. The objective of this course is to enable the diploma holders to acquire proficiency, both in spoken (oral) and written language. At the end of the course, the student will be able to develop comprehension skills, improve vocabulary, use proper grammar, acquire writing skills, correspond with others and enhance skills in spoken English. It is expected that each polytechnic will establish a ***communication skill laboratory*** *for conducting practicals mentioned in the curriculum.*

DETAILED CONTENTS

1. **Facets of Literature** (14 hrs)
   - 1.1 Short stories
     - 1.1.1 The Portrait of a Lady - Khushwant Singh
     - 1.1.2 The Refugees – Pearl S. Buck
   - 1.2 Prose
     - 1.2.1 Forgetting- Robert Lynd.
     - 1.2.2 Walking Tours- Robert Louis Stevenson
   - 1.3 Poems
     - 1.3.1 All The World's A Stage – W. Shakespeare
     - 1.3.2 No Men are Foreign- James Kirkup

2. The Art of Précis Writing (04 hrs)

3. Grammar and Usage (08 hrs)
   - 3.1 Narration
   - 3.2 Voice
   - 3.3 Idioms and Phrases

4. **Correspondence** (06 hrs)
   - 4.1 Business Letters
   - 4.2 Personal letters
   - 4.3 Application for Job

5. **Drafting** (08 hrs)
   - 5.1 Report Writing
   - 5.2 Inspection Notes
   - 5.3 Memos, Circulars
   - 5.4 Telegrams
   - 5.5 Press Release
   - 5.6 Agenda and Minutes of Meetings

6. Glossary of Technical & Scientific Terms (04 hrs)

7. **Communication** (08 hrs)
   - 7.1 Media and Modes of Communication
   - 7.2 Channels of Communication
   - 7.3 Barriers to Communication
   - 7.4 Listening Skills- Types of Listening
   - **7.5** Body language

LIST OF PRACTICALS

1. Practice on browsing information from Internet
2. Group Discussions
3. Mock Interviews
4. Telephone Etiquette – demonstration and practice
5. Situational Conversation with feedback through video recording
6. Presentation on a given theme (using PowerPoint)
7. Exercises leading to personality development like mannerism, etiquettes, body language etc.
8. Reading unseen passages
9. Writing (developing) a paragraph
10. Exercises on writing notices and telephonic messages

Note:

1) The Text Book on "English and Communication Skills, Book-II By Kuldip Jaidka et. al. developed by NITTTR, Chandigarh is recommended to be used for teaching & setting-up the question papers.

2) A communication laboratory may be set up consisting of appropriate audio-video system with facility of playing CDs/DVDS and a video camera for recording the performance of each student with play back facility. A set of CDs from any language training organization e.g. British Council etc. may be procured for use of students.

3) Elements of body language will be incorporated in all practicals

4) *The practical exercises involving writing may also be included in Theory Examination.*

RECOMMENDED BOOKS

1. *English and Communication Skills, Book-II By Kuldip Jaidka, Alwainder Dhillon and Parmod Kumar Singla, Prescribed by NITTTR, Chandigarh & Published By Abhishek Publication, 57-59, Sector-17, Chandigarh*
2. *Essentials of Business Communication by Pal and Rorualling; Sultan Chand and Sons*
3. *The Essence of Effective Communication, Ludlow and Panthon; Prentice Hall of India*
4. *New Design English Grammar, Reading and Writing Skills by AL Kohli (Course A and course B), Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,*
5. *New Design English Reading and Advanced Writing Skills for Class XI and XII by MK Kohli and AL Kohli; Kohli Publishers, 34 Industrial Area Phase-II, Chandigarh,*
6. *A Practical English Grammar by Thomson and Marlinet*
7. *Spoken English by V Sasikumar and PV Dhamija; Tata McGraw Hill*
8. *English Conversation Practice by Grount Taylor; Tata McGraw Hill*
9. *Developing Communication Skills by Krishna Mohan and Meera Banerji; MacMillan India Ltd., Delhi*
10. *Business Correspondence and Report Writing by RC Sharma and Krishna Mohan; Tata McGraw Hill Publishing Company Ltd. New Delhi*
11. *Communication Skills by Ms R Datta Roy and KK Dhir; Vishal Publication, Jalandhar*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	14	40
2	4	10
3	8	15
4	4	10
5	6	10
6	4	5
7	8	10
Total	**48**	**100**

GLOSSARY OF TECHNICAL & SCIENTIFIC TERMS

1. Absolute	परम, अचर, पूर्ण, स्थिर
2. Acceleration	त्वरण, प्रवेग
3. Acid	अम्ल
4. Alkaline	क्षारीय, खारा
5. Air Compressor	वायु-संपीडक
6. Air Conditioning	वातानुकूलन
7. Alignment	सरेखन
8. Alternating Current	प्रत्यावर्ती धारा
9. Altimeter	ऊंचाई मापने का यंत्र
10. Alum	फिटकरी
11. Ammeter	अम्मीटर
12. Ampere	ऐम्पियर
13. Amplication	प्रवर्धन
14. Amplitude	आयाम
15. Angle	कोण
16. Angluar Velocity	कोणीय वेग
17. Angular Momentum	कोणीय संवेग
18. Annealing	तापानुशीतन
19. Anode	अनोड
20. Apex	शीर्ष, शिखर, शिखाग्र
21. Apparent	स्पष्ट
22. Applied Machanics	अनुप्रयुक्त यंत्रिकी
23. Applied Science	अनुप्रयुक्त विज्ञान
24. Archimedes's Principle	आर्किमिडीज़ का सिद्धांत
25. Architecture	वास्तुकला, स्थापत्यकला
26. Armature	आर्मेचर
27. Atom	परमाणु
28. Automatic	स्वचलित
29. Axis	अक्ष
30. Axle	धुरी
31. Balance (Scale)	तुला, तराजू
32. Ball Bearing	बाल-बेयरिंग
33. Bar magnet	छड़-चुम्बक
34. Barometer	वायुदाबमापी
35. Base	आधार
36. Base Plate	आधार पट्टिका
37. Battery	बैटरी
38. Beaker	बीकर
39. Bending Moment	वंकन आधूर्ण
40. Blast Furnace	झोंका भट्टी
41. Bleach	विरंजक
42. Boiler	उबालक
43. Bridge	पुल
44. Burette	ब्यूरेट
45. Callipers	कैलिपर्स
46. Calorie	कैलोरी
47. Canal	नहर
48. Capacitance	धारिता
49. Carburettor	कार्बुरेटर
50. Cast Iron	ढलवा लोहा

51.	Catalyst	उत्प्रेरक
52.	Cathode	कैथोड
53.	Centre of Gravity	गुरुत्वाकर्षण – केन्द्र
54.	Centrifugal	उपकेन्द्रीय
55.	Centripetal	अभिकेन्द्रीय
56.	Centroid	केन्द्रीय
57.	C.G.S. System	सी.जी.एस. पद्धति
58.	Chemical Action	रासायनिक क्रिया
59.	Chai	श्रृंखला, माला ·
60.	Change of State	अवस्था परिवर्तन
61.	Characteristics	लक्षण
62.	Charge (n)	आवेश
63.	Choke	चोक
64.	Chord, Major	गुरु स्वर – संघात
65.	Chord, Minor	लघु स्वर – संघात
66.	Circular	वृत्ताकार, वर्तुल
67.	Clock-wise	दक्षिणा वर्त
68.	Coagulatio	स्कंदन
69.	Coefficient of Expansion	प्रसार गुणांक
70.	Coil	कुंडली
71.	Combustion	दहन
72.	Compass	दिशासूचक
73.	Compound	यौगिक
74.	Concave	अवतल
75.	Convex	उत्तल
76.	Concentrated (Solution)	गाढ़ा, सांद्रित (घोल)
77.	Concrete	कंकरीट
78.	Conduction	चालन
79.	Conductor	चालक
80.	Cone	शंकु
81.	Connection	सम्बंध, जोड़
82.	Constant (Adj.)	स्थिर, अचल, एकसमान
83.	Convection	संवहन
84.	Coulomb	कूलोम (विद्युत शक्ति की इकाई)
85.	Couple	बल युग्म
86.	Crane	क्रेन
87.	Crystalline	रवेदार
88.	Dehydrate	निर्जल करना
89.	Distil	आसहन करना
90.	Effervescence	बुदबुदाहट
91.	Element	तत्त्व, मूलतत्त्व
92.	Empirical Formula	मूलअनुपाती सूत्र
93.	Equivalent Weight	तुल्यांकी – भार
94.	Flame Test	ज्वाला – परीक्षण
95.	Flash Point	प्रज्वलन – ताप
96.	Flask	फ्लास्क
97.	Spring Balance	कमानी तुला
98.	Soluble	विलयशील
99.	Viscosity	गाढ़ापन
100.	Volumetric Analysis	आयतनी विश्लेषण

2.2 APPLIED MATHEMATICS - II

L	T	P
4	-	-

RATIONALE

Applied mathematics forms the backbone of engineering students. Basic elements of Differential calculus and integral calculus and statistics have been included in this course. This will develop analytical abilities to apply in engineering field and will provide continuing educational base to the students.

DETAILED CONTENTS

1. **Algebra** (12 hrs)

1.1 Determinants: Elementary properties of determinants up to 3rd order, consistency of equations, Crammer's rule.

1.2 Matrix: Algebra of matrices, Inverse of a matrix, matrix inverse method to solve a system of linear equations in 3 variables.

2. **Co-Ordinate Geometry** (20 hrs)

2.1 Cartesian and Polar coordinates (two dimensional), conversion from cartesian to polar coordinates and vice-versa, distance between two points (cartesian co-ordinates), section formulae

2.2 Area of triangle when its vertices are given, co-ordinates of centroid, in center of a triangle when the vertices are given, simple problems on locus.

2.3 Equation of straight line in various standard forms (without proof), inter section of two straight lines, angle between two lines. Parallel and perpendicular lines, perpendicular distance formula

2.4 General equation of a circle and its characteristics. To find the equation of a circle, given:

* Centre and radius
* Three points lying on it
* Coordinates of end points of a diameter;

3. **Integral Calculus** (24 hrs)

3.1 Integration as inverse operation of differentiation

3.2 Simple integration by substitution, by parts and by partial fractions (for linear factors only)

3.3 Applications of integration for :

a. Simple problem on evaluation of area bounded by a curve and axes.
b. Calculation of Volume of a solid formed by revolution of an area about axes. (Simple problems).
c. To calculate average and root mean square value of a function and

4. **Differential Equations** (08 hrs)

Solution of first order and first degree differential equation by variable separation method (simple problems)

RECOMMENDED BOOKS

1. *Elementary Engineering Mathematics by BS Grewal, Khanna Publishers, New Delhi.*
2. *Engineering Mathematics by Vol. I & II by S Kohli, IPH, Jalandhar*
3. *Applied Mathematics by Dr. RD Sharma*
4. *Applied Mathematics, Vol. I & II by SS Sabharwal & Sunita Jain, Eagle Parkashan, Jalandhar*
5. *Comprehensive Mathematics, Vol. I & II by Laxmi Publications*
6. *Engineering Mathematics by Dass Gupta*
7. *Engineering Mathematics by C Dass Chawla, Asian Publishers, New Delhi*
8. *Comprehensive Mathematics, Vol. I & II by Laxmi Publications*
9. *Engineering Mathematics, Vol I, II & III by V Sundaram et.al, Vikas Publishing House (P) Ltd., New Delhi*
10. *Engineering Mathematics by N.Ch.S.N Iyengar et.al, Vikas Publishing House (P) Ltd., New Delhi*
11. *Engineering Mathematics, Vol I & II by SS Sastry, Prentice Hall of India Pvt. Ltd.,*
12. *Engineering Mathematics, Vol I & II by AK Gupta, Macmillan India Ltd., New Delhi*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	12	25
2	20	25
3	24	40
4	08	10
Total	**64**	**100**

2.3 GRAPHIC PRESENTATION-II

L	T	P
-	-	6

RATIONALE

Graphic presentation forms a core subject for preparing perspective drawings, scale drawings, three dimensional views, furniture drawings and layouts. Therefore, this course aims at equipping the students with the skills of graphic presentation. Teachers are expected to lay considerable stress on practical work so that student attain desired competencies for preparing good quality perspectives of interior and exterior of buildings in different media. Teachers are also expected to stress upon appropriate line work, properties, dimensioning, lettering, printing, colour rendering techniques, shades/shadows and sciography.

DETAILED CONTENTS

Perspective Exercises on the following:

1. Fundamentals, dimension, fore shortening and convergence
2. Reality and appearance
3. Basis of perspective, cone of vision, central visual ray, picture plane, line of sight through picture plane, spectator — (10)

4. Principal aids of perspective, vanishing points eye level (2 sheets)
5. Study of cube in perspective.
6. Characteristics of perspective construction, determining vanishing points — (20)

7. Two-point perspective
8. Two-point perspective of a simple building with and without overhead roof
9. Perspective division of an area into areas of equal sizes
10. Two-point perspective of a simple house, dividing point method, perspective grid — (40)

11. Central perspective, frontal perspective, interior perspective, central perspective grid
12. Perspective drawing using short cut methods and dividing arc methods
13. Relationship between Station point (Spectator) picture plane and perspective; comparative study of perspective by changing position of station point from one side and in front of picture plane — (10)

14. The limits of exactness in perspective, distortion, limit of field vision. perspective on a curved surface
15. Shadows of plan, elevation and perspective, front lighting, side lighting, back-lighting, point-lighting from one light source, reflections in perspective — (10)

16. Three point perspective, Bird's eye-view
17. Shades and shadows of rounded bodies, shadow in a circular opening, shades and shadows of sphere and hollow sphere
18. Rendering of perspective in different mediums, ink, colour, charcoal, crayous
19. Free hand perspective views — (10)

2.4 BUILDING MATERIALS-II

L	T	P
3	-	-

RATIONALE

Diploma holders in Architectural Assistantship are supposed to prepare working drawings of buildings. Knowledge of building materials is very essential from the point of construction materials as well providing detailed specifications in the detailed drawings. Therefore, the course in building materials includes imparting basic knowledge in the properties and use of the important materials like; exterior and interior finishes, glass, plastics, building hardware, ceiling and roofing materials, additives and admixtures, adhesives etc.

Teachers are expected to demonstrate the samples of different materials, discuss their properties with particular reference to their use and appearance in particular situations depending upon climate and environmental conditions of the site where the materials are to be used. Students should be encouraged to collect samples of various materials and efforts should be made to maintain a good building material museum.

DETAILED CONTENTS

1. **Floor Finishes**:
   - 1.1 Terrazzo Tiles
   - 1.2 Glazed earthen and ceramic tiles
   - 1.3 CC Tiles
   - 1.4 Marble stone
   - 1.5 Kota stone
   - 1.6 Linoleum
   - 1.7 Rubber
   - 1.8 Cast iron grid

   Their sizes, availability and uses (15)

2. **Wall Finishes:**
   - 2.1 Wall board homogeneous
   - 2.2 Laminated fibers
   - 2.3 Polystyrene wall tiles
   - 2.4 Plastic wall tiles
   - 2.5 Wall papers
   - 2.6 Cork sheets and tiles
   - 2.7 Thermocoles
   - 2.8 Foam rubber tiles and rolls
   - 2.9 Glow Walls. (10)

3. **Ceiling Materials**:
   - 3.1 Hession cloth
   - 3.2 Gypsum plaster boards
   - 3.3 Plain a.c. sheets
   - 3.4 Plywood
   - 3.5 Hard Board
   - 3.6 Cellotex
   - 3.7 Fibre Boards
   - 3.8 Glass Roof tiles
   - 3.9 Asbestos tiles
   - 3.10 Thermofriz

   Their trade names, availability, sizes and uses (10)

4. **Building Hardware:**

Tower bolts
Hinger
Door Handles
Fan-light catches
Door springs
Latches
Floor door stopper
Fan light pivots
Mortice lock
Door closer
Ventilator chains
Wire gauze

Their sizes, materials and uses as per BIS (15)

5. **Glass :**

Sheet glass
Wired glass
Laminated safety glass
Plate glass
Insulating glass
Obscured glass
Coloured glass
Tinted glass
Heat absorbing glass
Glass blocks
Glazing putty

Their sizes and uses. (10)

6. **Roofing Materials:**

Asbestos sheets
GI sheets

Their standard sizes and uses (10)

7. **Additives and Admixtures:-**

7.1 Water repellants
7.2 Accelerators
7.3 Air entraining agents
7.4 Hardness
7.5 Workability increasing agents
7.6 Fly ash

Their availability and uses (10)

8. **Adhesives:**

8.1 Synthetic resins

Their trade names and uses (10)

9. **Steel:**
   - 9.1 Mild Steel
   - 9.2 Medium Tensile Steel
   - 9.3 Hard drawn steel wire
   - 9.4 Deformed steel their properties and uses

   (10)

10. Aluminum: Its properties and uses

Note:- *Students may be exposed to the latest material available in the market- survey to be conducted for comparative study for quality and cost basis.*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	7	15
2	4	10
3	5	10
4	7	15
5	5	10
6	5	10
7	5	10
8	5	10
9-10	5	10
Total	**48**	**100**

2.5 BUILDING CONSTRUCTION-I

L T P
1 - 6

RATIONALE:-

Students of Architectural Assistantship at diploma level are supposed to prepare structural drawings, working drawings and detailed drawings of various components of buildings. Also students are expected to design small residential buildings. For this purpose, it is essential that students are taught various components of building construction comprising of: foundations, super structure, openings, roofs, staircases, flooring and finishing and other allied building components.

Therefore, the subject of building construction is very important for students undergoing diploma course in Architectural Assistantship.

Teachers while imparting instructions are expected to show various components of buildings under construction, make use of models or other audio-visual media to clarify the concepts. While preparing drawings, teachers should lay considerable stress on proportioning, dimensioning, specification writing and printing and composition of drawing work. Teachers should also emphasis on environmental aspects like lighting, ventilation and orientation of buildings. Students should be asked to maintain a sketch book for recording the observations from site visits. While conducting viva, teachers should point out specific mistakes done by students in the preparation of drawings.

DETAILED CONTENTS

Theory

1. **Brick Work and Stone Work**
   - 1.1 Different sizes and types of bricks
   - 1.2 Wall thickness, T-junctions, cross junction and bonds
   - 1.3 Brick jalies
   - 1.4 Stone facings and claddings and classification of masonry **(30)**
2. **Openings in walls**
   - 2.1 Classification of arches as per finish, shape and material
   - 2.2 Classification of lintels of different materials, precast and cast-in-situ **(20)**
3. **Damp Proof Course: (DPC)**
   - 3.1 Sources of dampness and effects of dampness
   - 3.2 Classification as per hardness or rigidity of material
   - 3.3 Treatment of building components for effective damp proofing **(20)**
4. **Foundations:**
   - 4.1 Different types of foundations with reference to advantage of one over the other
   - 4.2 Foundations of different types with reference to method of construction.
   - 4.3 Foundations for special circumstance **(30)**

NOTE: *Field visits should be organized to clarify concepts*

Practical

Drawing Work

1. Drawing of different shapes and sizes of bricks.
2. Drawings of different bonds wall thickness 10,20,30,40 Cm thick, T-junctions, cross junction Brick work and jalies Simple Brick Jali and RCC Jali.
3. Drawings of lintels and arches of various materials .
4. Drawing of spread foundation and application of DPC on spread foundation and basements.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	35	30
2	21	20
3	21	20
4	35	30
Total	**112**	**100**

2.6 THEORY OF DESIGN

L T P
3 - -

RATIONALE

Students of Architectural Assistantship at diploma level are supposed to understand basic principles of theory of design while designing some building. All students should know the physical aspects of Architecture like: form, function, balance, light and shadow, shape, plane, volume, line, proportions, rythem, texture, emphasis, contrast, colour and other related elements.

Therefore, the subject of theory of design is very important for students undergoing diploma course in Architectural Assistantship because it is the basis of Architecture.

Teachers while imparting instructions are expected to teach various elements used in designing buildings. Teachers may make use of models and audio-visual aids to clarify the concepts. Group discussions and seminars may also be organized to discuss various concepts and principles involved in the design. It is recommended that teachers may organize visits to work sites to clarify the concepts and principles involved.

DETAILED CONTENTS

Theory of Design: Definitions, examples and applications of the following:

1. **Primary elements of design:**
   - 1.1 Point
   - 1.2 Line
   - 1.3 Figure
   - 1.4 Plane (10)
2. **Design elements:**
   - 2.1 Composition (20)
     - 2.1.1 Shape
     - 2.1.2 Size
     - 2.1.3 Form
     - 2.1.4 Function
   - 2.2 Balance (10)
     - 2.2.1 Symmetry and stability
     - 2.2.2 Formal balance and informal balance
   - 2.3 Texture (10)
     - 2.3.1 Surface Quality
     - 2.3.2 Light, structure, pattern
   - 2.4 Pattern (5)
   - 2.5 Contrast (5)
     - 2.5.1 Light and Shade
     - 2.5.2 Nature and man made
   - 2.6 Rythem and movement (5)
     - 2.6.1 Rythem in nature
   - 2.7 Proportion (5)
   - 2.8 Scale (10)
     - 2.8.1 Monumental Scale
     - 2.8.2 Human Scale
     - 2.8.3 Intimate Scale
   - 2.9 Emphasis (5)
   - 2.10 Colour
     - 2.10.1 Effect of colour on building
     - 2.10.2 Colour chart
     - 2.10.3 Colour variations (Contrasting colours) (10)
   - 2.11 Circulation (5)

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	4	10
2	44	90
Total	**48**	**100**

2.7 ARCHITECTURAL DESIGN-I

L	T	P
1	-	6

RATIONALE

Large percentage of diploma holders in Architectural Assistantship find employment with private architects and also majority of them go for self-employment. Therefore, diploma holders are required to design small residential and public buildings. This course aims at providing practical exercises in
designing so as to develop appropriate knowledge and skills in building design.
Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs. Teachers should also motivate students to maintain their sketch book in which they draw line sketches of different architectural styles.

DETAILED CONTENTS

1. Composition of sheet (5)
2. Problem of composition of lines (one exercise) , Problem on composition of various geometrical figures(square, triangle, circle, rectangle, pentagon etc.) in different tone of texture (two exercises). (10)
3. Preparation of plan and elevation from the models of various forms (composition of prisms, cubes, cylinders etc.)- (one exercise) (5)
4. Study of spaces required for different human activities(one sheet) (5)
5. Design studies in relation to furniture layout - (15)
   - 5.1 Living Area
   - 5.2 Dining Area
   - 5.3 Sleeping Area
   - 5.4 Study Area

   All studies to be made through plans.
6. Design studies of combination of above areas under fixed roofs:
   - 6.1 Living, dining and kitchen
   - 6.2 Study, bedroom and toilet

   All studies to be made through plans (10)
7. Design of one room house on ground floor
   - 7.1 Circulation analysis
   - 7.2 Presentation Drawing
     - 7.2.1 Plan
     - 7.2.2 Elevation
     - 7.2.3 Section
     - 7.2.4 Isometric View (50)

*__Note:__ *Students may encouraged to prepare a paper mode of various geometrical figure.*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	5	5
2	12	10
3	5	5
4	5	5
5	20	15
6	12	10
7	53	50
Total	**112**	**100**

3.1 BUILDING CONSTRUCTION -II

L T P
1 - 6

RATIONALE

Students of architectural Assistantship at diploma level are supposed to prepare structural drawings, working drawings and detailed drawings of various components of buildings. Also students are expected to design small residential buildings. For this purpose, it is essential that students are taught various components of building construction comprising of: foundations, super structure, openings, roofs, staircases, flooring and finishing and other allied building components.

Therefore, the subject of building construction is very important for students undergoing diploma course in Architectural Assistantship.

Teachers while imparting instructions are expected to show various components of buildings under construction, make use of models or other audio-visual media to clarify the concepts. While preparing drawings, teachers should lay considerable stress on proportioning, dimensioning, specification writing and printing and composition of drawing work. Teachers should also emphasis on environmental aspects like lighting, ventilation and orientation of buildings. Students should be asked to maintain a sketch book for recording the observations from site visits.
While conducting viva, teachers should point out specific mistakes done by students in the preparation of drawings.

DETAILED CONTENTS

Theory		Practical
1.	**Doors and Windows**	
1.1	Definitions, functions, sizes, location and classification	1. Drawing of different types of doors showing joints and fixtures paneled fully glazed flush door. (4 Drawing)
1.2	Joints 42 Hrs.	2. Drawing of different types of wooden windows SHASH Window Casement with flimeshsh. (1 Drawing)
2.	**Flooring**	3. Single timber floor. (2 Drawing)
2.1	Constituents and types of floorings for ground and upper floors	4. Stone slab and cast-in- situ floorings. (1 Drawing)
2.2	Timber floors-Sketches of Double triple joint	5. Drawing showing details of floor finishings. (1 Drawing)
2.3	Steel joist and RCC floors	6. Drawing a dog legged wooden staircase (1 Drawing)
2.4	Floor finishes 20Hrs.	7. RCC staircase cast at site and also precast (1 Drawing)
3.	**Staircases and Ramps:**	8. Drawing details of fixing and layout of AC, GI sheets, slates, tiles and locally available materials. (1 Drawing)
3.1	Definition and types of staircases as per nomenclature	9. Drawing of king post and queen post trusses along with their constructional details. (2 Drawing)
3.2	Staircases of different materials	
3.3	Relation between different components	
3.4	Definitions, purpose, slopes, types of ramps 20Hrs.	
*4.	**Roof and Roof Coverings**	
4.1	Pitch roof and terms related to roof.	
4.2	Types of timber roofs	
4.3	Single lean roof	
4.4	Double coller roof	
4.5	King post and queen post trusses (*Only Introductory) 30 Hrs.	

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	42	40
2	20	15
3	20	15
4	30	20
Total	**112**	**100**

3.2 HISTORY OF ARCHITECTURE-I

L T P
3 - -

RATIONALE

Students of architectural Assistantship at diploma level must be well conversant with the skills of preparing working drawings and vocabulary in architecture. The students, therefore, must have broad exposure to communicate and understand the vocabulary and terminology in the field of architecture. The course on History of Architecture develops appreciation regarding past and current trends in the field of architecture. The knowledge of this course will help the students to understand how the new technology and new materials influence the general trend in architecture and also the effect of society on architecture. The course covers broad topics like: important civilization (Indian, Egyptian, Greek and Roman), temple architecture in India, Buddhist Architecture, Islamic Architecture, Renaissance and modern Architecture in Europe and India.

The teacher should try to create interest among the students for this course by organizing site visits to the local old monuments. Use of audio-visual aids can also be made to explain various architectural developments. While imparting instructions, teachers should emphasis on materials, construction methods, structural system and design concepts involved.

The teacher should motivate the students to take general references from the history while designing their project.

DETAILED CONTENTS

1. **Evolution of Civilization with special reference to:**
   - 1.1 Man and his needs with reference to shelter
   - 1.2 Man and culture
   - 1.3 Society and culture
   - 1.4 Effects of changing environments - Geographical, Biological
   - 1.5 Social groups, societies and civilizations
   - 1.6 Culture and its development in the following fields - religion, societies, economic, political, intellectual, military
   - 1.7 Study Indus valley
   - 1.8 Causes of rise and fall of civilizations
   - 1.9 Planning development of Indus valley civilization
2. **Buddhist Architecture in India:**
   - 2.1 Historical, economical, social and geographical background
   - 2.2 Emphasis on siting, concept plans, elevations and sections, materials and construction methods
   - 2.3 Building types - chaitya-hall, stupa, stambh, torans and Viharals
   - 2.4 Large scale drawings of details used in Buddhist Architecture
3. **Temple Architecture in India**:
   - 3.1 Introduction to Temple Architecture in India: Development of Temple Architecture Alhole , Badomi puttaddakol evaluation development of temple Architecture.
   - 3.2 Dravidian Style
     - 3.2.1 Emphasis on evolution period of temple Architecture sitting concept plans, elevations, sections, materials and construction method.

3.2.2 Area of studies -
(1) Pallava (AD-600to 900)
(2) Chola (900 - 1150) A D.
(3) Pandya (1100 - 1350) A D.
(4) Vijaynagar (1350 - 1565)
(5) Madurai (1600) A D.

3.2.3 Development of Two order of temple Architecture in India special reference to papanath temple and virupleasha temple.

3.2.4 Effect of the Building Techniques on the buddish architecture.

3.3 Indo Aryan Style or North Indian Style

3.3.1 Emphasis on evolution, siting layout concepts of plans, elevations and sections, materials and construction methods.

3.3.2 Areas of study: Khajuraho, Orissa

4. Architecture character in respect of orders development of church plan(Basilican) construction method and general architect(St. Peter)

PRACTICAL

1. Sketch drawings of local old monument building, showing elevation, sections and various related details.
2. Preparation of sketch drawings of the various important details, used in the temples of different periods. Such as details of columns, cornics, balusters, chajjas etc.

Recommended Books:-

1. *Urban Pattern*
2. *Great Ages of world Architecture By G.K Hiraskar*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	14	30
2	12	25
3	14	30
4	8	15
Total	**48**	**100**

3.3 ARCHITECTURAL DESIGN-II

L	T	P
1	-	6

RATIONALE

Large percentage of diploma holders in Architectural Assistantship find employment with private architects and also majority of them go for self-employment. Therefore, diploma holders are required to design small residential and public buildings. This course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design.

Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs. Teachers should also motivate students to maintain their sketch book in which they draw line sketches of different architectural styles.

DETAILED CONTENTS

1. **Study of spaces and layout of furniture of various activities in small structure comprising public utilities like**
   - 1.1 Fuel Station
   - 1.2 Milk bar
   - 1.3 Florist Kiosk
   - 1.4 Guard Home

   32 Hrs.

2. **Design of three bed room house (with access to terrace).**
   - 2.1 Study Report
     - 2.1.1 Case study of existing building types
     - 2.1.2 Study of site
     - 2.1.3 Analysis of requirement and respective areas
     - 2.1.4 Circulation analysis
   - 2.2 Presentation Drawings
     - 2.2.1 Plans
     - 2.2.2 Elevations
     - 2.2.3 Sections
     - 2.2.4 Perspective View
   - 2.3 Study Tour and its report — 80 Hrs.

3. Time Problem: Furniture Layout and section that given mono functional space such as café, nursery, class room. Etc. *16 Hrs.*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	32	20
2	80	80
3	16	-
Total	**128**	**100**

3.4 SURVEYING

L T P
2 - 4

RATIONALE

Students of Architectural Assistantship at diploma level are expected to manage the site which involves taking measurements, surveying and inspection. Also the students are expected to align the columns and give levels and slope for flooring. Therefore, basic knowledge and skills of surveying including chain surveying, compass surveying, plane tabling, leveling, contouring is very essential. Hence this course. Teachers while imparting instructions are expected to explain various concepts and principles by showing various equipment and demonstration thereof. Considerable stress should be given on the use of survey equipment.

DETAILED CONTENTS

1. **Surveying:**
   1.1 Definition, objects and its types 2 Hrs.

2. **Compass Surveying:**
   2.1 Prismatic compass, Surveyor's compass, Bearings of lines, angle measurements, magnetic and true bearings, local attraction, its detection and elimination, methods of plotting compass survey traverse; their merits and demerits; adjustment of closing errors by graphical methods. Finding true north by Sun' shadow, errors in compass survey and how to avoid it advantages and disadvantages of compass survey 8 Hrs.

3. **Plane Tabling:**
   3.1 Equipment and accessories
   3.2 Setting of a plane table at a station point
   3.3 Methods of plane-tabling - traversing, intersections, radiation and resections and situations where each is used
   3.4 Finding the station point by two-point method
   3.5 Three point problem and its solutions by:
      i) Triangle of Error method
      ii) Tracing Paper
      iii) Graphical method
   3.6 Advantages and disadvantages of plane tabling 6 Hrs.

4. **Leveling:**
   4.1 Definition of leveling and terms used in leveling
   4.2 Types of leveling
   4.3 Parts of a dumpy level
   4.4 Temporary adjustment of a dumpy level and setting up a level
   4.5 Types of leveling staff
   4.6 Reducing levels by rise and fall method
   4.7 Reducing levels by height of collimation method 6 Hrs.

5. **Contouring:**
   5.1 Explanation of terms in contouring
   5.2 Characteristics of contours
   5.3 Uses of contours

5.4 Methods of contouring and their plotting
5.5 Interpolation of contours 8 Hrs.

6. Introduction to theodolite and its uses. 2 Hrs.

PRACTICAL

1. **Leveling**
   - 1.1 Study of dumpy Level and leveling staff
   - 1.2 Temporary adjustment of a dumpy level
   - 1.3 Taking staff readings on different stations from the single setting and finding difference of level between them. .
   - 1.4 Study of I.O.P. level
   - 1.5 Temporary adjustment of I.O.P. level
   - 1.6 Taking staff readings on different stations from the single setting and finding difference of level between them.
   - 1.7 Find the difference level between two distant points 30 Hrs.
2. **Contouring**
   - 2.1 Preparing contour plan by radial line method by the use of Tangent Clinometers/by taking students to an appropriate site.
   - 2.2 Preparing a contour plan by method of squares by taking students to appropriate site.
   - 2.3 Using a planimeter 18 Hrs.
3. **Plane Tabling**
   - 3.1 To study plane table survey equipment
   - 3.2 To set a plane table on a station point
   - 3.3 To make the north directions
   - 3.4 Plotting a few points by radiation method .
   - 3.5 To orient the plane-table by:
     - a. Through Compass
     - b. Back-sighting
   - 3.6 Plotting a few points by intersection method 16Hrs.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)		Marks Allotted (%)
	Theory	Practical	
1	2	30	13
2	8	18	20
3	6	16	20
4	6	-	20
5	8	-	15
6	2	-	12
Total	32	64	**100**

3.5 BUILDING SERVICES

L T P
3 - -

RATIONALE

Students of Architectural Assistantship at diploma level are expected to prepare working drawings of various fittings and fixtures and water supply and sanitary installations. Also students should be well conversant with electrical and mechanical installations in the buildings. For this purpose, it is essential that the students are taught various aspects of building services like: sanitary installations, house drainage, domestic water supply, fittings and fixtures and electrical lay out and fittings. Therefore, the subject of building services is very important for students undergoing diploma courses in Architectural Assistantship.

Teachers while imparting instructions are expected to show various fixtures and fittings, water supply and sanitary installations at work sites or by making use of literature, models, charts and other audio-visual aids so that students are able to comprehend the hardware used. Teacher should specifically point out problem areas and other environmental considerations while teaching this subject.

DETAILED CONTENTS

1. **Sanitation:**
   - 1.1 Glossary of drainage terms
   - 1.2 Surface drainage
   - 1.3 Systems of drainage
     - 1.3.1 Combined and separate systems
     - 1.3.2 Open drains in small towns
     - 1.3.3 Shape of street drains
   - 1.4 Size of sewers for different systems
   - 1.5 Storm overflow
   - 1.6 Self cleaning velocities
   - 1.7 Domestic drains, flushing of drains and sewers
   - 1.7.1 Standard type of drains
   - 1.7.2 RC drain sewers
   - 1.7.3 Earthenware pipes, cement concrete pipes, asbestos cement pipes, cast iron pipes and test of pipes

14Hrs.

2**. Manholes:**
   - 2.1 Spacing of manholes
   - 2.2 Sizes of manholes
   - 2.3 Manhole covers
   - 2.4 Ventilation of sewers

4 Hrs.

3. **House Drainage:**
   - 3.1 Trap type, materials and functions
   - 3.2 Inspection chambers
   - 3.3 Ventilation of house drains
   - 3.4 Intercepting traps, gully traps, grease traps
   - 3.5 Anti-syphonage or vent pipes
   - 3.6 One and two pipe systems
   - 3.7 Sinks, baths, water closets, flushing cisterns, urinals, lavatory basins
   - 3.8 Sizes of pipes and taps for house drainage

3.9 Testing drainage pipes for leakage, smoke list, water test
3.10 CI pipes for soil disposal and rain water drainage
3.11 Wrought iron, steel and brass pipes 6 Hrs.

4. **Plumbing and Internal Fixtures:**
   4.1 Joints for various types of pipes
   4.2 Sanitary fitting standards for public conveniences
   4.3 Septic tanks and seepage pits, soak pits
   4.4 Showing drainage system in the Building Drawing

4Hrs.

5. **Domestic Water Supply:**
   5.1 Consumption or demand of water for domestic purposes
   5.2 Leakage and wastage of water and its preventive measures
   5.3 Different methods of water distribution, boosting water, gravity and pressure distribution by storage tanks
   5.4 Service connection from mains
   5.5 House-service design
   5.6 steel, wrought iron, galvanized lead, copper, cement concrete and asbestos pipes, PVC pipes, DPR, Kokchent
   5.7 Showing water supply system in Drawing.

6 Hrs.

6**. Electrical Layouts and Fittings for Buildings:**
   6.1 Light and fans
   6.2 Candle power
   6.3 Human
   6.4 Food Candle
   6.5 Reflection factor
   6.6 Mercury lamps
   6.7 Electric lamps
   6.8 Tubular fluorescent lamps
   6.9 Fluorescent mercury lamps
   6.10 Thumb rule of calculating of illumination level
   6.11 Various systems of wiring and their suitability
   6.12 Maximum interval between poles, distribution boards
   6.13 Precautions to avoid electrical accidents
   6.14 Fire caused by electricity and fire fighting provisions
   6.15 Drawing of electrical layout plans
   6.16 Showing Electrical layout in Drawings.

6 Hrs.

7. **Introduction to Air-conditioning and Ventilation**
   7.1 Elementary principles of air conditioning and layouts for domestic buildings
   7.2 Air charges and temperatures
   7.3 Earthing of building
   7.4 Ventilation principles
   7.5 General principles of ducting and distribution
   7.6 Package units, window units, air cooling and exhaust fans

4 Hrs.

8. Drawing of Sanitary fitting and electrical, water Supply with showing fixture

4 Hrs.

Recommended Books:-

1. *Building services by Deshpande*
2. *Advanced Building Construction – Mitchell*
3. *Drainage and Sanitation*
4. *Modern Construction services Vol. I, II, III, IV and V by Richardson*
5. *Environment and services by Peter Burberry*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	14	30
2	4	10
3	6	10
4	4	10
5	6	10
6	6	20
7	4	5
8	4	5
Total	**48**	**100**

3.6 WORKING DRAWING-I

L T P
- - 6

RATIONALE

Preparation of working drawings and detailing forms the most important activities of diploma holders in Architectural Assistantship. Students are expected to develop mastery of skills in preparing working drawings of different building components and their detailing. Therefore, the courses in working drawing and detailing is very important.

Teachers while imparting instructions are expected to show various components of building under construction by organizing field visits or use models and other audio-visual media to clarify the concepts involved in preparing working drawings.

Teachers are expected to lay considerable stress on proportioning, dimensioning, specification writing, lettering and composition of drawing work whilst supervising students.

Teachers should also take into consideration environmental aspects while teaching preparation of working drawings.

DETAILED CONTENTS

Preparation of working drawings for a simple single story residential building:

1. Showing working dimensions system — 1 Sheet
   - 1.1 Centre Line
   - 1.2 Three line
   - 1.3 Four line
2. Site plan — 1 Sheet
3. Foundation plan with sectional details — 1 Sheet
4. Ground floor plan — 1 Sheet
5. Terrace floor plan — 1 Sheet
6. Sections-cross and longitudinal — 1 Sheet
7. Elevations - front and rear — 1 Sheet
8. Door and window detail — 1 Sheet
9. Entrance door design and details — 1 Sheet
10. Design and detailing of flooring — 1 Sheet

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1,2	08	5
3	08	10
4,5	30	35
6,7	30	25
8,9	15	20
10	05	5
Total	**96**	**100**

3.7 BASIC OF COMPUTER APPLICATION

L	T	P
-	-	4

RATIONALE

Information technology has great influence on all aspects of life. Almost all work places and living environment are being computerized. In order to prepare diploma holders to work in these environments, it is essential that they are exposed to various aspects of information technology such as understanding the concept of information technology and its scope; operating a computer; use of various tools of MS office; using internet etc. form the broad competency profile of diploma holders. This exposure will enable the students to enter their professions with confidence, live in a harmonious way and contribute to the productivity.

Note:

1. *There will be no theory examination.*
2. *Explanation of Introductory part should be dovetailed with practical work so that following topics may be explained in the laboratory along with the practical exercises.*

DETAILED CONTENTS

(1) Information Technology – its concept and scope
(2) Computers for information storage, information seeking, information processing and information transmission
(3) Elements of computer system, computer hardware and software; data – numeric data, alpha numeric data; contents of a program, processing
(4) Computer organization, block diagram of a computer, CPU, memory
(5) Input devices; keyboard, Scanner, mouse etc; output devices; VDU and Printer, Plotter
(6) Electrical requirements, inter-connections between units, connectors and cables
(7) Secondary storage; magnetic disks – tracks and sectors, optical disk (CD, CD-RW and DVD Memory), primary and secondary memory: RAM, ROM, PROM etc., Capacity; device controllers, serial port, parallel port, system bus
(8) Installation concept and precautions to be observed while installing the system and software
(9) Introduction about Operating Systems such as Windows, Windows NT etc.
(10) About the internet – server types, connectivity (TCP/IP, shell); applications of internet like: e-mail and browsing
(11) Various Browsers like WWW (World wide web

LIST OF PRACTICALS

1. Given a PC, name its various components and list their functions
2. Identification of various parts of a computer and peripherals
3. Practice in installing a computer system by giving connection and loading the system software and application software
4. Installation of DOS and simple exercises on TYPE, REN, DEL, CD, MD, COPY, TREE, BACKUP commands
5. Exercises on entering text and data (Typing Practice)
6. Installation of Windows 98 or 2000 or NT or XP.
   (1) Features of Windows as an operating system
   - Start
   - Shutdown and restore
   - Creating and operating on the icons
   - Opening closing and sizing the windows
   - Using elementary job commands like – creating, saving, modifying, renaming, finding and deleting a file
   - Creating and operating on a folder
   - Changing setting like, date, time color (back ground and fore ground)
   - Using short cuts
   - Using on line help

7. MS-Word

- File Management:
  Opening, creating and saving a document, locating files, copying contents in some different file(s), protecting files, Giving password protection for a file
- Page Set up:
  Setting margins, tab setting, ruler, indenting
- Editing a document:
  Entering text, Cut, copy, paste using tool- bars
- Formatting a document:
  Using different fonts, changing font size and colour, changing the appearance through bold/ italic/ underlined, highlighting a text, changing case, using subscript and superscript, using different underline methods
- Aligning of text in a document, justification of document ,Inserting bullets and numbering
- Formatting paragraph, inserting page breaks and column breaks, line spacing
- Use of headers, footers: Inserting footnote, end note, use of comments
- Inserting date, time, special symbols, importing graphic images, drawing tools
- Tables and Borders:
  Creating a table, formatting cells, use of different border styles, shading in tables, merging of cells, partition of cells, inserting and deleting a row in a table
- Print preview, zoom, page set up, printing options
- Using Find, Replace options
- Using Tools like:
  Spell checker, help, use of macros, mail merge, thesaurus word content and statistics, printing envelops and lables

- Using shapes and drawing toolbar,
- Working with more than one window in MS Word,
- How to change the version of the document from one window OS to another
- Conversion between different text editors, software and MS word

8. **MS-Excel**
   - Starting excel, open worksheet, enter, edit, data, formulae to calculate values, format data, create chart, printing chart, save worksheet, switching between different spread sheets
   - Menu commands: Create, format charts, organise, manage data, solving problem by analyzing data, exchange with other applications. Programming with MS-Excel, getting information while working
   - Work books: Managing workbooks (create, open, close, save), working in work books, selecting the cells, choosing commands, data entry techniques, formula creation and links, controlling calculations, working with arrays
   - Editing a worksheet, copying, moving cells, pasting, inserting, deletion cells, rows, columns, find and replace text, numbers of cells, formatting worksheet
   - Creating a chart: Working with chart types, changing data in chart, formatting a chart, use chart to analyze data
   - Using a list to organize data, sorting and filtering data in list
   - Retrieve data with MS – query: Create a pivot table, customising a pivot table. Statistical analysis of data
   - Exchange data with other application: embedding objects, linking to other applications, import, export document.

9. **MS PowerPoint**
   a) Introduction to Powerpoint
      - How to start Powerpoint
      - Working environment: concept of toolbars, slide layout, templates etc.
      - Opening a new/existing presentation
      - Different views for viewing slides in a presentation: normal, slide sorter etc.

   b) Addition, deletion and saving of slides

   c) Insertion of multimedia elements
      - Adding text boxes
      - Adding/importing pictures
      - Adding movies and sound
      - Adding tables and charts etc.
      - Adding organisational chart

   d) Formatting slides
      - Using slide master
      - Text formatting
      - Changing slide layout
      - Changing slide colour scheme
      - Changing background
      - Applying design template

   e) How to view the slide show?

- Viewing the presentation using slide navigator
- Slide transition
- Animation effects etc.

10. **Internet and its Applications**
    a) Log-in to internet
    b) Navigation for information seeking on internet
    c) Browsing and down loading of information from internet
    d) Sending and receiving e-mail
        - Creating a message
        - Creating an address book
        - Attaching a file with e-mail message
        - Receiving a message
        - Deleting a message

RECOMMENDED BOOKS

1. *Fundamentals of Computer by V Rajaraman; Prentice Hall of India Pvt. Ltd., New Delhi*
2. *Computers Today by SK Basandara, Galgotia publication Pvt ltd. Daryaganj, New Delhi.*
3. *MS-Office 2000 for Everyone by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., New Delhi*
4. *Internet for Every One by Alexis Leon and Mathews Leon; Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi*
5. *A First Course in Computer by Sanjay Saxena; Vikas Publishing House Pvt. Ltd., Jungpura,New Delhi*
6. *Mastering Windows 95, BPB Publication, New Delhi*
7. *Computer Fundamentals by PK Sinha; BPB Publication, New Delhi*
8. *Fundamentals of Information Technology by Leon and Leon;Vikas Publishing House Pvt. Ltd., Jungpura, New Delhi*
9. *On Your Marks - Net…Set…Go… Surviving in an e-world by Anushka Wirasinha, Prentice Hall of India Pvt. Ltd., New Delhi*
10. *Learning MS Office XP by Ramesh Bangia, Khanna Book Publishing Co. (P) Ltd., New Delhi.*
11. *Fundamentals of Information Technology by Vipin Arora, Eagle Parkashan, Jalandhar*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1-6	14	5*6=30
7	12	15
8	12	15
9	10	15
10	10	15
10	6	10
Total	**64**	**100**

4.1 CLIMATOLOGY, ENVIRONMENT AND ECOLOGY

L T P
3 - -

RATIONALE

Understanding of the basic principles of climatology and environment are very important for diploma holders in Architectural Assistantship. The knowledge of this subject will be very useful in the design of buildings. Teachers are expected to impart instructions of the above course keeping in view the effect of above course in the design of buildings

DETAILED CONTENTS

1. **Earth & Global Climate**:
   - 1.1 Introduction to Climatology
   - 1.2 Form of earth & structure of earth
   - 1.3 Movement of earth around Sun
   - 1.4 Elements of climate(wind, temperature, humidity
   - 1.5 Different climatic zone. (16 Hrs)
2. **Relationship of climate & comfort:**
   - 2.1 Effect of climate on man & shelter
   - 2.2 Macro-Microclimate effects
   - 2.3 Relation of climate elements to comfort
   - 2.4 Concept of comfort zone and Bio-climatic chart
   - 2.5 Criteria of site selection (12 Hrs)
3. **Building Protection devices & system:**
   - 3.1 Orientation of building
   - 3.2 Sun Charts(Sun Path diagram)
   - 3.3 Sun Protection Devices(horizontal & Vertical Louvers)
   - 3.4 Wind Protection Devices
   - 3.5 Introduction to use of Solar Energy in Construction
     - Objective of solar passive design
     - Passive Solar Heating System(direct gain, indirect & isolated gain) (12 Hrs)
4. **Environment and Ecology:**
   - 4.1 Basic elements and principles of ecology
   - 4.2 Conservation of energy, land forms and vegetation
   - 4.3 Sources of air and noise pollution and its effects and control
   - 4.4 Basic knowledge of landscaping
   - 4.5 Basic components of landscape/ecology
     - 4.5.1 Earth
     - 4.5.2 Water
     - 4.5.3 Stone

(08 Hrs)

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	16	30
2	12	25
3	12	25
4	08	20
Total	**48**	**100**

4.2 BUILDING CONSTRUCTION-III

L T P
1 - 6

RATIONALE

Students of architectural Assistantship at diploma level are supposed to prepare structural drawings, working drawings and detailed drawings of various components of buildings. Also students are expected to design small residential buildings. For this purpose, it is essential that students are taught various components of building construction comprising of: foundations, super structure, openings, roofs, staircases, flooring and finishing and other allied building components.

Therefore, the subject of building construction is very important for students undergoing diploma course in architectural Assistantship.

Teachers while imparting instructions are expected to show various components of buildings under construction, make use of models or other audio-visual media to clarify the concepts. While preparing drawings, teachers should lay considerable stress on proportioning, dimensioning, specification writing and printing and composition of drawing work. Teachers should also emphasis on environmental aspects like lighting, ventilation and orientation of buildings. Students should be asked to maintain a sketch book for recording the observations from site visits. While conducting viva, teachers should point out specific mistakes done by students in the preparation of drawings.

DETAILED CONTENTS

Theory

1. Steel Doors and Windows

1.1 Using standard rolled Sections.
1.2 Using rolled sections as frames and wooden shutters.
1.3 Rolling and collapsible shutter
1.4 Hanging details of different types.
1.5 Fly proof shutters
1.6 Window and doors using pre stressed sheets
1.7 Angle section, T, section of window/Door design. **5 Drawing**

2. Steel roofs

2.1 Line diagram of steel roofs for various spans.
2.2 Constructional details of steel roofs.
2.3 Roof covering: AC, GI sheets

4 Drawing

3. Finishing:

3.1 Plastering and pointing
3.2 Stone cladding and tile lining
3.3 Gravel and wash marble finish
3.4 Paneling and fibrous board finishes

1 Drawing

Practical

1. Drawing different types of doors using different Sections.
2. Drawing a sheet showing rolling and collapsible shutter.
3. Drawing a sheet showing different hanging details of windows using different rolled steel section.
4. Drawing and construction detail of AC and Sheet.
5. Drawing stone cladding (with marble and any other).
6. Drawing details of shuttering of columns, beams, slabs and Arches.

4. Form Work and Steel Work:-

Definitions of form work, shuttering and centring.

Form work for different structural members.

Bending of bars, formation of hooks and cranks.

Welded and riveted connections.

3 Drawing

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	36	30
2	34	30
3	10	10
4	32	30
Total	**112**	**100**

4.3 HISTORY OF ARCHITECTURE-II

L T P
3 - -

RATIONALE

Students of architectural Assistantship at diploma level must be well conversant with the skills of preparing working drawings and vocabulary in architecture. The students, therefore, must have broad exposure to communicate and understand the vocabulary and terminology in the field of architecture.

The course on History of Architecture develops appreciation regarding past and current trends in the field of Architecture. The knowledge of this course will help the students to understand how the new technology and new materials influence the general trend in architecture and also the effect of society on Architecture. The course covers broad topics like: important civilization (Indian, Egyptian, Greek and Roman), temple architecture in India, Buddhist Architecture, Islamic architecture, Renaissance and modern Architecture in Europe and India.

The teacher should try to create interest among the students for this course by organizing site visits to the local old monuments. Use of audio-visual aids can also be made to explain various architectural developments in history. While imparting instructions, teachers should emphasis on materials, construction methods, structural system and design concepts involved. The teacher should motivate the students to take general references from the history while designing their project.

DETAILED CONTENTS

1. **Islamic Architecture in India:**
   - 1.1 Imperial Style
   - 1.2 Slave Dynasty
   - 1.3 Khilji Dynasty
   - 1.4 Tuglak Dynasty
   - 1.5 Building Types to be studied

   Historical, economical, social, political and geographical background, effect of local elements on invading forces with special reference to building activity.
   NOTE: Students may be taken to different nearby monuments.
2. Provincial Architecture: Areas of study - Gujrat, Bijapur, Malwa, Mandu.
3. 3.1 Mughal Architecture: Rule of Humayun, Akbar, Jahangir, Shahjahan.
   3.2 Building types: Important tombs, mosques, palaces, gardens.
4. **Renaissance in Europe:**
   Influence of new construction The factors-social, economic, political and scientific that brought about Renaissance
   - its influence on architecture
5. Various modern movements in architecture caused by the works of pioneers The Bahans, Le Corbusier, F.L. Wright, Mics Vande Rohe, Walter Gropius
6. Modern Architecture in India covering the works of following Architects: Charles Correa, BV Doshi, Raj-Rewal, AD Raje, VC Jain.

PRACTICAL

1. Sketch drawings of the details used in the various architectural styles.

2. Sketch Drawing of old monument building, showing elevation, sections and various related details.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	16	30
2	6	10
3	3	10
4	5	5
5	12	5
6	6	40
Total	**48**	**100**

4.4 ARCHITECTURAL DESIGN-III

L	T	P
1	-	6

RATIONALE

Large percentage of diploma holders in Architectural Assistantship find employment with private Architects and also majority of them go for self-employment. Therefore, diploma holders are required to design small residential and public buildings. This course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design. Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs. Teachers should also motivate students to maintain their sketch book in which they draw line sketches of different architectural styles.

DETAILED CONTENTS

1. Study report on Vernacular Architecture:
   - 1.1 Local case study
     - 1.1.1 Social background
     - 1.1.2 Living pattern
     - 1.1.3 Planning and design study
     - 1.1.4 Building materials
     - 1.1.5 Construction methods
     - 1.1.6 Relevance to present time
     - 1.1.7 Report along with seminar

   Study Report along with sketches are to be prepared

2. Design of building involving two or more floors, split levels etc. The buildings can be like Nursing Home/School/ Public library, Cultural centre (Name of the building is only meant to give idea about size and scope of design)
   - 2.1 Study report
     - 2.1.1 Case study of existing building types, Study of site Analysis of requirement and respective areas Circulation Analysis
   - 2.2 Presentation Drawings
     - 2.2.1 Plans
     - 2.2.2 Elevations
     - 2.2.3 Sections
     - 2.2.4 Perspective View

3. Two days time limit sketch design of any small public building.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	28	20
2,3	84	80
Total	**112**	**100**

4.5 BUILDING BYE LAWS AND WORKING DRAWING- II

L	T	P
2	-	5

RATIONALE

In any architectural organization, diploma holders are expected to prepare the municipal drawings to get it sanctioned from the local development body. For this purpose, diploma holders in Architectural Assistantship must have the knowledge of the set of norms, rules and regulations and building bye-laws of the local body. Therefore, this course is essential to be taught to diploma holders.

DETAILED CONTENTS

1. **Building Bye Laws**:

   1.1 Study of Building bye laws (IS-1256 provision and definitions)
   1.2 Necessity of framing bye laws for urban development. Principles involved framing bye laws.
   - Study of local bye laws and local zoning plans as applied to buildings their effect on design of building Architect's act 1972 and land ceiling act (main Provision only)Preparation one set of municipal plan up to submission stage . Knowledge about all corporation forms.
   - Study of Revenue Paper
   - Town planning development and its zoning.

   1.3 Study of bye laws of any town.
   1.4 Forms being used for submission of drawing in Municipal Committee and town planning.

2. **Preparing Municipal Drawings:-**

   1.1 Calculating plot area and covered area permissible in each floor
   1.2 Preparing plans of different floors to the respective scale
   1.3 Preparing elevations on scale
   - Front elevation
   - Rear elevation
   - Side elevation if plot is three side open

   2.1 Preparing sections on scale
   - Section through staircase and mezzanine if any
   - Section through kitchen, toilet and basement if any

   2.2 Preparing site plans on scale
   - Site plan showing covered area, open area, service lane, front road. Main features of adjoining buildings 6 meters both ways, layout of sanitary pipes, rain water pipes.
   - Part layout plans owing surroundings plot in question WRT North

   2.3 Preparing Details
   - Foundation detail
   - Section of RCC Column if any
   - Schedule of doors and windows
   - Area chart

   2.4 Preparing the Drawing for submitting for approval, coloring it, along with revenue record such as Nakal , Jamabandi.
   2.5 Address of plot, as per sale deed
   - Signature and address of applicant(s)
   - Name and address and registration number of architect with signature

- Name and address of plumber
- Scales on which drawing is prepared and north point
- Detail specification and its importance on Drawing sheet.

2.6 Prints and Submission

- Five sets of prints of drawing prepared
- One set of prints cloth mounted
- All sets to be coloured as per BBL
- Obtain signatures of owner, architect and plumber
- Folding of prints as per file cover size
- Following documents and forms duly filled and signed to be enclosed with prints:

  - Notice to erect a building.
  - Notice to erect a building
  - General Specifications
  - Ownership and undertaking requirements under ULCR Act (1976)
  - Attested copy of a receipt for payment of building fee and stacking charges
  - Affidavit and undertaking requirements under ULCR Act (1976)
  - NOC from competent authority regarding land use as per master/zonal Plan
  - Approval from chief inspector of factories (for industrial building only)
  - Indemnity bonds in case of proposal for the construction of basement
  - Supervision certificate of architect

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	32	40
2	64	60
Total	**96**	**100**

4.6 THEORY OF STRUCTURES

L	T	P
3	-	-

RATIONALE

This is a fundamental course which covers broad elements of Applied Mechanics and Strength of Materials, which are prerequisites to structural design. This subject also develops analytical abilities and continued learning skills in the students. The course covers: force system, centre of gravity, moment of inertia, shear force and bending moments, simple stress and strain and theory of simple bending.

Teachers while imparting instructions should stress on concepts and principles and provide considerable practice in problem solving

DETAILED CONTENTS

1. **Resultant of force system and equilibrium:**
   - 1.1 Force-Definition, SI unites, types, system of forces, graphical representation.
   - 1.2 Resultant of concurrent forces, law of parallelogram, triangle law of forces, polygonal law of forces, resolution and addition of forces
   - 1.3 Moment of force - Statement of various theorems, resultant of non concurrent forces - parallel and non parallel forces. Problems on resultant of forces systems
   - 1.4 Equilibrium - Concept of equilibrium, equilibrium of two and more forces, conditions of equilibrium, graphical conditions of equilibrium, body constrains type of reaction provided by each constrain, free body diagram, problems on equilibrium.

2. **Centre of Gravity:**
   - 2.1 Centre of gravity by geometrical consideration for rectangular, triangle, semicircle.
   - 2.2 Centre of gravity of regular solids, cubes, spheres, semi spheres, right circular cones
   - 2.3 Centre of gravity by method of moments of area, mass or volume of regular figures, composite figures and regular figures with cut out holes

3. **Moment of Inertia:**
   - 3.1 Meaning of terms - second moment of area, radius of gyration of a section
   - 3.2 Theorem of parallel axis and perpendicular axis (statement only without proof)
   - 3.3 Second moment of regular figures - rectangle, triangle circle and annular sections (formulae only)

4. **Shear force and Bending moment:**
   - 4.1 Definition and concepts of S.F and B.M, calculations of reactions
   - 4.2 SF and BM diagrams for simply supported, overhanging, cantilever beams subjected to concentrated or uniformly distributed loads on entire or partial span.
   - 4.3 Calculation of position and magnitude of maximum shear force and bending moment, point of contra flexure

5. **Simple Stress and Strain:**
Concept and definitions, units, types of stresses, axial stresses in bars, strains Hooks law, tensile test on mild steel, working stress and factor of safety, temperature stresses in composite bars, problems on above

6. **Theory of Simple Bending:**
   - 6.1 Bending stresses, neutral axis
   - 6.2 Symmetrical and asymmetrical sections
   - 6.3 Assumptions in theory of bending
   - 6.4 Flexural formulae and their applications
   - 6.5 Shear stresses in beams

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	10	20
2	08	15
3	06	15
4	12	30
5	06	10
6	06	10
Total	**48**	**100**

4.7 MODEL MAKING

L T P
- - 3

RATIONAE

Student of Architectural Assistantship at diploma level are expected to assist in the preparation of architectural models of various kind in their professional career. This skill can also for basic of self-employment Architecture model as three dimensional representation are made in different mediums. The student should be acquainted with all of these mediums.

DETAILED CONTENTS

1. **Block Model of:**
   - 1.1 Wood
   - 1.2 Thermocol
   - 1.3 Cork
   - 1.4 Plaster of Paris

2. **Detailed Models in:**
   - 2.1 Paper sheets of various kinds
   - 2.2 Mount board
   - 2.3 Balsa wood
   - 2.4 acrylic sheets

3. **Site presentation:**
   - 3.1 Ground surfaces
   - 3.2 Hume vegetation vehicles

4. **Model of Details:**
   - 4.1 Jali details
   - 4.2 Grill details
   - 4.3 Gate details
   - 4.4 Railing details
   - 4.5 Block model of house
   - 4.6 Detail model

Exercise must be given from each section.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	8	25
2	8	25
3	8	25
4	8	25
Total	**32**	**100**

4.8 COMPUTER GRAPHICS - I

L	T	P
-	-	4

RATIONAE

In the present times an architectural assistant should be capable of drafting drawings on the computer as most of the architects lay greater stress on computerized drawings for their ease of drafting, editing, managing and presentation. At the end of the course the students should be able to make 2-D architectural drawings for presentation and construction purposes. The student should get familiar with the latest CAD software.

DETAILED CONTENTS

Note: *Relevant theory may be taught along with practical exercises in each topic.*

1. **Introduction to 2-D CAD**
   - 1.1 Graphics
   - 1.2 Starting AutoCAD
   - 1.3 Inside the drawing editor
   - 1.4 Commands in the menus (Tool bars)
   - 1.5 Accessing Commands
   - 1.6 Entity selection
   - 1.7 Entering coordinates
   - 1.8 Folders for organizing drawings and files

   Exercise: Creating folders and sub folders

2. **Creating and Saving a new Drawing**
   - 2.1 Commands and options to create new drawings
   - 2.2 Units
   - 2.3 Limits
   - 2.4 Snap
   - 2.5 Grid
   - 2.6 Ortho
   - 2.7 Layer
   - 2.8 Application of layers
   - 2.9 Open a new, existing drawing
   - 2.10 Save, save as, quit, close, exit

   Exercise: Setting up a new drawing with units, limits etc

3. **Drawing Commands**
   - 3.1 Commands and options to create new drawings
   - 3.2 Units
   - 3.3 Limits
   - 3.4 Snap
   - 3.5 Grid
   - 3.6 Ortho
   - 3.7 Layer
   - 3.8 Application of layers
   - 3.9 Open a new, existing drawing
   - 3.10 Save, save as, quit, close, exit

   Exercise: Setting up a new drawing with units, limits etc

4. **Viewing an Existing Drawing**
   - 4.1 Zoom
   - 4.2 Pan
   - 4.3 Redraw and Regen all
   - 4.4 Regen Auto
   - 4.5 View

   Exercise: Viewing, zooming of existing drawing made in section 3.

5. **Modifying an Existing Drawing**
   - 5.1 Undo Redo/Oops
   - 5.2 rim
   - 5.3 .Move
   - 5.4 Offset
   - 5.5 Rotate
   - 5.6 Array
   - 5.7 Stretch
   - 5.8 Divide
   - 5.9 Champher
   - 5.10 Erase
   - 5.11 Break
   - 5.12 Copy, multiple copy
   - 5.13 Mirror (Mirror test)
   - 5.14 Change (change properties)
   - 5.15 Extend
   - 5.16 Explode
   - 5.17 Blip mode
   - 5.18 Scale
   - 5.19 Fillet

   Exercise: a) Modifying composition made in section 3
   b) Making plan, elevation and section of simple building

6. **Making & Inserting Blocks**
   - 6.1 Blocks
   - 6.2 Insert block
   - 6.3 Base
   - 6.4 Using library for blocks
   - 6.5 W-block
   - 6.6 X-ref
   - 6.7 Explode

   Exercise:- Inserting furniture, fixtures, trees etc. in the plans, sections and elevations made in section 5.

5.1 BUILDING CONSTRUCTION-IV

L T P
1 - 6

RATIONALE

Students of architectural Assistantship at diploma level are supposed to prepare structural drawings, working drawings and detailed drawings of various components of buildings. Also students are expected to design small residential buildings. For this purpose, it is essential that students are taught various components of building construction comprising of: foundations, super structure, openings, roofs, staircases, flooring and finishing and other allied building components.

Therefore, the subject of building construction is very important for students undergoing diploma course in architectural Assistantship.

Teachers while imparting instructions are expected to show various components of buildings under construction, make use of models or other audio-visual media to clarify the concepts. While preparing drawings, teachers should lay considerable stress on proportioning, dimensioning, specification writing and printing and composition of drawing work. Teachers should also emphasis on environmental aspects like lighting, ventilation and orientation of buildings. Students should be asked to maintain a sketch book for recording the observations from site visits. While conducting viva, teachers should point out specific mistakes done by students in the preparation of drawings.

DETAILED CONTENTS

Theory

1. Doors and Windows

1.1 Using different aluminum sections.
1.2 Anodizing of aluminum sections.
1.3 Beadings in conjunction with aluminum section.

2. Interiors of Buildings:

2.1 False ceilings
2.2 Different counters as per usage
2.3 Paneling of wall, side boards and word robes
2.4 Design and Drawing Partition

3. Exteriors of Buildings:

3.1 Letter box.
3.2 Expansion joints

4. **Boundary walls and gates**

4.1 Drawing of boundary wall & gates.
4.2 Drawing of Expansion Joints

Practical

1. Drawing of aluminum door and window showing fixing, beading, hardware's etc. (3)
2. Sketch of sliding, folding, sliding and revolving doors. (1)
3. Drawing of false ceiling details. (1)
4. Drawing of counter (1)
5. Drawing of paneling (1)
6. Side board of wardrobe (1)
7. Letter box, name plate details (1)
8. Drawing and detailing staircase (1)

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	32	30
2	32	30
3	12	15
4	20	25
Total	**96**	**100**

5.2 ARCHITECTRUAL DESIGN –IV

L T P
1 - 7

Rationale:

Large percentage of diploma holders in Architectural Assistantship find employment with private Architects and also majority of them go for self-employment. Therefore, diploma holders are required to design small residential and public buildings. This course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design. Teachers are expected to show various types of designs of small to medium residential buildings to develop an appreciation of different designs. Teachers should also motivate students to maintain their sketch book in which they draw line sketches of different architectural styles.

1) Study Report on Parking
   - 1.1 Sizes of Vehicles
   - 1.2 Turning radius
   - 1.3 Road Width
   - 1.4 Different practical layouts
   - 1.5 Working of parking areas

2 Design Building involving more than 4 floor (Multistory concept building)The building can be Hotel/Motel/Hostel, Educational and public buildings.

3 Design housing scheme for group of 50 houses with parking area.

4 Time Problem

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	16	10
2	50	80
3	50	
4	12	10
Total	**128**	**100**

5.3 WORKING DRAWING AND DETAILING-III

L	T	P
-	-	8

RATIONALE

Preparation of working drawings and detailing forms the most important activities of diploma holders in Architectural Assistantship. Students are expected to develop mastery of skills in preparing working drawings of different building components and their detailing. Therefore, the courses in working drawing and detailing is very important.

Teachers while imparting instructions are expected to show various components of building under construction by organizing field visits or use models and other audio-visual media to clarify the concepts involved in preparing working drawings.

Teachers are expected to lay considerable stress on proportioning, dimensioning, specification writing, lettering and composition of drawing work whilst supervising students.

Teachers should also take into consideration environmental aspects while teaching preparation of working drawings.

Note:- The working drawings of Sr. No. 2,3,6 & 7are to be prepared with the help of Auto Cad as well.

DETAILED CONTENTS

To prepare a working drawing of a design project dealt in **WD-1** subject :

1. Site plan — 1 sheet
2. Foundation plan and details — 1 sheet
3. Ground floor plan — 1 sheet
4. Upper floor plans, one for each floor — One each
5. Terrace plan with rain water drainage details — 1 sheet
6. Sections, cross section through staircase and a section through kitchen — 2 sheets
7. Elevations - 4 on all sides — 2 sheets
8. **Details :**
   - Toilet (including plan elevation and section) — 1 sheet
   - Kitchen (including plan elevation and section) — 1 sheet
9. Flooring Details
10. Showing water supply, Electrical and sanitation disposal — 3 sheet

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	6	10
2	6	
3	12	40
4	12	
5	6	
6	12	20
7	12	
8	9	15
9	9	
10	12	15
Total	**96**	**100**

5.4 STRUCTURAL DESIGN - I

L T P
3 - -

RATIONALE

The students of diploma level are expected to prepare drawings at different levels of sanction and execution of project. The students are expected to design small residential buildings when working in an independent capacity and are involved in complex buildings of larger magnitude when working in large office. The students are also expected to have good knowledge of structural members. Knowledge of structural design is essential as it helps in preparation of various drawings.

Teachers while imparting instructions are expected to take the students to the site to explain the position of reinforcement in context with the chapters being undertaken. The students can be asked to prepare models of various reinforcements in a group of 4-6 students.

DETAILED CONTENTS

RCC Structural Elements:

1. Reinforced concrete materials and properties, grades of concrete, working stresses
2. Reinforcing materials
   - 2.1 Suitability of steel as a reinforcing material
   - 2.2 Different types of reinforcing materials including cold twisted deformed bars
   - 2.3 Loads as per IS-875
3. **Theory of RCC beams**
   - 1.1 Assumptions in theory of simple bending in RCC beams
   - 1.2 Flexural strength of reinforced concrete beams
   - 1.3 Flexural members: Neutral axis, critical neutral axis, balanced, under reinforced, over reinforced sections, lever arms, resisting moment of sections
   - 1.4 Shear in beams
     - Effects of shear stresses, permissible shear stresses
     - Diagonal tensions measured as shear stress
     - Vertical stirrups and inclined bars as reinforcement for shear and diagonal tension as per IS provision
     - Length of embedment and anchorage
     - Anchorage value of bends and hooks

4. **Singly reinforced beams**
   - 4.1 Calculation of moment of resistance of a simply supported beam for a given data as load span and properties of materials used
   - 4.2 Design of singly reinforced rectangular simply supported beam as per IS from the given data as load span and properties of material used with structural drawing
     - 4.2.1 Design of cantilever beams and its drawings

5. **Slabs**
   - 5.1 Design of one way simply supported slab with drawing
   - 5.2 Design of two way slab with the help of IS:456. Design coefficients (continuous) with drawings

5.3 Structural behaviour and design of continuous beams/slab in one direction showing position of main reinforcement in the drawings using coefficients given in IS:456

6. **Columns**

6.1 Concept of long and short columns as per IS:456. Effective length of columns

6.2 Design of axially loaded long and short columns as per IS:456 provision

6.3 Drawing of reinforcement for a column

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	3	10
2	3	
3	10	40
4	10	
5	12	30
6	10	20
Total	**48**	**100**

5.5 GENERIC SKILLS AND ENTREPRENEURSHIP DEVELOPMENT

L	T	P
3	-	-

RATIONALE

Generic Skills and Entrepreneurship Development is one of the courses from "Human Science" subject area. Generic skills have emerged as an important component of employability skills, which enable an individual to become and remain employable over lifetime and to lead happy and prosperous life. Entrepreneurship development aim at developing conceptual understanding for setting-up one's own business venture/enterprise. This aspect of Human Resource Development has become equally important in the era, when wage employment prospects have become meager.

Both the subject areas are supplementary to each other and soft skills are required to be developed in diploma passouts for enhancing their employability and self confidence.

DETAILED CONTENTS

1. **Introduction to Generic Skills** (4 hrs)
   - 1.1 Importance of Generic Skill Development (GSD)
   - 1.2 Global and Local Scenario of GSD
   - 1.3 Life Long Learning (LLL) and associated importance of GSD.

2. **Managing Self** (8 hrs)
   - 2.1 Knowing Self for Self Development
     - Self-concept, personality, traits, multiple intelligence such as language intelligence, numerical intelligence, psychological intelligence etc.
   - 2.2 Managing Self - Physical
     - Personal grooming, Health, Hygiene, Time Management
   - 2.3 Managing Self – Intellectual development
     - Information Search: Sources of information
     - Reading: Purpose of reading, different styles of reading, techniques of systematic reading.
     - Note Taking: Importance of note taking, techniques of note taking
     - Writing: Writing a rough draft, review and final draft.
   - 2.4 Managing Self – Psychological
     - Stress, Emotions, Anxiety-concepts and significance
     - Techniques to manage the above

3. **Managing in Team** (6 hrs)
   - 3.1 Team - definition, hierarchy, team dynamics
   - 3.2 Team related skills- sympathy, empathy, co-operation, concern, lead and negotiate, work well with people from culturally diverse background
   - 3.3 Communication in group - conversation and listening skills

4 **Task Management** (3 hrs)
   - 4.1 Task Initiation, Task Planning, Task execution, Task close out
   - 4.2 Exercises/case studies on task planning towards development of skills for task management

5. **Problem Solving** (5 hrs)

5.1 Prerequisites of problem solving- meaningful learning, ability to apply knowledge in problem solving

5.2 Different approaches for problem solving.

5.3 Steps followed in problem solving.

5.4 Exercises/case studies on problem solving.

6. **Entrepreneurship**

6.1 Introduction (22 hrs)

- Concept/Meaning and its need
- Competencies/qualities of an entrepreneur
- Entrepreneurial Support System e.g., District Industry Centres (DICs), Commercial Banks, State Financial Corporations, Small Industries Service Institute (SISIs), Small Industries Development Bank of India (SIDBI), National Bank of Agriculture and Rural Development (NABARD), National Small Industries Corporation (NSIC) and other relevant institutions/organizations at State/National level.

6.2 Market Survey and Opportunity Identification (Business Planning)

- How to start a small scale industry
- Procedures for registration of small-scale industry
- List of items reserved for exclusive manufacture in small-scale industry
- Assessment of demand and supply in potential areas of growth.
- Understanding business opportunity
- Considerations in product selection
- Data collection for setting up small ventures.

6.3 Project Report Preparation

- Preliminary Project Report
- Techno-Economic Feasibility Report
- Exercises regarding “Project Report Writing” for small projects

INSTRUCTIONAL STRATEGY

This subject will require a blend of different teaching and learning methods beginning with lecture method. Some of the topics may be taught using question answer, assignment, case studies or seminar. In addition, expert lectures may be arranged from within the institution or from management organizations. Conceptual understanding of Entrepreneurship, inputs by teachers and outside experts will expose the students so as to facilitate in starting ones own business venture/enterprise. The teacher will discuss success stories and case studies with students, which in turn, will develop managerial qualities in the students. There may be guest lectures by successful diploma holding entrepreneurs and field visits also. The students may also be provided relevant text material and handouts.

RECOMMENDED BOOKS

1. *Generic skill Development Manual, MSBTE, Mumbai.*
2. *Lifelong learning, Policy Brief (www.oecd.orf)*
3. *Lifelong learning in Global Knowledge Economy, Challenge for Developing Countries – World Bank Publication*
4. *Towards Knowledge Society, UNESCO Paris Publication*
5. *Your Personal Pinnacle of Success by DD Sharma, Sultan Chand and Sons, New Delhi*

6. *Human Learning, Ormrod*
7. *A Handbook of Entrepreneurship, Edited by BS Rathore and Dr JS Saini; Aapga Publications, Panchkula (Haryana)*
8. *Entrepreneurship Development by CB Gupta and P Srinivasan, Sultan Chand and Sons, New Delhi*
9. *Handbook of Small Scale Industry by PM Bhandari*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	4	5
2.	8	15
3.	6	10
4.	3	10
5.	5	10
6.	22	50
Total	**48**	**100**

5.6 COMPUTER GRAPHICS-II

L T P
- - 4

RATIONALE

The students of Architecture Assistantship should have sufficient knowledge and skills to add dimensions, texts, plot drawings. They should handle one minor and one major project so as to develop confidence.

DETAILED CONTENTS

Note: *Relevant theory may be taught along with practical exercises in each topic.*

1. **Dimensioning** (8 hrs)
   - 1.1 Dimension type, style, units
   - 1.2 Dimension utilities
   - 1.3 Dimension variables
   - 1.4 Dimensioning of different drawing elements like line (horizontal, vertical, inclined), arc, circle (radius, diameter), continuous dimensioning etc
   - 1.5 Editing dimension text and updating

2. **Adding Text** (6 hrs)
   - 2.1 D-text, text (adding new text and editing existing text)
   - 2.2 Text style – font types, height, width factor etc

3. **Plotting Drawings** (8 hrs)
   - 3.1 Plot command
   - 3.2 Selecting area for plotting
   - 3.3 Scale of plot, scale to fit
   - 3.4 Selecting plotting device
   - 3.5 Selecting paper size and type
   - 3.6 Selecting block and white or colored plots
   - 3.7 Selecting appropriate print speed, quality
   - 3.8 Print preview

4. **Major Projects** (42 hrs)

   The students should draft a complete set of drawings of two projects

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	8	12
2.	6	10
3.	8	12
4.	42	66
Total	64	100

Elective-I

5.7(a) SITE PLANNING AND LAND SCAPING

L T P
- - 3

RATIONALE

Architectural building locate in specific locations require that these relate with the surroundings Consequently it is imperative that the setting of the building be dealt if great detail. This course would help the students in creating suitable surrounding in different contexts This course would deal into study of landscape feature relate to the built up mass.

DETAILED CONTENTS

1. **Functional Elements:**
   - 1.1 Parking for different building types
   - 1.2 Outdoor functional space with respect to different building types
   - 1.3 Use of landscape feature with respect to architectural functions
   - 1.4 Layout an orientation of buildings

2. **Aesthetic of Site Features:**
   - 2.1 Effect of built-up-mass on surroundings
   - 2.2 Use of landscape elements
   - 2.3 Lighting fixtures
   - 2.4 Street furniture

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	16	50
2.	16	50
Total	**32**	**100**

Elective-I

5.7(b) INTERIOR DESIGN

L T P
- - 3

RATIONALE

Student of Architectural Assistantship at the diploma level are Expected to know design and execute building interiors Therefore the basic knowledge of building construction and detailed knowledge of building material is required With the knowledge of this subject the students can help in handling interior project from the concept stage to the project implementation stage Also this exercise if necessary since the interior are becoming more integral part of architecture and considerable stress is being laid in interior design.

Teacher while imparting instruction are expected to explain concept an principle introducing various building finishing materials The course would be supplemented with literature and sample of materials.

DETAILED CONTENTS

1. Theory of interior design:
2. Importance of interior design in building and colour schemes
3. Psychology and application of colouring for and texture in Interiors
4. Material use for interim design
5. **Introduction to Interior Design of:**
   - Living room
   - Be room
   - Dinning room
   - Kitchen

6. Practical exercise and site visits of small building such as library drawing studio display center shops residence and the like.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	4	10
2.	4	15
3.	4	15
4.	6	20
5.	6	20
6.	8	20
Total	32	100

Elective-I

5.7(C) ARCHITECTURAL GRAPHICS

L T P
- - 3

RATIONAE

Student graduating from the diploma programmes are expected to assist in the preparation of presentation of drawing for different purpose in different mediums Student , expert in this area can use this knowledge even for self-employment.

This subject would cover all the aspect concerned with the preparation and rendering of drawing an perspective views

DETAILED CONTENTS

1. **Rendering of Basic Drawing in Ink and Pencil Separately:**
   - 1.1 Darwin human figures vehicle and trees
   - 1.2 Scoiography rendering techniques
   - 1.3 Site rendering techniques
   - 1.4 Elevational rendering

2. **Darwin an Rendering of Views:**
   - 1.1 Darwin practice of one point and two point perspective
   - 2.2 Rendering of perspective in black an white and colour

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	16	50
2.	16	50
Total	**32**	**100**

6.1 BASICS OF MANAGEMENT

L	T	P
3	-	-

RATIONALE

Since the diploma holders are expected to take up middle level managerial positions, their exposure to basic management principles is very essential. Some topics like Structure of Organization, Leadership, Motivation, Customer Relationship Management (CRM), Legal Aspects of Business, Environmental Considerations, Accident and Safety: Total Quality Management (TQM), Intellectual Property Rights (IPR) etc. have been included in the subject.

DETAILED CONTENTS

1. **Introduction:** (8 Hrs)
   Definition and concept of Management, functions of management viz. planning, organizing, staffing, coordinating, controlling; Various areas of management - Human Resource Management (HRM), Financial Management, Marketing Management, Material Management etc.

2. **Structure of Industrial Organization** (4 Hrs)
   Concept and structure of an organization, hierarchical management structure (top, middle and lower level management) and functional management structure.

3. **Leadership** (4 Hrs)
   Concept, importance, types and qualities of a good leader

4. **Motivation** (4 Hrs)
   Concept and importance of motivation - drives and incentives, intrinsic and extrinsic motivation, brief about theories of motivation.

5. **Customer Relationship Management (CRM)** (6 Hrs)
   Need, various types of customers, customer satisfaction, life- long customer, Customer Satisfaction Index (CSI) and its significance in playing effective role of engineers in changing scenario.

6. **Legal Aspects of Business** (12 Hrs)
   a) Elementary knowledge of Income Tax, Sales Tax, Excise Rules, Provident Fund
   b) Elementary knowledge of Factory Act, 1948 and Payment of Wages Act 1936, Workmen Compensation Act, Industrial Dispute act 1947, Employees State Insurance Act 1978.
   c) Labour Welfare schemes including wage payment-types, system of wage payment and incentives.
   d) Intellectual Property Rights (IPR): Concepts, definition, infringements and remedies related to patents, copyrights, trademarks, and designs. Introduction to registering procedure, patent rules.
   e) Accident and Safety: Classification, precaution and treatment after accident, safety practices promotion, personal protection equipment (PPEs) for safety at work places.

7. Introduction to Total Quality Management (TQM) and steps to achieve this. (2 hrs)

8. Environmental Considerations (8 Hrs)
   a) Concept of ecology and environment
   b) Factors contributing to Air, Water, Noise Pollution
   c) Pollution Control Board
   d) Disaster Management-basic idea

INSTRUCTIONAL STRATEGY

It is observed that the diploma holders generally take up middle level managerial positions, therefore, their exposure to basic management principles is very essential. Accordingly students may be given conceptual understanding of different topics related to management. Some of the topics may be taught using question answer, assignment or seminar. The teacher will discuss success stories and case studies with students, which in turn, will develop appropriate managerial qualities in the students. In addition, expert lectures may also be arranged from within the institutions or from management organisations. Appropriate extracted reading material and handouts may be provided.

RECOMMENDED BOOKS

1. *Principles of Management by Philip Kotler TEE Publication*
2. *Principles and Practice of Management by Shyamal Bannerjee: Oxford and IBM Publishing Co, New Delhi.*
3. *Financial Management by MY Khan and PK Jain, Tata McGraw Hill Publishing Co:: 7, West Patel Nagar , New Delhi.*
4. *Modern Management Techniques by SL Goel: Deep and Deep Publications Pvt Limited , Rajouri Garden, New Delhi.*
5. *Management by James AF Stoner, R Edward Freeman and Daniel R Gilbert Jr. : Prentice Hall of India Pvt Ltd, New Delhi.*
6. *Essentials of Management by H Koontz, C O' Daniel , Mc Graw Hill Book Company, New Delhi.*
7. *Marketing Management by Philip Kotler, Prentice Hall of India, New Delhi*
8. ***Total Quality Management by Dr DD Sharma, Sultan Chand and Sons, New Delhi.***
9. ***Intellectual Property Rights and the Law by Dr. GB Reddy.***
10. ***Service Quality Standards, Sales & Marketing Department, Maruti Udyog Ltd.***
11. ***Customer Relationship Management: A step-by-step approach, Mohamed & Sagadevan Oscar Publication, Delhi***
12. ***Customer Relation Management, Sugandhi RK, Oscar Publication, Delhi***
13. ***Environment Engineering by GN Pandey & GC Pandey, Tata McGraw Hill Publication.***

2 ***SUGGESTED DISTRIBUTION OF MARKS***

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	8	15
2.	4	10
3.	4	10
4.	4	12
5.	6	10
6.	12	15
7.	2	08
8.	8	20
Total	**48**	**100**

6.2 COMPUTER GRAPHICS –III

L	T	P
-	-	6

RATIONALE

To enable the student to create three dimensional objects in space with special emphasis on presentation and visualization of interiors and exteriors of building using different rendering techniques using auto CAD 2000 or the latest programme. To enable the student to make, render and edit drawings and images using adobe photoshop and corel draw (latest versions); to enable the student to make audiovisual presentations using MS Power point

DETAILED CONTENTS

1. **Fundamental of 3-D Drafting**
   - 1.1 Basic Features
   - 1.2 Coordinate system
   - 1.3 3-D entities and surfaces

   Exercises-1: Converting simple geometric shapes into 3-D Objects

2. **Making an existing 2-D plan drawing compatible to 3-D drafting**
   - 2.1 Commands and modifications to 2-D drawings
   - 2.2 B. Poly, rectangle, elevation, extrude – requirements and applications
   - 2.3 3-D of exterior of blocks – preparation, modification of 2-D drawing
   - 2.4 3-D of interiors of block – preparation, modification of 2-D drawings

3. **3-D Modeling**
   - 3.1 Wire frame, surface and 3-D solid modelling
   - 3.2 Viewing 3-D models
   - 3.3 Rendering, shading and hide commands
   - 3.4 Material representation
   - 3.5 Importing and exporting library

   Exercises-2: 4th and 5th Semester design proposal to be converted in 3-D model

6.3 STRUCTURAL DESIGN -II

L	T	P
2	-	-

1. **Steel Structural Elements:**

1.1 Structural steel and steel sections, study of steel tables and reading of data for steel sections

1.2 Structural connections

1.2.1 Riveted connections, types of rivets, forces in rivets, types of riveted joints with sketches

1.2.2 Welded connections, types of welds, forces in welds, types of welded connections with sketches.

2. Beams –

2.1 Design of beams with single RS section as per IS:800 and handbook for span and loads

2.2 Design of tension and axially loaded compression members

2.3 Design of usually loaded compression members

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	16	50
2.	16	50
Total	**32**	**100**

6.4 ARCHITECTURAL PROFESSIONAL PRACTICE

L T P
3 - -

Rationale

The knowledge of this subject is required for all engineer/technicians who wish to choose industry/field as their career. This course is designed to develop understanding of various functions of management, role of workers and architects and providing skills with respect to marketing, industrial safety, CPM, PERT, communication and entrepreneurship etc. which are essential attributes for a successful technician.

DETAILED CONTENTS

1. **Tenders and Quotations** (4 hrs)
   Tenders, essential characteristics of a tender notice, types of tender, tender documents, simple exercises on preparation of tender document, comparative statements (technical and cost comparisons), work order, supply order, Inspection

2. **Contract** (4 hrs)
   - 2.1 General Principles of contract
   - 2.2 Types of contract and their advantages and disadvantages and suitability
   - 2.3 Architect duties and liabilities under the contract
   - 2.4 Contractors duties and liabilities
   - 2.5 Employer's duties sand liabilities

3. **Architect and his work** (2 hrs)
   - 3.1 Structure of an architect's office
   - 3.2 Office and management
   - 3.3 Architects duties to his employees under labour welfare provision

4. **Code, competition fees** (2 hrs)
   Architectural competitions, professional conduct, conditions of engagement and Scale of professional fees and charges.

5. Architect act, 1972 (4 hrs)

6. **CPM and PERT** (8 hrs)
   - 6.1 Introduction to CPM & PERT
   - 6.2 Development of CPM networks Pertaining to simple engineering works

REFERENCE BOOKS

1. Professional practice by Roshan Namavati
2. Tender Documents by Labour Law

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	8	16
2.	8	16
3.	4	10
4.	4	10
5.	8	18
6.	16	30
Total	48	100

6.5 ELECTIVE-II

6.5.1 EARTHQUAKE RESISTANT BUILDING CONSTRUCTION

L	T	P
3	-	-

RATIONALE

Diploma holders in civil engineering have to supervise construction of various earthquake resistant buildings. Therefore, the students should have requisite knowledge regarding terminology of earthquake and the precautions to be taken while constructing earthquake resistant buildings

DETAILED CONTENTS

1. **Elements of Engineering Seismology** (08 hrs)
   General features of tectonic of seismic regions. Causes of earthquakes, Seismic waves, earthquake size (magnitude and intensity), Epicentre, Seismograph, Classification of earthquakes, Seismic zoning map of India, Static and Dynamic Loading, Fundamental period.

2. **Seismic Behaviour of Traditionally-Built Constructions of India** (07 hrs)
   Performance of building during earthquakes and Mode of failure (Out-of-plane failure, in-plane failure, Diaphragm failure, Connection failure, Non-structural components failure)

3. Special construction method, tips and precautions to be observed while planning, designing and construction of earthquake resistant building. (08 hrs)

4. Introduction to IS: 4326, IS: 13828, IS: 1893(Part 1), 154326 and IS: 13920 (latest edition) (05 hrs)

5. Seismic Provision of Strengthening and Retrofitting Measures for Traditionally-Built Constructions, Brick and RCC Structures (08 hrs)

6. Provision of reinforcement detailing in masonry and RC constructions (06 hrs)

7. Disaster Management: Disaster rescue, psychology of rescue, rescue workers, rescue plan, rescue by steps, rescue equipment, safety in rescue operations, debris clearance and casuality management. (06hrs)

INSTRUCTIONAL STRATEGY

The student may be taken for visit to various building construction sites where precautions related to earthquake resistant construction are being taken so that the students may appreciate the importance of the subject.

RECOMMENDED BOOKS

1. *Elements of Earthquake Engineering by Jai Krishana and AR Chandersekaran; Sarita Parkashan, Meerut.*
2. *Building Construction by BL Gupta and NL Arora, Satya Prakashan, New Delhi*
3. *Manual Published by Earthquake Engineering department, IIT Roorkee / IIT Kanpur*
4. *IS 13920, IS: 13827, IS: 13828, IS 1893-2002, IS 4326 (latest edition)*
5. *Earthquake Engineering by RL Weigel, Prentice Hall Inc., N.I., 1970*
6. *Dynamics of Structure by AK Chopra, Prentice Hall Inc. New Delhi*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	08	19
2	07	15
3	08	17
4	05	10
5	08	19
6	06	08
7	06	12
Total	**48**	**100**

ELECTIVE-II
6.5.2 HOUSING

L T P
3 - -

RATIONALE

Some percentage of students find employment in state housing boards urban development authorities Student are expected to prepare the drawing of various type of housing scheme and their other relate aspects Hence the subject.

DETAILED CONTENTS

1. Introduction

2. Historical Factors:
   - 2.1 Pre colonialism
   - 2.2 Impact of colonialism
   - 2.3 Contemporary processes

3. Housing Strategies:
   - 4.3 Demographic factors
   - 4.4 Socio-cultural factors
   - 4.5 Socio economic factors

4. Planning:
   - 4.1 Slum clearance
   - 4.2 Neighborhood units

5. Type of Housings:
   - 5.1 EWS type
   - 5.2 LIG type
   - 5.3 MIG type
   - 5.4 Duplex and pent houses
   - 5.5 Site and Service Scheme
   - 5.6 Plotted Development Schemes

6. Physical Layout:
   - 6.1 Linear cluster (Ro housing)
   - 6.2 Chowk cluster
   - 6.3 Open court Cluster

7. Site organization
8. Housing standard(with reference to building code)
9. Housing finances

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	03	06
2	06	12
3	06	12
4	06	12
5	08	16
6	06	12
7	05	10
8	04	10
9	04	10
Total	**48**	**100**

ELECTIVE-II

6.5.3 TOWN PLANNING

L	T	P
3	-	-

RATIONALE

Sum percentage of students find employment in the state department of town and country planning housing board and urban development authorities Student are expected to prepare master plan and layout of housing schemes road parking etc Therefore the course in Town Planning equip the student with appropriate knowledge to perform above said functions.

While teaching this subject teachers should show some of the typical master plan and layout plan to bring conceptual clarity the mind of students.

DETAILED CONTENTS

1. Introduction to town planning
   - 1.1 Objects of town planning
   - 1.2 Importance of town planning
   - 1.3 Principle of town planning
2. Origin and growth of old India cities
   - 2.1 Mohanjodaro and Harappa
   - 2.2 Taxila and Nalanda
3. Planning Process
   - 3.1 Site selection
   - 3.2 Site planning
   - 3.3 Tow an Villages
   - 3.4 Ancient For of Village Planning
4. The city of Delhi origin and growth from ancient to modern
5. The process of urbanization
   - 5.1 Urban and rural definition
   - 5.2 Migration
6. City development plan:-
   - 6.1 Master plan regional plan in relation to Chandigarh
   - 6.2 Neighborhood unit housing group

7 Urban traffic roads regional roads local street footpath cycle path junction

8 Zoning -use zoning height zoning density zone density net and gross.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	04	08
2	08	18
3	08	18
4	06	12
5	06	12
6	06	12
7	05	10
8	05	10
Total	**48**	**100**

6.6 ESTIMATING AND SPECIFICATION WRITING

L	T	P
4	-	-

RATIONALE

Diploma holders in Architectural Assistantship find employment with private architects and also some percentage of them start their own enterprises. Therefore, the profession demands the development of basic knowledge and skills of estimating and specification writing. This course covers different methods of taking out quantities, units of measurement, calculation of quantities of materials and preparation of cost estimates and elements of specification writing.

Teachers are expected to lay considerable emphasis on estimating and costing exercises from given drawings. Practice of writing broad specifications should also be dealt with.

DETAILED CONTENTS

1. Introduction to estimating - Types of estimates:
2. Different methods of taking out quantities - centre line, in-to-in, out-to-out
3. Various performas used in estimates - measurement form, abstract of cost and material statement form
4. Units of measurement and units of payment of different items of work including building services
5. Preparation of a rough cost estimate, detailed estimates complete with detailed reports, specifications, abstract of cost and material and statement for a small residential building with a flat roof
6. Calculation of quantities of materials and analysis of rates for: Plain cement concrete of different proportions, Brick and stone masonry in cement and lime mortar, plastering and pointing with cement mortar in different proportions; white washing, Thumb rule methods of calculating steel in RCC.
7. Specifications writing: Principles of specifications writing; writing broad specifications of items with special reference to two storied building.
8. Exercises involving choosing of relevant specifications
9. Accounts: Explanation of ordinary terms used in book keeping, cash book, work order, measurement book, petty cash and imprest, classification of stores, receipts and meaning of rate analysis

LIST OF BOOKS

1. *Estimating, Costing and Accounts by DD Kohli and RC Kohli(S Chand and Co)*
2. *Estimating and Costing by BN Dutta*

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	4	8
2	6	10
3	6	10
4	6	10
5	10	15
6	10	15
7	6	8
8	6	8
9	4	6
10	6	10
Total	**64**	**100**

6.7 FIELD/PRACTICE BASED MAJOR PROJECT WORK

L	T	P
-	-	12

RATIONALE

Major Project Work aims at developing innovative skills in the students whereby they apply in totality the knowledge and skills gained through the course work in the solution of particular problem or by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming to identify suitable project assignments for their students. The project assignment can be individual assignment or a group assignment. There should not be more than 3 students if the project work is given to a group. The students should identify themselves or accept the given project assignment at least two to three months in advance. The project work identified in collaboration with industry should be preferred. Each teacher is expected to guide the project work of 5–6 students.

The project assignments may consist of:

1. Plans
2. Elevations
3. Sections
4. Perspective views
5. Models

Effort should be made to provide actual field problem a project work to students.

Project selected should be not too large in size and complexity and be related to local situations.

A suggestive criteria for assessing student performance by the external (personnel from industry) and internal (teacher) examiner is given in table below:

Sr. No	Performance criteria	Max. marks	Rating Scale				
			Excellent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10	10	8	6	4	2
2.	Planning and execution of considerations	10	10	8	6	4	2
3.	Quality of performance	20	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20	20	16	12	8	4
5.	Sense of responsibility	10	10	8	6	4	2

6.	Self expression/ communicat-ion skills	5	5	4	3	2	1
7.	Interpersonal skills/human relations	5	5	4	3	2	1
8.	Report writing skills	10	10	8	6	4	2
9.	Viva voce	10	10	8	6	4	2
Total marks		**100**	**100**	**80**	**60**	**40**	**20**

The overall grading of the practical training shall be made as per following table

	Range of maximum marks	**Overall grade**
i)	More than 80	Excellent
ii)	79 <> 65	Very good
iii)	64 <> 50	Good
iv)	49 <> 40	Fair
v)	Less than 40	Poor

In order to qualify for the diploma, students must get "Overall Good grade" failing which the students may be given one more chance of undergoing 8 -10 weeks of project oriented professional training in the same industry and re-evaluated before being disqualified and declared "not eligible to receive diploma ". It is also important to note that the students must get more than six "goods" or above "good" grade in different performance criteria items in order to get "Overall Good" grade.

Important Notes

1. *This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.*
2. *The criteria for evaluation of the students have been worked out for 100 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.*
3. *The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students performance as per the above criteria.*
4. *It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.*

The teachers are free to evolve another criteria of assessment, depending upon the type of project work.

It is proposed that the institute may organize an annual exhibition of the project work done by the students and invite leading Industrial organizations in such an exhibition. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific industries are approached for instituting such awards

6.8 PRACTICE IN COMMUNICATION SKILLS

L	T	P
-	-	2

RATIONALE

For successful completion of diploma programme, a student should possess adequate command on language and communication skills so that he/she is able to express himself/herself with ease and felicity. The language used by the student should be appropriate to objectives and occasion. The contents of this subject shall provide practical training to the students through language laboratory.

LIST OF PRACTICAL EXERCISES

1. Exercises on phonetics
2. Interactive session (case studies)
3. Presentation of periodic progress reports (written/oral) and maintaining daily diary
4. Exercises on self assessment using tools like SWOT analysis.
5. Communication empowerment through breaking language Barriers.
6. Internet communication
7. **Correspondence**
   - 7.1 Resume writing
   - 7.2 Covering letter
   - 7.3 Follow-up correspondence
   - 7.4 Internal and External business Correspondence
8. Practice on public relation skills with live examples.
9. Practice on listening skills.
10. Speaking exercises with emphasis on voice modulation (reading and extempore)
11. Demonstration and practice on Body language and Dress sense.
12. Exercises on etiquettes and mannerism in difficult situations like business meetings, table manners, telephone etiquettes and manners related to opposite gender.
13. Exercises on with and humour in conversations and creating lively environment.
14. Role play for effective Communication.
15. Cross-cultural Communication
16. Group Discussion
17. Mock interviews (telephonic/personal)