DIPLOMA IN ENGINEERING AND TECHNOLOGY

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

SEMESTER PATTERN

N – SCHEME

IMPLEMENTED FROM 2020 - 2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS (II / III YEAR

N-SCHEME

(Implemented from Academic Year 202-21 onwards)

Syllabus Revision Committee

Chairperson

Tmt G. LAXMI PRIYA I.A.S.
Director
Directorate of Technical Education, Guindy, Chennai.

Co-ordinator

Dr. V.Karthikeyan
Principal
Thiagarajar Polytechnic College, Salem-636 005

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP (1012)	
Convener **Dr. R. Malliga** Principal Periyar Centenary Polytechnic College, Vallam, Thanjavur – 613 403.	
Mr. S.Venkateswara Prabhu HOD /Arch Govt. Women's Polytechnic College Lawspet, Puducherry – 605 008	**Ms.Y.Annelet Anbarasi** Principal i/c Ayyanadar Janakiammal Polytechnic College, Chinnakkamanpatti, Sivakasi East – 626 189
Mr.K.B.Velliyangiri Lecturer/SG-II /Architecture Periyar Centenary Polytechnic College, Vallam, Thanjavur – 613 403	**Mr. M. A.Karthick** HOD / Architecture Dr.Dharmambal Govt. Polytechnic College for Women,Taramani, Chennai- 600 112
Mr. S.Veeramani HOD/Arch K.S.R Polytechnic College, Tiruchengode TK, Namakkal DT-637 215	**Mr.K.Venkatraj** Krishna Planners 36, Daniel Thomas Nagar, Thanjavur-613 007
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DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(SEMESTER SYSTEM)

(Implemented from 2020 - 2021)

N – SCHEME

R E G U L A T I O N S*

***Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology.*

1. Description of the Course:

a. Full Time (3 years)

The Course for the Full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches.

b. Sandwich (3½ years)

The Course for the Sandwich Diploma in Engineering shall extend over a period of three and half academic years, consisting of 7 semesters* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4^{th} and/or during 7^{th} semester the students undergo industrial training for six months / one year. Industrial training examination will be conducted after completion of every 6 months of industrial training.

c. Part Time (4 years)

The course for the Part Time Diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters*, the subjects of 3-year full time diploma courses being regrouped for academic convenience.

* ***Each Semester will have 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses and 18 hrs. / Week for Part-Time Diploma Courses.***

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses Viz. Textile Technology, Leather Technology, Printing Technology, Chemical Technology etc.) have been revised and the revised curriculum is applicable for the candidates admitted from 2020 – 2021 academic year onwards.

2. Conditions for Admission:

Condition for admission to the Diploma courses shall be required to have passed in the S.S.L.C Examination of the Board of Secondary Education, Tamil Nadu.

(Or)

The Anglo-Indian High School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education, Tamil Nadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (academic) or (vocational) courses mentioned in the Higher Secondary Schools in Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & should have studied the following subjects.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
			Subjects Studied		
		Subjects Studied	Related subjects	Vocational subjects	
1.	All the Regular and Sandwich Diploma Courses	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory& Practical	2 years course to be passed with appropriate Trade
2.	Diploma Course in Commercial Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.	-

- For the Diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practicals may also be taken for arriving the eligibility.
- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.
- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Commercial Practice Diploma courses, the candidates studied the related subjects will be given first preference.
- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: **No Age limit.**

5. Medium of Instruction: English

6. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

This will come into effect from N Scheme onwards i.e., from the academic year 2020-2021.

7. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical subjects.

The curriculum outline is given in Annexure – I.

8. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment. Board Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

9. Continuous Internal Assessment:

For Theory Subjects:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i) Subject Attendance **5 Marks**

(Award of marks for subject attendance to each subject Theory/Practical will be as per the range given below)

80%	-	83%	1 Mark
84%	-	87%	2 Marks
88%	-	91%	3 Marks
92%	-	95%	4 Marks
96%	-	100%	5 Marks

ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Average of these two test marks will be taken and the marks to be reduced to 05 Marks.

The Test – III is to be the Model Examination covering all the five units and the marks obtained will be reduced to 05 Marks.

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination:** Covering all the 5 Units. (Board Examinations-question paper-pattern).	End of 16th week	100	3 Hrs

From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Test - I and Test – II is as follows. The tests should be conducted by proper schedule. Retest marks should not be considered for internal assessment.

Without Choice:

Part A Type questions:	6 Questions × 1 mark	06 marks
Part B Type questions:	7 Questions × 2 marks	14 marks
Part C Type questions:	2 Questions × 15 marks	30 marks
	Total	**50 marks**

iii) Assignment **5 Marks**

For each subject Three Assignments are to be given each for **20 marks** and the average marks scored should be reduced for 5 marks.

iv) Seminar Presentation **5 Marks**

The students have to select the topics either from their subjects or general subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the material for the given topic using the library hour and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory subjects and carries 5 marks for each theory subject. The respective subject faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Board Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

A. <u>For Practical Subjects:</u>

The Internal Assessment mark for a total of **25 marks** which are to be distributed as follows: -

a) Attendance : **5 Marks**

(Award of marks same as theory subjects)

b) Procedure/ observation and tabulation/
Other Practical related Work : **10 Marks**

c) Record writing : **10 Marks**

TOTAL : **25 Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.*
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.
- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks (including Observation and Record writing) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject.

The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

10. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communication skill and ICT skill of students.

As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

11. Project Work and Internship:

The students of all the Diploma Courses have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamil Nadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e., institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester. The project work is approved during the V semester by the properly constituted committee with guidelines.**

a) Internal assessment mark for Project Work & Internship:

Project Review I	…	**10 marks**
Project Review II	…	**10 marks**
Attendance	…	**05 marks**
(Award of marks same as theory subject pattern)		
Total	…	**25 marks**

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Board Examinations:

Demonstration/Presentation	25 marks
Report	25 marks
Viva Voce	30 marks
Internship Report	20 marks
Total	**100* marks**

*Examination will be conducted for 100 marks and will be converted to 75 marks.

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year "Project Work & Internship" for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual student during the Project Work & Internship Board examination.

12. Scheme of Examinations:

The Scheme of examinations for subjects is given in Annexure - II.

13.Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Board Examinations marks put together, subject to the condition that he/she secures at least a minimum of 4*0 marks out of 100 marks in the Board Theory Examinations and a minimum of 50 marks out of 100 marks in the Board Practical Examinations.*

14. **Classification of successful candidates:**

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate marks in all the semesters put together and passes all the semesters except the I and II semester in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time (lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all the semesters put together and passes all the subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/Full Time/Sandwich/Part Time] without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class.**

The above classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in 2020 -2021)

15. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

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ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

THIRD SEMESTER

Col. No	Subject Code	SUBJECT	HOURS PER WEEK				
			Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
1	4012310	Building Materials	4	-	-	-	4
2	4012320	Theory of Architecture	5	-	-	-	5
3	4012330	History of Architecture – I	5	-	-	-	5
4	4012340	Building Construction and Detailing – I		-	-	4	4
5	4012350	Architectural Drawing – I	-	-	-	4	4
6	4012360	Basic Design	-	-	-	4	4
7	4012370	Computer Application in Architecture – I	-	-	-	6	6
Extra/ Co-curricular activities		Physical Education	-	-	-	-	2
		Library	-	-	-	-	1
TOTAL			**14**	**-**	**-**	**18**	**35**

ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

FOURTH SEMESTER

Col. No	Subject Code	SUBJECT	HOURS PER WEEK				
			Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
1	4012410	Mechanics of Structures	6	-	-	-	6
2	4012420	Survey Theory	4	-	-	-	4
3	4012430	History of Architecture – II	4	-	-	-	4
4	4012440	Building Services	4	-	-	-	4
5	4012450	Building Construction and Detailing – II	-	-	-	4	4
6	4012460	Architectural Drawing – II	-	-	-	4	4
7	4012470	Architectural Design Studio – I	-	-	-	6	6
Extra/ Co-curricular activities		Physical Education	-	-	-	-	2
		Library	-	-	-	-	1
TOTAL			**18**	**-**	**-**	**14**	**35**

ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

FIFTH SEMESTER

Col. No	Subject Code	SUBJECT	HOURS PER WEEK				
			Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
1	4012510	Estimating and Costing	5	-	-	-	5
2	4012520	Environmental Engineering	4	-	-	-	4
3	4012531 4012532 4012533	**Elective Theory - I** i) Elements of Interior Design ii) Contemporary Architecture iii) Architectural Acoustics	4	-	-	-	4
4	4012540	Computer Application in Architecture – II	-	-	-	5	5
5	4012550	Architectural Design Studio – II	-	-	-	6	6
6	4012561 4012562 4012563	**Elective Practical-I** i) Architectural Model Making ii) Elements of Interior Design Practical iii) Surveying Practice	-	-	-	4	4
7	4012570	Entrepreneurship and Startups	-	-	-	4	4
Extra/ Co-curricular activities		Physical Education	-	-	-	-	2
		Library	-	-	-	-	1
TOTAL			**13**	**-**	**-**	**19**	**35**

ANNEXURE I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

CURRICULUM OUTLINE

SIXTH SEMESTER

Col. No	Subject Code	SUBJECT	HOURS PER WEEK				
			Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
1	4012610	Structural Design	6	-	-	-	6
2	4012620	Professional Practice and Management	5	-	-	-	5
3	4012631 4012632 4012633	**Elective Theory-II** i) Landscape Architecture ii) Town Planning iii) Sustainable Architecture	5	-	-	-	5
4	4012640	Computer Application in Architecture – III	-	-	-	6	6
5	4012651 4012652 4012653	**Elective Practical-II** i) Structural Detailing and Drawing ii) Landscape and Detailing iii) Building Services Practical	-	-	-	4	4
6	4012660	Project Work and Internship	-	-	-	6	6
Extra/ Co-curricular activities		Physical Education	-	-	-	-	2
		Library	-	-	-	-	1
TOTAL			**16**	**-**	**-**	**16**	**35**

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF THE EXAMINATION

THIRD SEMESTER

Subject Code	Subject Name	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks (Converted to 75)	Total Mark		
4012310	Building Materials	25	100	100	40	3
4012320	Theory of Architecture	25	100	100	40	3
4012330	History of Architecture – I	25	100	100	40	3
4012340	Building Construction and Detailing – I	25	100	100	50	3
4012350	Architectural Drawing – I	25	100	100	50	3
4012360	Basic Design	25	100	100	50	3
4012370	Computer Application in Architecture – I	25	100	100	50	3
TOTAL		**175**	**700**	**700**		

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF THE EXAMINATION

FOURTH SEMESTER

Subject Code	Subject Name	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks (Converted to 75)	Total Mark		
4012410	Mechanics of Structures	25	100	100	40	3
4012420	Survey Theory	25	100	100	40	3
4012430	History of Architecture – II	25	100	100	40	3
4012440	Building Services	25	100	100	40	3
4012450	Building Construction and Detailing – II	25	100	100	50	3
4012460	Architectural Drawing – II	25	100	100	50	3
4012470	Architectural Design Studio – I	25	100	100	50	3
TOTAL		**175**	**700**	**700**		

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF THE EXAMINATION

FIFTH SEMESTER

Subject Code	Subject Name	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks (Converted to 75)	Total Mark		
4012510	Estimating and Costing	25	100	100	40	3
4012520	Environmental Engineering	25	100	100	40	3
4012531 4012532 4012533	**Elective Theory - I** i) Elements of Interior Design ii) Contemporary Architecture iii) Architectural Acoustics	25	100	100	40	3
4012540	Computer Application in Architecture – II	25	100	100	50	3
4012550	Architectural Design Studio – II	25	100	100	50	3
4012561 4012562 4012563	**Elective Practical-I** i) Architectural Model Making ii) Elements of Interior Design Practical iii) Surveying Practice	25	100	100	50	3
4012570	Entrepreneurship and Startups	25	100	100	50	3
TOTAL		**175**	**700**	**700**		

ANNEXURE II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-21 onwards)

SCHEME OF THE EXAMINATION

SIXTH SEMESTER

Subject Code	Subject Name	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment Marks	Board Exam. Marks (Converted to 75)	Total Mark		
4012610	Structural Design	25	100	100	40	3
4012620	Professional Practice and Management	25	100	100	40	3
4012631 4012632 4012633	**Elective Theory-II** i) Landscape Architecture ii) Town Planning iii) Sustainable Architecture	25	100	100	40	3
4012640	Computer Application in Architecture – III	25	100	100	50	3
4012651 4012652 4012653	**Elective Practical-II** i) Structural Detailing and Drawing ii) Landscape and detailing iii) Building services practical	25	100	100	50	3
4012660	Project Work and Internship	25	100	100	50	3
TOTAL		**175**	**600**	**600**		

List of Equivalent Subjects for M – Scheme to N – Scheme

SEM	M- SCHEME		N – SCHEME	
	Subject code	Subject Name	Subject code	Subject Name
III w.e.f oct 2021	31231	Building Materials	4012310	Building Materials
	31232	Theory of Architecture	4012320	Theory of Architecture
	31233	History of Architecture – I	4012330	History of Architecture-I
	31234	Building Construction and Detailing – I	4012340	Building Construction and Detailing – I
	31235	Architectural Drawing – I	4012350	Architectural Drawing-I
	31236	Basic Design	4012360	Basic Design
	30001	Computer Applications Practical	40002	Computer Application Practical
IV w.e.f Apr 2022	31241	Mechanics of structures	4012410	Mechanics of Structures
	31242	Survey Theory	4012420	Survey theory
	31243	History of Architecture – II	4012430	History of Architecture-II
	31244	Building Services – I	4012440	Building Services
	31245	Building Construction and Detailing – II	4012450	Building Construction and Detailing – II
	31246	Architectural Drawing – II	4012460	Architectural Drawing-II
	31247	Architectural Design Studio – I	4012470	Architectural Design Studio-I
V w.e.f oct 2022	31251	Estimating and costing	4012510	Estimating and costing
	31252	Environmental Engineering	4012520	Environmental Engineering
	31253	Building Services – II	4012440	Building Services
	31254	Elements of Interior Design	4012531	Elements of Interior Design
	31255	Computer Application in Architecture – I	4012370	Computer Application in Architecture – I
	31256	Architectural Design Studio – II	4012550	Architectural Design Studio-II
	30002	Life and Employability Skill Practical	40001	Communication Skill Practical

VI **w.e.f Apr 2023**	31261	Structural Design	4012610	Structural Design
	31262	Professional Practice and Management	4012620	Professional Practice and Management
		Elective Theory		
	31281	I. Landscape Design and Detailing	4012631	I. Landscape Architecture
	31282	II. Town Planning	4012632	II. Town Planning
	31283	III. Climatology	-	III. **No equivalent paper**
	31264	Structural Detailing and Drawing	4012651	Structural Detailing & Drawing
	31265	Architectural Model Making	4012561	Architectural Model Making
	31266	Computer Application in Architecture – II	**-**	**No equivalent paper**
	31267	Project Work	**-**	**No equivalent paper**

III SEMESTER

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

BUILDING MATERIALS

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012310

Semester : III Semester

Subject Title : BUILDING MATERIALS

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / semester	Internal Assessment	Board Examinations	Total	
BUILDING MATERIALS	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	CLASSICAL BUILDING MATERIALS	12
II	CEMENT, MORTAR, CONCRETE	11
III	TIMBER AND GLASS	11
IV	PROTECTIVE AND DECORATIVE FINISHES	11
V	MISCELLANEOUS MATERIALS	12
TEST & MODEL EXAMINATION		7
Total		**64**

RATIONALE:

Diploma holders in Architectural Assistantship are supposed to prepare working drawings of buildings. Knowledge of building materials and their behavior under varied climatic conditions is very essential from the point of construction for providing detailed specifications in the working drawings. Therefore, the course in building materials includes imparting basic knowledge in the properties and use of the basic materials like: stones, bricks, lime, cement, paints, timber, exterior and interior finish, glass, plastics, building hardware, roofing materials etc. Teachers are expected to demonstrate the samples of different materials, discuss their properties with particular REFERENCES 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.

NOTE:

The students are also expected to go through Architecture Journals like Inside – Outside, Interiors Today, Design and Interiors, Architect and builder, Builders Friend etc. They should make scrapbook of relevant brochures.

OBJECTIVES:

To introduce the students to the world of building materials both traditional and modern so that they could make a proper choice for the various needs

DETAILED SYLLABUS

4012310- BUILDING MATERIALS

Contents: Theory

Unit	Name of the Topics	Hours
I	**CLASSICAL BUILDING MATERIALS**	
	STONE: Formation & Classification – Characteristics of good stone – Characteristics and Uses of granite, lime stone, sand stone, marble, and kottah-. Manufactured Sand (M Sand), Plastering Sand (P Sand) & its Advantages.	**4**
	BRICKS: Methods of Brick Manufacturing - Characteristics of Good Bricks – Classification of Bricks and their Uses – Different Sizes and Shapes of Bricks and their Uses.	**5**
	CLAY TILES: Tile Manufacturing – Various Types of Tiles and their Uses.	**1**
	LIME: Source of Lime, Classification of Lime, Various Stage of Lime, Characteristics of Lime, Types and Uses.	**2**
II	**CEMENT, MORTAR, CONCRETE**	
	CEMENT: Composition of ordinary Portland cement-functions of cement ingredients – Characteristics - Types of Cement and Uses – Grades of cement (33, 43 and 53) - Setting time of cement - White and Colored Cements – Storage of cement.	**5**
	MORTAR: Characteristics of mortar - Types of Mortar using Lime, Cement, Mud, - Composite mortars using fly ash and surkhi - Proportions and Uses.	**2**
	CONCRETE: Characteristics of Concrete – Types of concrete using lime and cement - P.C.C, R.C.C. - Proportion of Cement concrete - Composite Concrete - Water Cement ratio and strength of Concrete - Mixing, Laying, Curing and Admixtures. Hollow concrete block and Paver blocks (Interlocking tile)- Light weight concrete blocks	**4**
III	**TIMBER AND GLASS:**	
	TIMBER: Characteristics of Timber - Classification of Timber - Defects of Timber and their Causes - Seasoning, Preservation and Fire-Proofing of Timber - Common Varieties used in construction.Wood based	**7**

	Products and Uses (Veneering, Laminate, Plywood, block board, batten board, particle board). Bamboo – characters and uses in building industry. **GLASS:** Types of Glass and Uses – Glass blocks - Definition of Curtain wall – Purpose of Curtain walls - Structural Glazing.	**4**
IV	**PROTECTIVE AND DECORATIVE FINISHES** Painting: Paints-Base, Vehicle, pigments, Solvent, Drier and Fillers. Preparation of various Paints and their Uses - Ready mix Paints - Cement, White wash, Colour wash, Oil Bound Distempers, Enamel, and Plastic Emulsion Paints- Defects in Painting, Painters Putty (solignum), Plaster Putty, Varnish, Lacquer, Epoxy Resin. Finishes for Granite, Marble, Mosaic, Wooden and Vitreous Tile – Anti skid and Anti stain measures, Anti- Termite and pest control Treatments.	**11**
V	**MISCELLANEOUS MATERIALS:** **THERMAL AND ACOUSTIC MATERIALS** – Thermocole, Cork, Glass Wool, Fiber boards and Patented Insulating Materials- Gypsum board **PLASTICS** – Classification and Uses - PVC, Fiber Reinforced Plastics (FRP), Ultra PVC sections. **METALS** - MS (Powdered Coated and Painted), Stainless Steel, Aluminum (Anodized and Powdered Coated) – Types and Uses Introduction to NANO materials – Vermiculate – Artificial sand – Recycled Aggregates. **WATER PROOFING AND DAMP PROOFING MATERIALS:** Various types of water proofing materials - Properties and functions- Various types of damp proofing materials - Properties and functions.	**3** **3** **4** **2**

TEXT BOOKS

1. “Aggarwal & Arora” – “A Text book of Civil Engineering Materials”
2. “S.C.Rangwala” – “Building Materials”
3. “P.C.Varghese” – “Building materials”
4. “M.L.Gambhir & Neha Jamwal” – “Building Materials”
5. “S.K.Duggal” – “Building Materials”

REFERENCE BOOKS

1. “R.C. Smith” – “Materials of Construction”
2. “N.K.R. Moorthy” – “Building Materials”
3. “B.N.Das” – “Materials of Construction”
4. “S.L.Chawla” –“Text book of Engineering Materials”

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

http://www.baboo-Flooring.com

http:// ag.avizona.edu/SWES

http://www/angelfite.com/in

http://www.idrc.ca/libary/documents/104800/chapz-e.htmlhttp://www/angelfite.com/inz/granite

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

THEORY OF ARCHITECTURE

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012320

Semester : III Semester

Subject Title : THEORY OF ARCHITECTURE

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
THEORY OF ARCHITECTURE	5 Hours	80 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	INTRODUCTION AND ELEMENTS OF ARCHITECTURE	15
II	ARCHITECTURAL FORMS & SPACE	15
III	COMPONENTS OF DESIGN AND PRINCIPLES OF COMPOSITION	15
IV	ORGANIZATION OF FORMS & SPACES	14
V	ARTICULATION AND CIRCULATION	14
TEST & MODEL EXAMINATION		7
Total		**80**

RATIONALE:

Students of Architectural Assistantship at diploma level are supposed to understand basic principles of theory of architecture 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, rhythm, texture, emphasis, contrast, color and other related elements. Therefore, the subject theory of architecture 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.

OBJECTIVES:

At the completion of the study, the students will be able

- To know about the principles of architecture.
- To know about the elements of architecture.
- To understand the concepts of various buildings.
- To study the organization of forms and spaces.
- To gain knowledge about the articulation and circulation of buildings.

DETAILED SYLLABUS

4012320- THEORY OF ARCHITECTURE

Contents: Theory

UNIT	NAME OF THE TOPIC	HRS
I	**INTRODUCTION AND ELEMENTS OF ARCHITECTURE** Definition of Architecture - Architectural design –Difference between Architecture and Civil Engineering – Architect – Civil Engineer - An analysis, Integration of aesthetic and function - Elements of Architecture – point, line, plane and volume - various building examples.	**15**
II	**ARCHITECTURAL FORMS & SPACE** Form & space - Unity of opposites, Shapes, visual and emotional effects of geometric forms - The sphere, the cube, the pyramid, the cylinder and cone and their derivatives, Subtractive & additive forms – linear, radial, centralized, clustered, grid - various building examples - Form defining space – horizontal elements, vertical elements - Space defining elements, openings in space-defining elements.	**15**
III	**COMPONENTS OF DESIGN AND PRINCIPLES OF COMPOSITION** **COMPONENTS:** Proportion, scale - Ordering principles - balance, rhythm, symmetry, datum, hierarchy, pattern, and axis with building examples. **PRINCIPLES OF COMPOSITION:** Unity, harmony and specific qualities of design to include dominance, punctuating effect, dramatic effect, fluidity, climax, texture, color and contrast with building examples.	**7** **8**
IV	**ORGANIZATION OF FORMS & SPACES** **SPATIAL RELATIONSHIPS:** i) Space within space ii) Interlocking spaces iii) Adjacent spaces iv) Space linked by a common space. **SPATIAL ORGANIZATION:** influencing factors and their types i) Centralized ii) Linear iii) Radial iv) Clustered v) Grid Works of contemporary architects and their ideologies and philosophies using the forms and space – F.L.Wright, Le Corbusier	**7** **7**

V	**ARTICULATION AND CIRCULATION** **ARTICULATION OF FORM**: Types: i) Edges and corners, ii) Surfaces articulation - Works of contemporary architects and their ideologies and philosophies using the forms and space – Louis Sullivan, Philip Johnson. **CIRCULATION** Function of building circulation- components of building circulation - The building approach, the building entrance, configuration of the path, path space relationship, form of circulation space with examples - Simple circulation diagram for buildings - Examples - Circulation as a component in the works of modern and post-modern architects – Louis Khan, Charles Correa.	**7** **7**

TEXT BOOKS

1. "V.S.Pramar", "Design Fundamentals in Architecture", "Samaiya Publications Private Ltd., NewDelhi".
2. "Paul Alan Johnson" – "The Theory of Architecture" – "Concepts and themes, Van Nostrand Reinhold Co., NewYork."
3. "Francis D.K.Ching", "Architecture-Form, Space and Order", "Van Nostrand Reinhold Company, New York,1979".

REFERENCE BOOKS

1. "Helm Marie Evans and Caria David Dunneshil," – "An initiation to Design", "Macmillan Publishing Co. Inc., NewYork"
2. "Ernest Burden" – "Elements of Architectural Design"
3. "Sir Bannister Fletcher" – "A History of Architecture," – "Butterworths, London,1987".
4. "G.Muthu Shoba Mohan"- "Principles of Architecture"
5. "Anupama Rani"- " Domestic Architecture".

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

HISTORY OF ARCHITECTURE – I

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012330

Semester : III Semester

Subject Title : HISTORY OF ARCHITECTURE - I

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
HISTORY OF ARCHITECTURE – I	5 Hours	80 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	EGYPTIAN & WEST ASIA	15
II	GREECE & ROME	15
III	EARLY CHRISTIAN AND BYZANTINE	14
IV	ROMANESQUE & GOTHIC	15
V	RENAISSANCE	14
TEST & MODEL EXAMINATION		7
TOTAL		**80**

RATIONALE:

Students of Architectural Assistantship at diploma level must be well conversant with the skills of preparing working drawings, vocabulary, 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 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, emphasis on materials, construction methods, structural system and design concepts involved and also motivate the students.

OBJECTIVES:

At the completion of the study, the students will be able

- To understand the new technology and new materials, general trend, effect of society and terminology on Architecture.

DETAILED SYLLABUS

4012330- HISTORY OF ARCHITECTURE – I

Contents: Theory

Unit	Name of the Topic	Hours
I	**EGYPTIAN & WEST ASIA** **EGYPT:** Architectural Character - Mass to Trabeate construction and general characteristics of Egyptian Architecture - Great Pyramid of Cheops, Gizeh, Great temple of Amman, Karnak. **WEST ASIA:** Babylonian and Persian cultures - architectural character - Ziggurat, Urnammu, - Palace at Persepolis – hanging garden of Babylon	**8** **7**
II	**GREECE & ROME** **GREECE** - Architectural character - Orders - Doric, Ionic, Corinthian: Parthenon, Athens: Theatre at Epidaurous **ROME** - Architectural Character - Advances in Engineering - About roman aqueducts - pont du gard, nimes –Pantheon, Rome	**8** **7**
III	**EARLY CHRISTIAN AND BYZANTINE** Evolution of church forms - Pendentives & Dome in Byzantine Architecture - Architectural character - St. Sophia, Constantinople, St. Vitale, Ravenna	**14**
IV	**ROMANESQUE & GOTHIC** **ROMANESQUE** - Architectural character in Italy, France and England – Abbay Aux- Homes **GOTHIC** - Evolution of vaulting and development of structural systems - Architectural character –Notre Dame, Paris	**8** **7**
V	**RENAISSANCE** The idea of rebirth and revival of art - Renaissance, High Renaissance and Baroque Periods - Features of a typical Renaissance Palace - Dome construction - St. Paul's, London. - St. Peter's, Rome.	**14**

TEXT BOOKS

1. “Sir Banister Fletcher” – “A History of Architecture”, -“University of London, The Antholone Press”.
2. “Spiro Kostof “- “A History of Architecture” - “Setting and Rituals, Oxford University Press, London”.
3. “Percy Brown” – “Indian Architecture (Buddhist and Hindu Period)” – “Taraporevala and Sons, Bombay”.
4. “Satish Grover” – “The Architecture of India (Buddhist and Hindu Period)”,- “Vikas Publishing Housing Pvt.Ltd., NewDelhi.”
5. “Percy Brown” – “Indian Architecture Buddhist & Hindu”
6. “Satish Grover” – “Buddhist & Hindu Architecture in India.”
7. “James Fergusson” – “History of Indian & Eastern Architecture”.

REFERENCE BOOKS

1. “A.Volwahsen” – “Living Architecture - India (Buddhist and Hindu)”,- “Oxford and IBM, London”.
2. “Christoper Tadgelli” – “The History of Architecture in India from the Dawn of Civilization to the end of Raj,Longman Group”, - “U.K.Ltd., London”.
3. “Carmen Kagal,Vistara” – “The Architecture of India,” - “Published by Festival of India”.
4. “Electa Moniteur” – “Architecture in India”, -“M/s.ElectaFrance,Milan”.
5. “George Mitchell” – “The Hindu Temple,” – “BI Pub., Bombay”.
6. “Sanjeev Matheshwari & Rajeev Garg”- “Ancient Indian Architecture”

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

http://library.advanced.org/10098

http://www.encylopedia.com/articles/05371.html

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

BUILDING CONSTRUCTION AND DETAILING - I

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012340

Semester : III Semester

Subject Title : BUILDING CONSTRUCTION AND DETAILING – I

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
BUILDING CONSTRUCTION AND DETAILING – I	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	MASONRY – STONE, BRICK & COMPOSITE	16
II	FOUNDATION	16
III	CEMENT CONCRETE CONSTRUCTION (P.C.C. & R.C.C.)	16
IV	TIMBER JOINTS, DOORS & WINDOWS	16
TOTAL		**64**

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.

OBJECTIVES:

At the completion of the study, the students will be able

- To develop understanding about construction principles.
- To develop design abilities by applying basic principles of construction and choosing appropriate materials and techniques.
- To gain knowledge in the basic building materials and basic construction principles for foundation, masonry wall, doors & windows.

DETAILED SYLLABUS

4012340- BUILDING CONSTRUCTION AND DETAILING – I

Contents: Practical

Unit	Name of the Topic	Hours
I	**MASONRY – STONE, BRICK & COMPOSITE** **STONE MASONRY**: Definition – Technical terms – Dressing of Stones – Joints in Stone Masonry – Classification of Stone Masonry**.** **BRICK MASONRY**: Technical terms – Bonds in Brick Work (English and Flemish bond up to two brick wall) – Bonds in Pier – Tee junction – Squint junction **MASONRY AND PARTITION WALL** Masonry – load Bearing Wall – Partitions – Retaining Walls and Breast wall – cavity wall construction – reinforced brick work.	**5** **6** **5**
II	**FOUNDATION** Types of Soils – Types of Loads – Bearing Power of Soil – Types of Foundation – Causes of Failure of Foundation and measures to prevent such failures – Dewatering of Foundation Trenches – Pile Foundation – Types of Pile Foundations. **FLOORS & ROOFS** **FLOORS**: – Types of Flooring- Timber, P.C.C, R.C.C., Stone, Tile, Ribbed Flooring **ROOFS & ROOF COVERINGS -** Technical terms - Classification of Roofs –Pitched Roof—Types of Pitched Roof (excluding Steel Trussed Roof)**–** Flat Roofs – Roof coverings for Pitched Roofs – FRP, PVC,AC sheet, Aluminum Sheets and country & Mangalore tiled roofing	**6** **5** **5**
III	**CEMENT CONCRETE CONSTRUCTION (P.C.C. & R.C.C.)** Definition of P.C.C. & R.C.C. – Water Proofing of Concrete – Reinforcement – Advantages of R.C.C. – Causes of Failure, Rehabilitation of R.C.C. Structures Various Building Components in a Single Storied Building and their functions	**8**

	DAMP PROOFING: Source of dampness- Causes of dampness – Methods of Damp Proofing – Materials used for Damp Proofing – Selection of Material for D.P.C. – Damp Proofing Treatment in Buildings (Foundations, Floors, Walls, Roofs, and Parapet Walls & Basement).	**8**
IV	**TIMBER JOINTS, DOORS & WINDOWS.** TIMBER JOINTS**:** Technical terms – Classification of Joints. DOORS & WINDOWS**:** Technical terms – Location of Doors – Size of Doors – Types of Doors & Windows – Fixtures and Fastenings for Doors and Windows **ARCHES & LINTELS, DAMP PROOFING** ARCHES & LINTELS: Technical terms – Types of Arches – Materials used for Construction – Types of Lintels.	**10** **6**

LIST OF PLATES:

1. Plan, Elevation and Isometric view of stone masonry **(Sketch only).**
2. Plan, Elevation and Isometric view of alternate courses for English bond **(Sketch only).**
3. Plan, Elevation and Isometric view of alternate courses for Flemish bond **(Sketch only).**
4. Plan, elevation and section of Partition walls using timber, glass to half full size scale detailing. Details shall be prepared to half full sizescale.
5. Plan and sectional elevation of Spread Footing (Stone and Brick), Plan and sectional elevation of Isolated Footing, Combined Footing (R.C.C)
6. Cross section of different types of floors and Cross section of different types of Roof coverings.
7. Elevation of all types of Arches and Cross section of Lintels.
8. Damp proofing of Foundations, Basement wall, Floors, Roofs, and Parapet Walls **(Sketch only).**
9. Plan and Cross section of a single storied building showing various building components.
10. Plan, Elevation, Section and Construction details of Wooden Paneled Door and Flush Door. Details shall be prepared to full size scale.

11. Plan, Elevation, Section and Construction details of Partly Paneled and Partly Glazed Door. Details shall be prepared to full size scale.
12. Plan, Elevation, Section and Construction details of Aluminum Glazed door / Window. Details shall be prepared to full size scale.
13. Plan, Elevation, Section and Construction details of Steel door / Steel Glazed Window. Details shall be prepared to full size scale.
14. Plan, Elevation, Section and Construction details of Wooden Paneled window and Glazed window. Details shall be prepared to full size scale.

BOARD EXAMINATION

ALLOCATION OF MARKS

Part A: Theory questions 7 out of 10, two questions from each unit carry five marks each with a total mark **of 35**

Part B: Any two of the exercises from the exercises that are done in the studio during the semester carries 2x30 = **60 marks**.(By lot)

Viva-Voce : 5marks

Total : 100 Marks

TEXT BOOKS

1 “S.C.Rangwala” – “Building Construction”.

2 “Arrora & Bindrra” – “A text book of building construction”

3 “Dr.B.C.Punmia” – “Building Construction”

4 “Dr.J.Jha , Prof.S.K.Sinha & P.C Varghese” – “Building Construction”

5 “S.S.Bhavikatti” – “Building Construction”

REFERENCES:

1. ”R.C.Mitchell” - “Building construction”
2. “R.S. Deshpande” – “A Text book of Building Construction”
3. “Richard Greenhaigh” – “Building Construction”
4. “Shah &Kale” – “Building Drawing”
5. “S.S. Bhavikatti , M.V.Chitawadag” – “Building Planning & Drawing”
6. “W.B.Mckay” – “Building Construction Metric (fifth edition)”
7. “Roy Chudley & Roger Greeno” –“Building Construction Hand Book”

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

http://www.baboo-Flooring.com

http:// ag.avizona.edu/SWES

http://www/angelfite.com/in

http://www.idrc.ca/libary/documents/104800/chapz-e.htmlhttp://www/angelfite.com/inz/granite

http://www.ibex-ibex-intl.comhttp://www.inika.com/

chitrahttp://www.routbdge.com http://www.ventura india.com

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

4012340 - BUILDING CONSTRUCTION AND DETAILING – I

MODEL QUESTION PAPER

Duration: 3 HRS **Max.marks:100**

PART-A **(7X5=35 marks)**

Answer any 7 questions

1. What are the uses of stone masonry?
2. What is dressing of stone?
3. Define the following
    a) Header
    b) stretcher
4. Define bearing capacity of soil.
5. What are the different types of foundation? Explain any one in detail.
6. Write the classification of roof.
7. What are the different types of concrete? Explain any one in detail
8. Write a short note on Various Building Components in a Single Storied Building and their functions
9. What are the different types used in timber construction? Explain any one in detail.
10. What are principles to be followed in locating doors and windows in a building?

PART-B (By lot) **(2x30=60 marks)**

Answer all the questions

11. Draw the Plan, Elevation and Isometric view of alternate courses of two brick wall in English bond.
12. Draw the Plan, Elevation, Section and Construction details of Aluminum Glazed door

Viva-Voce - 5 marks

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

ARCHITECTURAL DRAWING - I

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012350

Semester : III Semester

Subject Title : ARCHITECTURAL DRAWING - I

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL DRAWING - I	4 Hours	64 Hours	25	100*	100	3Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	PENCIL SKETCHING	18
II	ARCHITECTURAL ISOMETRIC DRAWINGS	15
III	MEASURED DRAWING	15
IV	DOCUMENTATION OF A BUILDING	16
TOTAL		**64**

RATIONALE:

The students of Diploma in Architectural Assistantship should have sufficient skills to draw isometric drawings, besides this they should also be introduced to pencil sketching and measured drawing of simple objects. They should be given sufficient exercises in rendering of isometric drawings, pencil sketching and measured drawing. So that they are able to perform well in the field/industry.

OBJECTIVES:

At the completion of the study, the students will be able

- To introduce architectural drawing techniques and to facilitate effective visual communication

DETAILED SYLLABUS

4012350 - ARCHITECTURAL DRAWING - I

Contents: Practical

UNIT	TOPICS	HOURS
I	**PENCIL SKETCHING** Exercise with Straight line, curvilinear line, Planes, Volume and Texture to understand various forms in Nature and Manmade forms Freehand Sketching Exercise to understand the Characteristic of Elements in Nature and Manmade forms Sketching from memory- Basic Knowledge of Scale, Proportion, Light and Shade - Enlarging and Reducing of drawing Sketching of various Compositions with Natural and Geometrical Form – Rendering and sketching exercises with Pencil. **(Minimum of 6 exercises)**	**6** **6** **6**
II	**ARCHITECTURAL ISOMETRIC DRAWINGS** Architectural details like pergolas, some alphabetical shapes Addition of solids and voids that will create more 3-dimensional expression -Sunshades, Steps, Stools, Table and Chair. **(Minimum of 5 exercises)**	**15**
III	**MEASURED DRAWING** Observation, measurement and drafting- plans, elevations of simple objects like furniture, Entrance gates, etc. and building components like columns, cornice, door, window, etc. Principle of basic architectural drafting - line value, lettering basic and sections - presentation formats. Measured drawing of simple objects like furniture, entrance gates, etc. and building components like columns, cornice, door, window, etc**.(Minimum of 3 exercises)**	**5** **5** **5**
IV	**DOCUMENTATION OF A BUILDING** Detailed measured drawing of a building. **(Minimum of 1 exercise)**	**16**

BOARD EXAMINATION

ALLOCATION OF MARKS

Part-A **:** Any one question from unit – I which carries **20 marks**.
(By lot) (Pencil Sketching)

Part-B **:** Any one question from unit – II which carries **25marks.**
(By lot) (Architectural Isometric drawings)

Part-C **:** Any one question from unit – III which carries **50 marks.**
(By lot) **(**Measured Drawing)

Viva-voce **: 5marks**

REFERENCES:

1. "IH.Morris", "Geometrical Drawing for Art Students" – "OrientLongman, Madras,1982".
2. "George K.Stegman,HarryJ.Stegman", "Architectural Drafting" "Printed in USA by \ American TechnicalSociety,1966".
3. "Francis Ching", "Architectural Graphics", "Van Nostrand Rein Hold Company, New York, 1964".
4. "C.Leslie Martin", "Architectural Graphics", "The Macmillan Company, New York,1964".
5. "Clande Batley", "Indian Architecture", "D.B,Taraporevale Sons andCo.,Ltd.,Bombay".
6. "William Kirby Lockard", "Drawing as a Means to Architecture", "Van Nostrand,Reinhold Company, NewYork".
7. "George A.Dinsmore", "Analytical Graphics" – "D.Van Nostrand, Company Inc.,Canada".
9 "Francis D.K.Ching With Steven P.Juroszek"-" Design Drawing"
10 "Robert W.Gill" –"Manual Of Rendering With Pen & Ink (revised & enlarged edition)"

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

http://www infinit.net - elements of design

http://www.Okino.com - design, visualization, rendering system

http://www.interface - signage.com

http://www.design community.com - arch rendering, 3D design

http://www.cs.brown.edu

http://www.dtcc.edu/-document,project info - Arch.dwg.

LIST OF EQUIPMENTS (for a batch of 30 students)

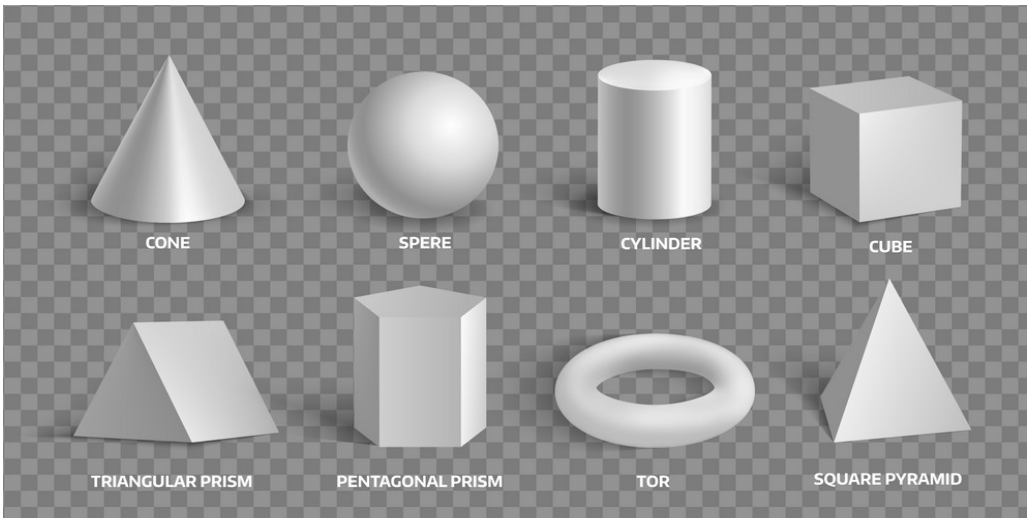
Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

4012350 - ARCHITECTURAL DRAWING – I

MODEL QUESTION PAPER

Duration:3hrs **Max.marks:100**

Part-A: Sketch the given object and render with light and shade. **- 20 marks**.



Part-B: Draw a plan, elevation and isometric view of Sunshade. **- 25marks**.

Part –C: Document and detail the drawings of given chair / door / window

Measure the objects and detail out the plan, section, elevations. **- 50 marks**.

(A2 sheets – 2 / student)

Viva–voce **- 5marks**

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

BASIC DESIGN

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012360

Semester : III Semester

Subject Title : BASIC DESIGN

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BASIC DESIGN	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	ELEMENTS OF VISUAL COMPOSITIONS	12
II	PRINCIPLES OF VISUAL COMPOSITIONS	12
III	PLANER FORMS	6
IV	PAPER FORMS	3
V	SOLIDS AND VOIDS	6
VI	LINEAR FORMS	3
VII	APPLICATION OF BASIC DESIGN IN ARCHITECTURE	22
TOTAL		**64**

RATIONALE:

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 representations are made in different mediums. The student should be acquainted with all of these mediums.

GUIDELINES:

1. Course in Basic Design shall be conducted by giving small simple exercises
2. Each exercise shall be aimed at teaching the principles of Aesthetics and Visual Design and its application in Architecture forms and spaces.
3. Goals and Objectives of each exercise shall be made clear to the students before Starting the exercises.
4. Each exercise shall have meaningful sequence with the previous exercises and the next exercise.

OBJECTIVES:

At the completion of the study, the students will be able

- To develop skills in manual presentation techniques, use of various media of presentation, Principles of 2-D & 3-D compositions, Principles of Design.
- To understand the Visual & aesthetic qualities of Art and relating these to Architectural Design situation.

(These subject forms the direct input to Design. Basic Design is the foundation of all Professional courses which deals directly or indirectly with Aesthetic.)

DETAILED SYLLABUS

4012360-BASIC DESIGN

Contents: Practical

UNIT	TOPICS	HOURS
I	**ELEMENTS OF VISUAL COMPOSITIONS** Assignment shall be aimed at understanding role of the following basic elements of visual design existing in paintings, compositions, murals, sculptures, building and in a nature – Dots, Lines, Planes, Patterns Shapes, Forms, Spaces, Colour, Texture, Levels, Light, etc. **(Minimum 4 exercises by covering all the components)**	**12**
II	**PRINCIPLES OF VISUAL COMPOSITIONS** The exercises shall be aimed at understanding and using principles like Repetition, Rhythm, Radiation, Focal point, Symmetry, asymmetry Background, Foreground, Sense of Direction, Harmony, Balance and Proportion. (**Minimum 4 exercises by covering all the components)**	**12**
III	**PLANER FORMS** This exercise shall be aimed at creating sculptures out of Mount Board, Box Board/ Metal Foils and any other planer material and also exploring the possibility of adopting the sculptures to Architectural functions. (**Minimum 2 exercises by covering all the components)**	**6**
IV	**PAPER FORMS** This exercise shall include explorations of various folded paper forms and its possible use in Architectural Spaces. **(Minimum 1 exercise)**	**3**
V	**SOLIDS AND VOIDS** This exercise shall include creation of symbolic sculptural forms and spaces using mount board / any mouldable material. **(Minimum 2 exercises)**	**6**
VI	**LINEAR FORMS** Students should be asked to create Atrium Sculptures, Space sculptures, Geodesic Domes etc. for outdoor and indoor Architectural spaces using Match sticks / metal Wire. **(Minimum 1 exercise)**	**3**

VII	**APPLICATION OF BASIC DESIGN IN ARCHITECTURE** **(Any one for each)** The exercise shall be aimed at learning to adopt compositions, murals and sculptures for semi- recreational and semi - functional Architectural spaces like Outdoor Dining Area, Entrance Gates of Exhibition Living room, Bedroom, Kitchen Atrium or Courtyard with levels. (**Minimum 6 exercises by covering all the topics**)	**9** **9** **4**

BOARD EXAMINATION

ALLOCATION OF MARKS

Part-A: Any one question from units 1 & 2 which carries. **20 marks**. (By lot)

Part-B: Any one question from units 3 to 6 which carries. **35marks**. (By lot)

Part-C : Any one question from unit 7which carries.**40 marks**. (By lot)

Viva-voce 5 marks

REFERENCES:

1. "Francis D.K.Ching" – "Architecture - Form Space and Order"- "Van Nostrand Reinhold Co., (Canada),1979".
2. "John W.Mills" – "The Technique of Sculpture", "B.T.Batsford Limited, New York - Reinhold Publishing Corporation,London,1966".
3. "C.Lawrence Bunchy" – "Acrylic for Sculpture and Design", "450,West 33rd Street,New York,N.Y.10001,1972".
4. "Maitl and Graves","The Art of Colour and Design", -"McGrawHillBookco.,1951 (2^{nd}edition)".
5. "V.S. Paramar"-" Design Fundamentals in Architecture", "Somalya Publications (P) Ltd., New Delhi,1973".
6. "Robbert S. Oliver", "The Complete Sketch", "VNR, New Delhi,1989".
7. "Tokyo Musashino Academy of Art "– "Introduction to Pencil Drawing", "Graphic Sha Publishing co., Ltd, Japan,1991".

WEBSITES

https://nptel.ac.in
https://ndl.iitkgp.ac.in
http://www infinit.net - elements of design http://www.Okino.com - design, visualization, rendering system http://www.interface - signage.com
http://www.design community.com - arch rendering, 3D design

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

4012360 - BASIC DESIGN

MODEL QUESTION PAPER

Duration:3 Hours **Max. marks :100 marks**

PART- A (20 Marks)

I. Create a pattern A3 size sheet with lines and curves. The lines should follow a pattern which should be symmetrical and should not touch each other. The pattern should not be an abstract and the output should be a form from nature. Materials: A3 size thick sheets, color pencils, sketch pens

PART- B (35 Marks)

II. Do any one Match stick model for the following conditions

- 3 module x 3 module pyramid

OR

- 3 module x 6 module pyramid

PART- C (40 Marks)

III. Design a sculpture for courtyard space of size 10M x 10M. The space is for recreational purpose in an urban apartment. The height of the court yard is open towards 5floors.

Materials for the sculpture: ½ kg of clay or plaster of Paris / wire mesh / base board / color agents.

Note: Concept sheet has to be submitting in 15 minutes and the sheet to be evaluated for 5marks. The deviation should not be more in terms of elements and form of the model.

Note: The class exercise models should not be used for the exams. The problems should orient towards the exercises but not the same.

VIVA-VOCE - 5 MARKS

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

III SEMESTER

COMPUTER APPLICATION IN ARCHITECTURE - I

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012370

Semester : IV Semester

Subject Title : COMPUTER APPLICATION IN ARCHITECTURE - I

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
COMPUTER APPLICATION IN ARCHITECTURE-I	6 Hours	96 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	GETTING STARTED	19
II	DRAW COMMANDS & EDITING COMMANDS	20
III	DRAWING AIDS &CREATING TEXT BASIC DIMENSIONING INQUIRY COMMANDS	19
IV	HATCHING BLOCKS	19
V	PLOTTING DRAWINGS IN AUTOCAD PRACTICE WITH COMPLETE DRAWIN	19
TOTAL		**96**

RATIONALE:

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.

OBJECTIVES:

At the completion of the study, the students will be able

- To understand the Fundamentals of software to create a basic 2D and 3D drawing in AutoCAD.
- To enable student the techniques and teaches them to be proficient in the use of AutoCAD to make simple geometric forms, rendering, house plan and other presentation techniques involved.
- To understand the tool for the task, the best way to use that tool and how to create new tools to accomplish tasks more efficiently.

DETAILED SYLLABUS

4012370 – COMPUTER APPLICATION IN ARCHITECTURE- I

Contents: Practical

UNIT	NAME OF THE TOPIC	HOURS
I	**GETTING STARTED** Starting AutoCAD - AutoCAD screen components- starting a drawing: open drawings, create drawings (start from scratch, use a template & use a wizard) - invoking Commands in AutoCAD - drawing lines in AutoCAD co-ordinate systems: absolute co-ordinate system, relative co-ordinate system - direct distance method - saving a drawing: save &save as - closing a drawing - quitting AutoCAD, opening an existing file. concept of object - object selection method: pick by box, window selection, crossing selection, all, fence, last previous, add, remove - erasing object: oops Command, Undo/Redo Commands - zoom Command - pan Command, panning in real time - setting units - object snap, running object snap, mode- drawing circles.	**10** **9**
II	**DRAW COMMANDS & EDITING COMMANDS** ARC Command - RECTANGLE Command – ELLIPSE Command Elliptical arc- POLYGON Command (regular polygon) - PLINE Command – DONUT Command - POINT Command – construction line: XLINE Command, RAY Command - MULTILINE Command - MOVE Command- COPY Command- OFFSET Command ROTATE Command- SCALE Command – STRETCH Command - LENGTHEN Command - TRIM Command - EXTEND Command - BREAK Command-CHAMFER Command – FILLET Command - ARRAY Command - MIRROR Command - MEASURE Command - DIVIDE Command - EXPLODE Command - MATCHPROP Command - Editing with grips PEDIT.	**10** **10**
III	**DRAWING AIDS &CREATING TEXT BASIC DIMENSIONING INQUIRY COMMANDS** Layers - layer properties manager dialog box - Object Properties: object property toolbar, properties window - LTSCALE factor - AUTO Tracking - REDRAW Command, REGEN Command.	**6**

	Creating single line text -drawing special characters - creating multiline text - editing text - text style. Fundamental dimensioning terms: dimension lines, dimension text, arrowheads, extension lines, leaders, centre marks and centerlines, alternate units - associative dimensions - dimensioning methods - drawing leader, AREA - DIST - ID - LIST - DBLIST – STATUS – DWGPROPS.	**3** **10**
IV	**HATCHING BLOCKS** BHATCH, hatch Commands - boundary hatch options: quick tab advance tab - hatching around text traces, attributes, shapes and solids - editing hatch boundary - boundary Commands the concept of blocks. Converting objects into a block: BLOCK - BLOCK Commands - nesting of blocks - inserting blocks: insert, MINSERT Commands - creating drawing files: WBLOCK command - defining block attributes - inserting blocks with attributes - editing attributes.	**9** **10**
V	**PLOTTING DRAWINGS IN AUTOCAD PRACTICE WITH COMPLETE DRAWING** PLOT Command - plot configuration - pen assignments - paper size & orientation area - plot rotation & origin - plotting area – scale. Each student is required to prepare a set of orthographic projections of a building design approved by the teacher in charge.	**6** **13**

EXERCISES:

1. Study of various menus of Auto CAD package.
2. Setting limits and creating entities like LINE, ARC, CIRCLE, etc.
3. Draw 5 different Geometric Shapes and hatch it with different patterns showing dimensions and area.
4. Draw a grill design for an opening of size 9'x6'.
5. Draw a tile design for 2'x2' size tile.
6. Draw a plan and elevation of parapet wall for an residence project.
7. Draw the given pattern by using Array command with hatch.
8. Draw elevation and cross section for a window (minimum 2 types) with dimensioning.
9. Draw elevation and cross section for a door (minimum 2 types) with dimensioning.

10. Draw a plan of single room showing 2 windows and a door showing dimensions and area.
11. Draw four sides elevations of (plate 10) with proper dimensioning.
12. Do furniture arrangements for the plan shown in plate10.
13. Design and Draw a elevation of compound wall and entrance gate with proper dimensioning.
14. Draw a given single bedroom residence plan with proper dimension and take a printout the final drawing to a suitable scale.
15. Draw a given section and elevation with proper dimension and take a printout the final drawing to a suitable scale.

BOARD EXAMINATION

ALLOCATION OF MARKS

For a given line plan of minimum plinth area 100 Sq.m, draw plan, Elevation, Section and dimension the same. (By lot)

Note: The examiners should prepare minimum of 10-line plans

Plan	-	30 marks
Elevation	-	25 marks
Section	-	25 marks
Dimensioning	-	15 marks
Viva-voce	-	5 marks

TEXT BOOKS:

1. AutoCAD 2014 for Engineer & Designer by Prof. Sham Tickoo , Amit Bhat , T.Kishore Haurav Verma

REFERENCES BOOKS:

1. “Auto CAD REFERENCES manual” – “Autodesk UNC, 2010”.
2. “Dana.J. Hepler , Paul Ross Wallach, Donald E.Helper” – “.Drafting & Design for Architectural & Construction (Ninth Edition)”
3. “S.S.Bhavikatti , M.V.Chitawadagi”-“Building Planning & Drawing”

WEBSITES:

https://www.autodesk.in

https://www.thesourcecad.com/autocad-tutorials

http://www.cadtutor.net/

https://static.sdcpublications.com/pdf

http://www.sin.fi.edu/-Computer drafting

http://www.ccollege.hccs.cc.tx.us/-omp.graphic

LIST OF EQUIPMENTS (for a batch of 30 students)

Computer – 30 Nos

SOFTWARE USED

CAD Software

4012370 - COMPUTER APPLICATIONS IN ARCHITECTURE - I

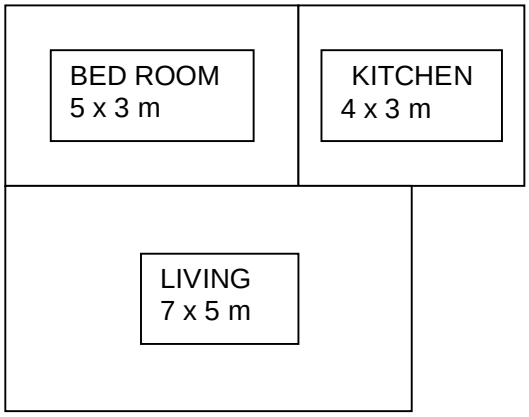
MODEL QUESTION PAPER

Duration: 3 Hrs **Maximum marks: 100**

ALLOCATION OF MARKS

Plan	-	30 marks
Elevation	-	25 marks
Section	-	25 marks
Dimensioning	-	15 marks
Viva-voce	-	5 marks

1. Draw the Building plan shown in figure with Elevation, Section with Dimensioning and specifications using Auto CAD and finally take a print out of the drawing to the scale of (1:200)**. (By lot)**



Note: The examiners should prepare minimum of 10-line plans (Area approximately equal to 100 Sq.m).

IV SEMESTER

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

MECHANICS OF STRUCTURES

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOM IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012410

Semester : IV Semester

Subject Title : MECHANICS OF STRUCTURES

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
MECHANICS OF STRUCTURES	6Hours	96 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION, STRESS, STRAIN& ELASTIC CONSTANTS APPLICATION OF STRESS AND STRAIN IN ENGINEERING FIELDBEHAVIOUR OF DUCTILE AND BRITTLE MATERIAL	18
II	SHEAR FORCE AND BENDING MOMENT	18
III	CENTRE OF GRAVITY & MOMENT OF INERTIA	18
IV	AREA MOMENT METHOD & THEOREM OF THREE MOMENTS	18
V	COLUMNS AND STRUTS & PIN JOINTED FRAMES	17
TEST & MODEL EXAMINATION		7
TOTAL		**96**

RATIONALE:

This is a fundamental subject which covers broad elements of Engineering Mechanics, Strength of Materials and Theory of Structures. Study of this subject enables the student to distinguish between different types of stress and strain in a material, under the action of external forces. The student will learn to analyse simple structural elements for their design which he usually needs in the professional life. Teachers while imparting instruction should stress on concepts and principles and provide considerable practice in problem solving.

OBJECTIVES

At the completion of the study, the students will be able to

- Understand the Stress, strain and elastic constants.
- Understand the Application of stress and strain in engineering field.
- Know about the behavior of ductile and brittle materials.
- Locate the position of centroid of different geometrical section.
- Determine Ixx, Iyy, Zxx, Zyy of different geometrical section.
- Understand stresses in beams due to bending.
- Determine the Slope and Deflection of Determinate beams by area moment method.
- Analyze of Continuous beam, fixed beam and propped cantilever by Theorem of Three moment and draw SFD &BMD.
- Define different types of Columns and to find Critical load of Columns.
- Analyze Pin jointed frames by graphical method.
- Solving problems in the course of study.

DETAILED SYLLABUS

4012410- MECHANICS OF STRUCTURES

Contents: Theory

Unit	Name of the Topic	Hours
I	**1.1 INTRODUCTION, STRESS AND STRAIN &ELASTIC CONSTANTS:**	**2**
	Importance of study of Engineering Mechanics/ Strength of Materials, Mechanical properties of materials – Elasticity, Plasticity, Hardness, Toughness, Brittleness, Ductility, Creep &Fatigue.	**4**
	Stress and strain: Force-definition-Types of forces acting on a structural member- Definition of tension, compression, shear; Stress-strain-definition- Different types of stresses-tensile, compressive and shear stresses - Different types of strains –Tensile, Compressive and Shear strains; Longitudinal and Lateral strains-Poisson's Ratio- Numerical problems on stress and strain.	**6**
	Modulus of Elasticity / Elastic constants Elasticity –Elastic limit- Hooke's law – Young's modulus of Elasticity –Rigidity modulus-Volumetric strain – Bulk modulus – Definition- Relation between three Moduli-(no derivation)-Young's modulus for selected engineering materials- Numerical problems.	**3**
	1.2 APPLICATION OF STRESS AND STRAIN IN ENGINEERING FIELD: Deformation of Prismatic bars subjected to uni-axial load– Deformation of stepped bars – deformation of prismatic bars due to self-weight – Numerical problems.	**3**
	Behavior of ductile and brittle material Load extension curve of Ductile and Brittle material – Limit of proportionality, Elastic limit, Yield stress, Ultimate stress, Breaking stress, Factor of safety – Significance of percentage of elongation and reduction in area – Numerical problems.	

II	**2. 1 SHEAR FORCE AND BENDING MOMENT** Definition of a beam– Support conditions and diagrammatic representation – Types of beams based on support conditions – Diagrammatic representation of beams – Static equilibrium equations – Determinate and indeterminate beams- Loads- Transverse loads-Types (Concentrated, uniformly distributed and varying loads)- Diagrammatic representation of beams with different loads - Shear force and Bending Moment - Definition – Conventional signs used for S.F. and B.M – S.F and B.M of determinate beams – Cantilever beam & Simply supported beams - simple problems only (Concentrated loads and udl only) – Overhanging beams (No Problems) – Point of contra flexure – Economical overhanging.	**18**
III	**GEOMETRICAL PROPERTIES** **3.1 CENTROID:** Geometrical properties -Definition of centroid and center of gravity – Centroid of regular geometrical figures - Centroid of symmetric, asymmetric, and anti symmetric practical sections-Numerical problems. **3.2. MOMENT OF INERTIA (MI):** Definition and notation of Moment of Inertia, Polar moment of inertia, Radius of gyration, Section modulus and Polar modulus, Parallel and perpendicular axis theorems; M.I. of regular geometrical plane sections (rectangular, triangular and circular sections) – M.I. about centroidal axis - MI about base, Radius of gyration- section modulus- Polar moment of inertia – Polar modulus- problems- MI of symmetric, asymmetric and anti-symmetric practical sections - Problems.	**9** **9**

IV	**4.1 SLOPE AND DEFLECTION OF BEAMS (CANTILEVER & SIMPLY SUPPORTED BEAMS):** Deflected shape of beams with different support conditions – Flexural rigidity and stiffness of beams – Definition of slope and deflection-Area moment method – Mohr's theorems for slope and deflection of beams – Derivation of expression for maximum slope and maximum deflection of simple standard cases by area moment method for cantilever and simply supported beams subjected to symmetrical UDL and point loads – Numerical problems on slope and deflection at salient points of cantilever and simply supported beam from first principles.. **4.2 THEOREM OF THREE MOMENTS:** Introduction to continuous beam – Definition of indeterminate structures- Degree of indeterminacy of continuous beams- General methods of analysis of indeterminate structures – Clapeyron's theorem of three moments – Statements – Application of Clapeyron's theorem of three moments and sketching of SFD & BMD for the following cases: problems on two spans simply supported ends, propped cantilever and fixed beams.	**9** **9**
V	**5.1 COLUMNS AND STRUTS:** Definition of columns and struts - short and long columns – Equivalent length/Effective length- Slenderness ratio- Axially loaded and eccentrically loaded- End conditions – Euler's formula and Rankine's formula for buckling load (no derivation) - application of formula – columns subjected to axial loads – simple problems on simple single section only. **5.2 PIN JOINED FRAMES:** Frame / Truss – definition – Determinate and Indeterminate frames – Classification of frames – Perfect and Imperfect frames – Deficient and Redundant frames - Formulation of a perfect frame – Common types of trusses – Methods of analysis – Graphical method only - Space diagram – Bow's notation – Resultant force– Vector diagram – Determination of forces in a cantilever / Simply supported determinate truss with vertical load only.	**8** **9**

TEXT BOOKS

1. “B.C.Punmia”-“Strength of materials and Theory of structures- Vol I” - , “Lakshmi publications, Delhi”
2. “S. Ramamrutham”-,”Strength of Materials” – “Dhanpatrai & Sons,Delhi”.
3. “R.K. Bansal”-“ Engineering Mechanics & Strength of Materials” -,” Lakshmi publications, Delhi”.
4. “S.Ramamrutham & R.Narayan”-“Theory of Structures”
5. “P.N.Chandramouli”-“ Fundamentals of Strength of Materials”
6. “R.Subramanian”-“ Strength of Materials”
7. “T.S.Venkatesh & D.K.Singh”-“Strength of Materials”
8. “S.S Bhavikatti”-“Strength of Materials”
9. “B.C.Punmia ,Er.Ashok K Jain & Dr.Arun K.Jain”-“Theory of Structures”
10. “R.S.Khurmi”-“Theory of Structures”.

REFERENCE BOOKS

1 “V.N. Vazirani & M.M.Ratwani”=”Analysis of Structures”.

2 “R.L.Jindal”-“Elementary Theory of Structures”.

3 “S.B.Junnarkor”-“Mechanics of structures”

4 “V.Natarajan”-“Elements of Applied Mechanics”

5 “Dr A.Elangovan“- “Engineering Mechanics-Tamil Version”

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

SURVEY THEORY

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012420

Semester : IV Semester

Subject Title : SURVEY THEORY

TEACHING AND SCHEME OF EXAMINATION

No. of hours per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SURVEY THEORY	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	CHAIN, COMPASS SURVEYING & LEVELLING	12
II	THEODOLITE SURVEYING & TRIGNOMETRICAL LEVELLING	11
III	TACHEOMETRY AND TOTAL STATION	12
IV	AREAS AND VOLUMES & CONTOUR SURVEYING	11
V	GPS & GIS	11
TEST & MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

Students of Architectural Assistantship at diploma level are expected to manage the site which involves taking measurements surveying and inspection one of the main concerns which is required to be carried out for the development of township, residential colonies, public buildings etc. in the survey work. Therefore, thorough basic knowledge and skills of surveying including chain surveying, compass surveying, leveling, theodolite surveying, tachometric surveying and modern surveying is very essential. Teachers while imparting instructions are expected to explain various concepts and principles by showing various equipments and demonstration.

OBJECTIVES:

At the completion of the study, the students will be able to

- Know basic concepts about surveying.
- Understand the principles of chain surveying
- Know principles of compass surveying.
- Understand the principles of leveling for different Architectural Purposes.
- Know the principle of Tachometry surveying
- Understand the contours.
- Understand the modern surveying instruments and methods.

DETAILED SYLLABUS

4012420-SURVEY THEORY

Contents: Theory

Unit	Name of the Topic	Hrs.
I	**1.1 CHAIN & COMPASS SURVEYING** **Introduction:** Definition – object of surveying – Division of surveying – plane and geodetic survey – classification of survey. **Chain surveying:** Instruments used for chaining –Ranging-Types – Direct & Indirect ranging-Baseline – Check line – Tie line – offsets – Types of offsets (Description only). **Compass surveying:** Purpose of compass surveying – magnetic dip & declination - magnetic& true meridian – magnetic true & Arbitrary bearing – WCB &RB – Fore and back bearing –calculation of included angle – closed frame work - simple problems only. **1.2 LEVELLING:** Levelling –levels –functions – Types of levels – Dumpy level – Modern Tilting Levels – Quick setting levels – Automatic and laser level -Levelling staff – Types – Temporary adjustment –Back Sight - Fore sight – Inter sight – Change point – Bench mark – Height of instrument – Reduction of levels – Methods – Height of collimation and Rise and fall method-Simple Problems.	1 2 4 5
II	**2.1 THEODOLITE:** Type of Theodolite – Transit and non-Transit Theodolite – Vernier and Micrometer Theodolite -Technical terms used in Theodolite survey – Temporary adjustment – Fundamental lines – Relation between them. Measurement of Horizontal angle – methods - general, repetition and reiteration methods –measurement of vertical angle – Latitude and Departure – Consecutive coordinates – Independent coordinate. Computation of Area of closed traverse problems. **2.2 TRIGNOMETRICAL LEVELLING:** Finding elevation of objects – Base accessible – Base inaccessible – Single plane & Double plane methods – Simple problems only.	6 5

III	**3.1 TACHEOMETRY:** Instrument used – system of Tacheometry – stadia and tangential systems– Tacheometric Constants –- Fixed hair method – Analatic lens (no Proof) – Distance and elevation formulae for horizontal and inclined sight- simple problems on determination of distance and elevation of objects (staff held vertical only) - determination of tachometric constants from field observations for horizontal and inclined line of sight. (staff held vertical only) **3.2 TOTAL STATION:** Introduction - applications of total station – components parts – accessories used – instrument preparation & setting and measurement – creating a new job – measuring magnetic bearing of a line – field procedure for co- ordinates measurements – field procedure to run a traverse survey - linking data files.	**6** **6**
IV	**4.1 AREAS & VOLUMES** Computation of areas of irregular figure –General Methods of determining areas- Mid Ordinate rule-Average ordinate rule- Trapezoidal rule - Simpson's rule- Problems –Computation of Volume –computation of earth work from cross section - one Level Cross Section only –simple problems on embankment and cutting by trapezoidal and prismoidal formulae only. **4.2 CONTOUR SURVEYING:** Definition – Contour – Contouring – Characteristics of Contours - Contour Gradient – Uses of Contour plan and Map – Calculation of capacity of reservoirs – Simple problems only.	**6** **5**
V	**5.1 GLOBAL POSITION SYSTEM (GPS):** Introduction – Fundamentals – Applications in Civil Engineering – GPS receiver- hand held GPS –Differential GPS - Various satellites used by GPS. **5.2 GEOGRAPHICAL INFORMATION SYSTEM(GIS):** MAP – Types of Maps – Development of GIS – Components of GIS – Ordinary mapping to GIS – Comparison of GIS with CAD and other system– Application of GIS -Land Information System.	**6** **5**

TEXT BOOKS

1. "Punmia.B.C"-"Surveying Volume-1 & Volume-2"- ",Laxmi Publications(p)Ltd".,
2. "Duggal .S.K"- "Surveying volume I & II "- "Tata McGraw hill New Delhi"
3. "Agor"-"A Text Book of Surveying Levelling ", -"Khanna publishers"
4. "Basak"- "Surveying & Leveling"

REFERENCES:

1. "Kanetkar.T.P. & S.V.Kulkarni"-"Surveying and levelling part I &II ",
2. "Rangwala.S.C" -"Surveying & Levelling", - "Charotar Publishing House",
3. "Sathesh Gopi,R.Sathikumar & N.Madhu"- "Advanced Surveying, (Total Station & Remote sensing)","Pearson Education, Chennai, 2007".
4. "Burrough P A"- "Principles of GIS for Land Resources Assessment,"- "Oxford Publication, 2000".
5. "Michael N Demers", "Fundamentals of Geographical Information Systems",- - "Second Edition, John Wiley Publications, 2002"

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

HISTORY OF ARCHITECTURE - II

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012430

Semester : IV Semester

Subject Title : HISTORY OF ARCHITECTURE - II

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
HISTORY OF ARCHITECTURE - II	4 Hours	64 Hours	25	100*	100	3Hours

*** Examinations will be conducted for 100 marks will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	ANCIENT INDIA & BUDDHIST ARCHITECTURE	12
II	HINDU ARCHITECTURE	11
III	DRAVIDIAN ARCHITECTURE	12
IV	INDO - ARYAN STYLE	11
V	WORLD ISLAMIC AND INDO – ISLAMIC ARCHITECTURE	11
TEST& MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

The teaching of Historical Architecture can have its emphasis upon Chronology, Building materials and Technology, Architectural styles and Architectural details. It is not essential to address the associated elements (the influences) and the context of particular styles. The various styles can be explained with selected examples, which can be expounded through schematic drawings of only Plans, concepts, Structural Principles and Architectural Styles. The Historical, Socio-Cultural, Geographical influences of various Architecture should be emphasized to the students.

OBJECTIVES:

At the completion of the study, the students will be able

- To understand ancient india Buddhist, hindu, Dravidian, indo-aryan style, world Islamic and indo –Islamic Architecture styles.

DETAILED SYLLABUS

4012430- HISTORY OF ARCHITECTURE - II

Contents: Theory

NOTE: The teaching of Historical Architecture can have its emphasis upon Chronology, Building materials and Technology, Architectural styles and Architectural details. It is not essential to address the associated elements (the influences) and the context of particular styles. The various styles can be explained with selected examples, which can be expounded through schematic drawings of only Plans, concepts, Structural Principles and Architectural Styles. The Historical, Socio-Cultural, Geographical influences of various Architecture should be emphasized to the students.

***For better understanding Dravidian architecture visits are required during the course time in this semester".*

Unit	Name of the Topic	Hours
I	**ANCIENT INDIA & BUDDHIST ARCHITECTURE** **ANCIENT INDIA** - Indus Valley Civilization - Culture and pattern of settlement. - Vedic village and the rudimentary forms of bamboo and wood, wooden construction under the Mauryan rule. **BUDDHIST ARCHITECTURE** - Architectural Production during Ashoka's rule - Ashokan Pillar, Sarnath, Sanchi Stupa. Salient features of a Chaitya hall and Vihara, Rock cut architecture in the western and Eastern ghats - Karli, Takti Bhai, Gandhara.	**6** **6**
II	**HINDU ARCHITECTURE** Evolution of Hindu Temple - Early shrines of the Gupta and Chalukyan periods - Durga Temple, Aihole and Virupaksha Temples, Pattadakal.	**11**
III	**DRAVIDIAN ARCHITECTURE** Dravidian architecture characters - Rock cut productions under Pallavas - Shore Temple, Mahaballipuram - Dravidian Order -Brihadeeswara Temple, Tanjore - Evolution and form of Gopuram - Complexity in temple plan due to complexity in Ritual - Meenakshi Temple, Madurai	**12**
IV	**INDO - ARYAN STYLE** Salient features of an Indo Aryan architecture - Lingaraja Temple, Bhuvaneswar and Sun Temple, Konark	**11**

V	**WORLD ISLAMIC AND INDO – ISLAMIC ARCHITECTURE** Introduction to world Islamic architecture – Middle East, south East Asia, Pakistan and Bangladesh – general architecture features. Introduction to indo – Islamic architecture - Change from trabeate to vaulted and dome construction - Mix of Islamic and Indian elements and early provincial indo – Islamic architecture Typical characters of mosque, fort, gateway and tomb (Masjid, Quila, Darwazza, Mausoleum) - Red fort, Delhi - Taj Mahal, Agra - Jami Masjid, Ahmedabad.	**11**

TEXT BOOKS

1. "Sir Banister Fletcher", "A History of Architecture", "University of London, The Antholone Press"
2. "Spiro Kostof" – "A History of Architecture" – "Setting and Rituals, Oxford University Press, London"
3. "Percy Brown"-" Indian Architecture Buddhist & Hindu"

REFERENCE BOOKS

1. "Pier Liugi Nervi, General Editor" – "History of World Architecture- Series", "Harry N.Abrams, Inc.Pub.,NewYork"
2. "S.Lloyd and H.W.Muller", "History of World Architecture-Series", "Faber and Faber Ltd.,London"
3. "Gosta, E.Sandsform", "Man the Builder", "Mc.Graw Hill Book Company, NewYork"
4. "Sanjeev Matheshwari &Rajeev Garg"-"Ancient Indian Architecture (from Blossom to Bloom)"
5. "Satish Grover"-" Buddhist & Hindu Architecture in India"
6. "James Fergusson"-" History of Indian & Eastern Architecture"

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

http://www. greatbuildings.com

http://indianculture.tqn.com

http://www.hindunet.org

http://bishop.calpoly.edu

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

BUILDING SERVICES

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name: 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code: 4012440

Semester : IV Semester

Subject Title : BUILDING SERVICES

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
BUILDING SERVICES	4 Hours	64 Hours	25	100*	100	3Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	ELECTRICAL SERVICES& LIGHTING	12
II	VENTILATION & AIR CONDITIONING	11
III	MECHANICAL SERVICES & FIRE PROTECTION	12
IV	RENEWABLE ENERGY SOURCES	11
V	ACOUSTICS AND SOUND INSULATION &BUILDING SAFETY AND SECURITY SYSTEMS	11
TEST& MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

Building services engineering, technical building services, architectural engineering, or building engineering is the engineering of the internal environment and environmental impact of a building. It essentially brings buildings and structures to life. This includes design, installation, and operation & monitoring of the mechanical, electrical and public health systems required for the safe, comfortable and environmentally friendly, acoustically treated modern buildings. Building services engineers work closely with other construction professionals; architects, structural engineers and quantity surveyors. They influence the architecture of a building and play a significant role on the sustainability and energy demand of a building. Within building services engineering, new roles are emerging, for example in the areas of renewable energy, sustainability, low carbon technologies and energy management. A typical building services engineer has a wide-ranging career path include design, Construction, electrical, lighting, water supply, security systems, drainage and Environmental technology.

OBJECTIVES:

At the completion of the study, the students will be able

- To understand the electrical terms, units and symbols involved in the building industries both commercial and residential.
- To prepare electrical layout for residential buildings.
- To gain knowledge about lighting systems, units of lighting and types.
- To gain knowledge about the ventilation & Air conditioning.
- Familiarize various electrical & mechanical services required to the building.
- To understand fire hazards, safety & design regulations.
- To gain knowledge about Renewable energy sources.
- To understand building acoustics.
- To gain knowledge about modern buildings safety and security systems.

DETAILED SYLLABUS

4012440 - BUILDING SERVICES

Contents: Theory

Unit	Name of the Topic	Hours
I	**1.1 ELECTRICAL SERVICES** Conventional Architectural Symbols for Electrical installations Main, Sub-Mains - Types of Fuses - Distribution Panel-circuit breaker, Junction boxes –ceiling roses, – Various systems of wiring – wooden casing wiring, cleat wiring, CTS wiring, conduit wiring -Standard Wire Gauge – Types of Switches–2 pin and 3 pin sockets, –Two Pin & Three Pin Plugs– Exhaust Fan –– change over switches. Use of generators, invertors, emergency lamps-Preparation of Electrical layout for a small residence **1.2 LIGHTING** Units of measurement – Lux, candela, Luminous flux - Types of lighting - Natural and Artificial Lighting – Requirements of good lighting -– Day light factors – Day light Penetration – Aims of good lighting –Principles of openings to afford good lighting. Level of Illumination for different functions (general)- Light fittings –Fluorescent bulbs, Mercury Vapor lamps, Energy Efficient lighting. (CFL, LED)	**6** **6**
II	**VENTILATION & AIR CONDITIONING:** **2.1 VENTILATION:** Definition – Necessity- Comfort conditions (Factors affecting ventilation- temperature control, humidity control, air filtration)– Types of ventilation (Natural & Mechanical ventilation in buildings) **2.2 AIR CONDITIONING:** Definition – Purpose – Principles of air conditioning (Temperature control, Air velocity control, Humidity control, control of purity of air) – Air Conditioning Systems– Types of air cleaners (Filters, Spray washers, Electric precipitators) – Types of Air Conditioners (Central type, Window Type &Split unit) - air conditioning layout for an auditorium & conference hall.	**5** **6**
III	**3.1. MECHANICAL SERVICES:** Lifts – Definition – Location – Sizes – Component parts (Lift well, Travel, Pit, , Machine, Buffer, Door Locks ,Suspended rope, Lift car, Landing Door, Call Indicator, Call Push)–	**6**

	Different types of Elevators – Freight elevators, Passengers elevators, Hospital elevators – Dumbwaiters– Escalators – Locations and Functions – Advantages of Escalators. **3.2 FIRE PROTECTION:** General requirements for fire resisting buildings (alarm systems, Fire extinguishing Installations) – Fire protection systems (Fire hydrants, automatic sprinklers, carbon dioxide fire extinguishing system)–Requirements as per NBC (Fire exits, General requirements, maximum travel distance, Horizontal exit, roof exit, fire lifts, external stairs) - Fire fighting equipments.	**6**
IV	**4.1 RENEWABLE ENERGY SOURCES** Introduction – Merits of renewable energies – Sources – study about Hydro power, wind power, solar power, geothermal power, biomass power – Solar power – Solar cell, solar panels, solar water heater, solar lighting, solar pumps and fountains, solar pool heater – Portable and flexible solar panels – Hydro power plant – merits and limitations- Biomass energy – Biomass fuels – Advantage over fossil fuels – Wood heating.	**11**
V	**5.1 ACOUSTICS AND SOUND INSULATION**: Acoustics of Buildings (Necessity of Acoustical design in buildings) Measurement of intensity of sound (Bel, Decibel) Acoustical defects (Echoes, reverberation, sound foci, dead spots, Exterior noise nuisance) – Transmission of noise (air borne noise, impact noise)-sound absorbants– General factors to be considered and constructional measures to be followed for noise control in residential buildings. Acoustical Treatment of Buildings such as Cinema Theatre, Concert Halls, Conference Hall, Seminar and Lecture Hall. **5.2 BUILDING SAFETY AND SECURITY SYSTEMS** Introduction – need for safety and security systems – security systems – access control and perimeter protection – intruder alarms - CCTV cameras - Types - Dome cameras - Wall cameras - Hidden cameras - components of CCTV system – uses in residential buildings.Introduction to building automation - Functions of Building Management Systems – Benefits of BMS.	**6** **5**

TEXT BOOKS

1. “S. Gokulachari”-“ Building Services”
2. “Mouafak Zaher”-“Building Services”
3. Roger Greeno (Author), .F.Hall (Author), Roger Green (Author)”-“Building Services
4. “R.Uadyakumar”-“ Building Services”

REFERENCE BOOKS:

1. “National Building code of India. 1983”
2. “A. Balasubramaniyan”- “Advanced Constructions Technology”
3 “David Guntee”-“Fire& Human Behaviours “– “Jhon Willy & Sons”
4. “E.G. Bercher& A.C. Pernall”-“Designing for fire safety”
5. “Thomas Adam and Charles Black”-“Fire Safety in Building”
6. “E.G. Bucher & A.C. Parhall”-“Designing for Fire Safety”– “John Wiley & sons”.
7. “Cybil M. Harris”-“Handbook of Utilities and Services for Buildings”
8. “A.K. Mittal”-“Electrical and Mechanical Services in High Rise Building: Design and Estimation Manual:Including Green Buildings”
9. “R.V.Srinivasa Murthy”-“ Basic Electrical Engineering”
10. “Peter Morgan”-“Rural Water Supplies & Sanitation”
11. “Donald Watson”-“Time Saver Standards - Building Materials & Systems”
12. “M.David Egan”-“Architectural Acoustics”

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

BUILDING CONSTRUCTION AND DETAILING – II

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012450

Semester : IV Semester

Subject Title : BUILDING CONSTRUCTION AND DETAILING –II

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
BUILDING CONSTRUCTION AND DETAILING –II	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	FINISHES	8
II	R.C.C AND STEEL STRUCTURES	18
III	TEMPORARY STRUCTURES	18
IV	MISCELLANEOUS STRUCTURES & APPROVAL DRAWING	20
TOTAL		**64**

RATIONALE:

In Diploma level Architectural Assistantship Technical education development of auto motor skills plays a vital role. The auto motor skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment for preparation of detail to the various building components. This is accomplished by doing drawings related to construction details of different components of the building in studios

OBJECTIVES:

At the completion of the study, the students will be able

- To develop understanding about construction principles.
- To develop design abilities by applying basic principles of construction and choosing appropriate materials and techniques.
- To draw the detailed drawing of R.C.C and steel structures, stair and temporary structures.
- To prepare approval drawing by showing all necessary details required for getting approval from the local authority concerned

DETAILED SYLLABUS

4012450 - BUILDING CONSTRUCTION AND DETAILING – II

Contents: Practical

UNIT	NAME OF THE TOPIC	HOURS
I	**FINISHES** Finishes – Plastering – Pointing – Cladding	8
II	**R.C.C AND STEEL STRUCTURES** Pre – cast concrete construction – pre – stressed concrete construction – joints in concrete work. **STEEL WORKS:** Mild steel sections for grills and gates – Knowledge of various types of roof trusses and their selection for commercial and industrial buildings – rolling shutters – collapsible gate – metal doors and windows.	9 9
III	**TEMPORARY STRUCTURES** Scaffolding – Types of Scaffolding – Shoring – Types of Shoring – Underpinning- Methods of Underpinning – Form work – Requirements of Form work – Materials for Form work – Construction of Form work for Columns, Beams and Floor Slabs – Centering for Arches. **STAIRS** Location of Stairs – Technical terms – Requirements of a good Stairs – Classification of Stairs – Stairs of different Materials.	10 8
IV	**MISCELLANEOUS STRUCTURES** Flat slab construction: types of Shell roof structures – Domes – Ruled surface – Folded plates (description of the structures only) –Cost effective construction techniques - Rat trap bond, Filler slab, Funicular shell – Use of Pre - Cast technology in construction. **APPROVAL DRAWING** The basic criteria required for an approval drawing are to studied – The students have to prepare an approval drawing by showing all necessary details required for getting approval from the local authority concerned.	8 12

LIST OF PLATES:

1. Details of Different plastering, pointing and cladding with different materials on Exterior surfaces (sketch only).
2. Details different types of joints in concrete work.
3. Details of Grill Gate, Rolling Shutter and Collapsible Gate.
4. Details of King Post Truss and steel Trusses for industrial buildings and go down. Details of Single and double scaffolding.
5. Details of formwork for shoring, underpinning, Beams and Floor Slabs, Arches.
6. Plan and sectional elevation of Dog-legged staircase and Open well staircase
7. Plan and sectional elevation of Spiral staircase and Bifurcated staircase
8. Details of Shell roof and folded plate roof, sectional plan of and cross section of Filler slab.
9. Plan, elevation, section and Isometric view of Rat Trap Bond
10. Details of Shell roof for a petrol filling station with plan, Elevation and Section

BOARD EXAMINATION

ALLOCATION OF MARKS

Part A **:** Theory question of 10 questions, two questions from each unit carry Five marks each with a total mark of **7X5=35 marks**

Part B **:** Any two of the exercises from the exercises that are done in the Studio during the semester carries **2x30**= **60marks**.

Viva-Voce **: 5 marks**

Total **: 100Marks**

TEXT BOOKS

1 “S.C.Rangwala” – “Building Construction”.

2 “Arrora & Bindrra” – “A text book of building construction”

3 “Dr.B.C.Punmia” – “Building Construction”

4 “Dr.J.Jha , Prof.S.K.Sinha & P.C Varghese” – “Building Construction”

5 “S.S.Bhavikatti” – “Building Construction”

REFERENCES:

1. ”R.C.Mitchell” - “Building construction”
2. “R.S. Deshpande” – “A Text book of Building Construction”

3. “Richard Greenhaigh” – “Building Construction”
4. “Shah &Kale” – “Building Drawing”
5. “S.S. Bhavikatti , M.V.Chitawadag” – “Building Planning & Drawing”
6. “W.B.Mckay” – “Building Construction Metric (fifth edition)”
7. “Roy Chudley & Roger Greeno” –“Building Construction Hand Book”

WEBSITES

https://nptel.ac.in
https://ndl.iitkgp.ac.in
http://www.baboo-Flooring.com http:// ag.avizona.edu/SWES http://www/angelfite.com/in
http://www.idrc.ca/libary/documents/104800/chapz-e.htmlhttp://www/angelfite.com/inz/granite
http://www.ibex-ibex-intl.comhttp://www.inika.com/chitrahttp://www.routbdge.com
http://www.ventura india.com

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

4012450- BUILDING CONSTRUCTION AND DETAILING – II

MODEL QUESTION PAPER

Duration: 3 HRS **Max. marks:100 marks**

NB : 1. Answer any 7 question from Part A, each questions carries 5 marks.

2. Answer the questions in Part B, by choosing it by lot which carry 2x30=60 marks.

3. Viva-Voce: 5 marks

PART – A (7 x 5 = 35 marks)

1. Explain different types mortar used in plastering.
2. What are different types of pointing?
3. Explain the types of finishes.
4. Write about the types of roof trusses.
5. Explain with neat sketch 'Lean to Roof'.
6. What are advantages of steel roof truss over timber sloping roofs?
7. What are requirements of a formwork?
8. What is requirement of a good staircase?
9. What are assumptions to be made while detailing folded plate structures?
10. Write the bye-laws to be followed for the construction single storey residential building.

PART – B (2 x 30 = 60 marks)

1. Draw the details of formwork for Columns and Beams.
2. Draw the Details of Single and double scaffolding.

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

ARCHITECTURAL DRAWING – II

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012460

Semester : IV Semester

Subject Title : ARCHITECTURAL DRAWING – II

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL DRAWING – II	4Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	BASICS OF RENDERING	20
II	COLOR RENDERING	20
III	PERSPECTIVE & SCIOGRAPHY	24
TOTAL		**64**

RATIONALE

Graphic presentation and Art is considered to be the language of Engineers and Architects which is a means of communication among the designers, engineers, technicians, architects & draftsmen engaged in the field of construction of buildings. The translation of ideas into practice with the use of this graphic language is beyond imagination. Thus, for effective and efficient communication among all those involved in the system, it becomes necessary that the personal working in different capacities acquire appropriate skills in the use of this graphic language.

OBJECTIVES:

At the completion of the study, the students will be able

- To introduce architectural drawing techniques and to facilitate effective visual communication.
- To understand and apply rendering in drawings.
- To draw perspective drawings.

DETAILED SYLLABUS

4012460- ARCHITECTURAL DRAWING – II

Contents: Practical

UNIT	NAME OF THE TOPIC	HOURS
I	**BASICS OF RENDERING**	
	Rendering of finishing materials – Stones, Bricks, Plaster finishes Shading.	6
	Representation of Curves, Slopes Basics of Color Rendering – working with presentation drawings Rendering the above perspectives with different mode like color pencils or poster color or pen and ink – rendering of trees, cars and human figures – improvising presentation drawings. (**Minimum of 2 exercises)**	14
II	**COLOR RENDERING**	
	Theory of Color - Color and Light - Color wheel -Classification of Color - Primary, Secondary & Tertiary color - Hue, Chrome & Values, Shades, Tones & Tints - Color Schemes - Application of Color in Design Color rendering with objects.	14
	Coloring of various compositions with natural and geometric form – Objects – Imaginary drawings. **(Minimum of 3 exercises)**	6
III	**PERSPECTIVE & SCIOGRAPHY**	
	Perspective projection concepts and methods- Various types of perspective views –Vanishing point- Station point – Picture plane , horizon , cone of vision, etc. – Normal eye view, Bird's eye view -simple and complex geometrical forms.	5
	Principles of Perspective – Two point & One point - Principles of sciography – study of Light and Shade. **(Minimum of 2 exercises one each in 2D and 3D)**	4
	Application of shades and shadows of Architectural Elements like Sunshade, Steps Porch, Fins, Projections, Columns, Beams, Curved objects. **(Minimum of 2 exercises)**	5
	Two points perspectives for exteriors – residence. **(Minimum of 2 exercises)**	5
	One point perspective for simple interiors – living room, kitchen, bed room, Dining. (**Minimum of 4 exercises)**	5

BOARD EXAMINATION

ALLOCATION OF MARKS

Part-A: One Point perspective with color rendering for interior spaces - **35 marks**.

Part-B: two Point perspectives with pencil rendering for exterior spaces - **60 marks**.

Viva–voce - 5marks

REFERENCES :

1. "William Coombers and Adama Charle black"-" Background of perspective"
2. "N. G. shah and khala"-"Principles of perspective drawing"
3. "Cland"-" Step by step perspective drawing"
4 "Grunbacher"-"The art of perspective drawing"
5. "JohnM. Holmes",-"Applied Perspective", "SirIsaac, Piotman and Sons Ltd., London 1954".
6. "Robert W.Gill", -"Basic Perspective", "Thames andHudson,London,1974".
7. "Interiors: Perspective in Architectural Design Graphic"-"SMA Publishing Co.Ltd., Japan,1967".
8. "C.Leslie Martin",-"Architectural Graphics", "The Macmillan Company, NewYork,1964".
9. "Francis Ching", "Architectural Graphics","Van Nostrand and Reinhold Company, New York,1975".
10. "Emest Norling", "Perspective drawing" ,"Walter Fostor Art Books,California,1986".
11. "Bernard Alkins" – " Architectural Rendering", "Walter Foster ArtBooks,1986".
12. "Francis D. K. Ching" "Architectural Graphics 5e"
13. "Mo Zel"-"The Architectural Drawing Course: Understand the Principles and Master the Practices"
14. "Francis D.K.Ching With Steven P.Juroszek"-" Design Drawing"

WEBSITE

https://nptel.ac.in
https://ndl.iitkgp.ac.in

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

4012460 - ARCHITECTURAL DRAWING – II

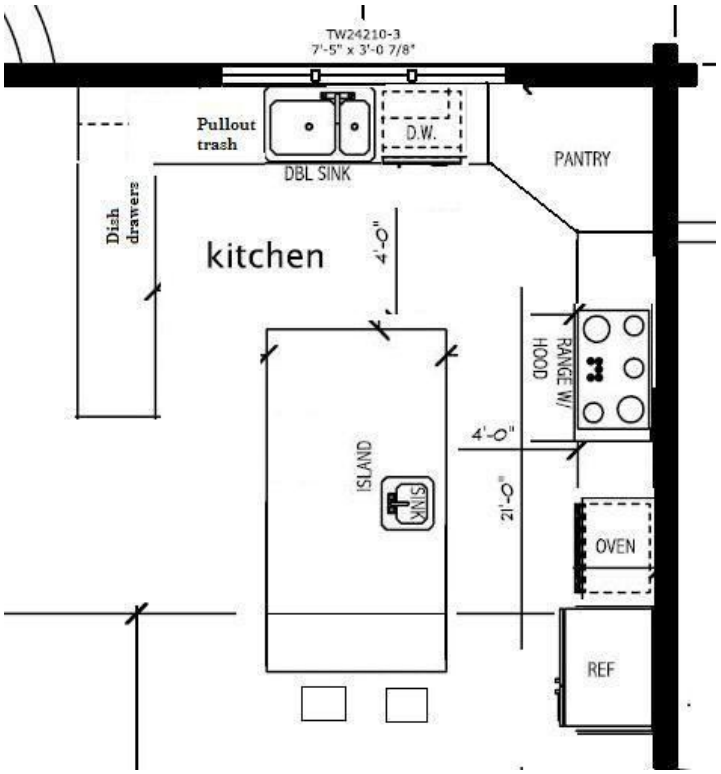
MODEL QUESTION PAPER

Duration: 3HRS **Max.marks:100 marks**

PART- A (35 Marks)

PERSPECTIVE DRAWING

I. Draw one point perspective for the given kitchen and render the drawing with color pens.



PART- B (60 Marks)

II. Draw a two-point perspective for own plan and render the drawing with pens.

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

II YEAR

N – SCHEME

IV SEMESTER

ARCHITECTURAL DESIGN STUDIO - I

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012470

Semester : IV Semester

Subject Title : ARCHITECTURAL DESIGN STUDIO – I

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL DESIGN STUDIO - I	6 Hours	96 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	DESIGN PROBLEM – 1	48
II	DESIGN PROBLEM – 2	48
TOTAL		**96**

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 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.

OBJECTIVES:

At the completion of the study, the students will be able

- To develop space visualization application of materials to simple architectural forms.
- To apply the knowledge gained in other subjects and basic design to design of buildings of single/ simple activity.

DETAILED SYLLABUS

4012470- ARCHITECTURAL DESIGN STUDIO - I

Contents: Practical

NOTE: The problems involve simple space organization starting with single space single use - small span Horizontal movement - single bay-passive energy type spaces.

The study of space standards and anthropometrics related to each problem is stressed upon. Anthropometries as related to physically handicapped and elderly persons are required to be studied. Examples of exercises include

UNITS	NAME OF THE TOPIC	HOURS
DESIGN PROBLEM – 1	Bedroom with attached toilet, Kitchen, Hostel Room and Toilet for a physically challenged Person.	48
DESIGN PROBLEM – 2	Design problem shall deal with planning for small groups of people and minor activities for residence and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,	48

BOARD EXAMINATION

ALLOCATION OF MARKS

Part-A: One question from Design Problem - I - **35 marks.** (By lot)

Part-B: Any one of the question from Design Problem – II - **60 marks**.

Viva – voce - **5 marks**

REFERENCES :

1. “E and O.E”-“.Planning”, “Life Books Ltd., London,1973”.
2. “De.Chiara and Calendar”, “Time-saver Standards for Building Types”, “McGraw Hill Co., New York, 1973”.
3. “Sid Del MarLeach”, “Techniques of Interior Design Rendering and presentation”, “McGraw Hill Co., New York,1973”

WEBSITES

www.design basic.com/-(on house type - Americans)

http://www.geosytems.gatech.edu/-(on detail design method)

http://www.c.s.berkely.edu/- (on bubble diagram builder interaction

http://www.plannet.com/resources.htme - (on resource info)

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	Each 1 per student
Pinner board	-	1 No

4012470 – ARCHITECTURAL DESIGN STUDIO - I

MODEL QUESTION PAPER

Duration:3 Hrs **Max. Marks:100 marks**

Part-A: One question from Design Problem - I - **35 marks. (By Lot)**

Part-B: Any one of the question from Design Problem – II - **60 marks**.

Viva – voce: 5 marks

1. Design a bedroom with attached Toilet by considering space standards.

   Design Requirements:

Plan	-	1:50	-	25 Marks
Sectional Elevation	-	1:50	-	10 Marks

2. Design a kitchen by considering space standards.

   Design Requirements:

Plan	-	1:50	-	25 Marks
Sectional Elevation	-	1:50	-	10 Marks

3. Design a Hostel room by considering space standards.

   Design Requirements:

Plan	-	1:50	-	25 Marks
Sectional Elevation	-	1:50	-	10 Marks

4. Design a Toilet for a physically challenged person by considering space standards.

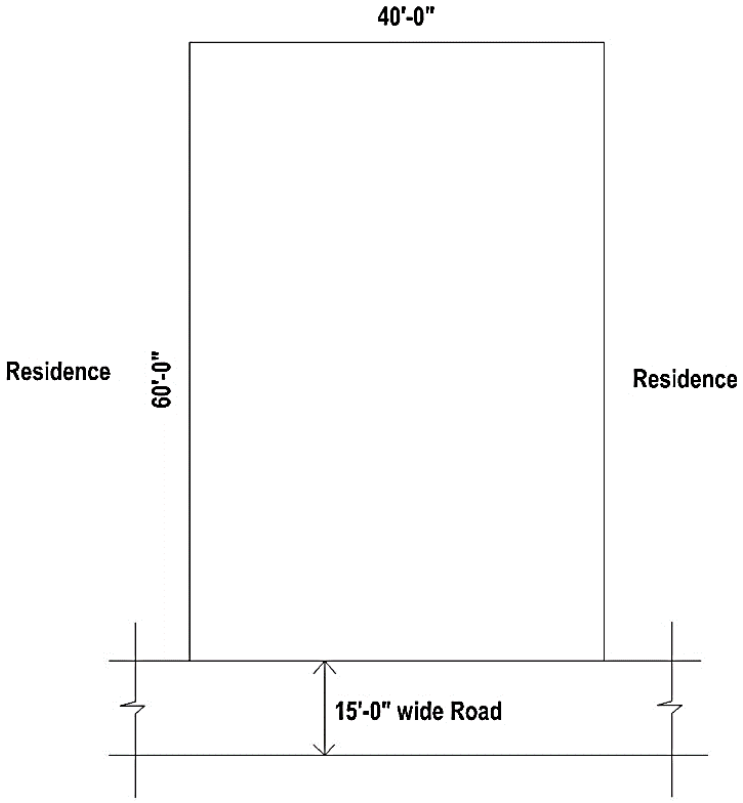
   Design Requirements:

Plan	-	1:50	-	25 Marks
Sectional Elevation	-	1:50	-	10 Marks

Part – B

1. (a) Residence at Thanjavur

Design a residence of area 1200 sq ft in the given site. With your own requirements. By applying the rules and regulations of local authority.



SITE PLAN

Drawing Requirements:

Site plan	- 1:100	- 10 Marks
Plan	- 1:50	- 30 Marks
Elevation	- 1:50	- 10 Marks
Section	- 1:50	- 10 Marks

VIVA-VOCE - 5 Marks

V SEMESTER

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ESTIMATING AND COSTING

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012510

Semester : V Semester

Subject Title : ESTIMATING AND COSTING

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ESTIMATING AND COSTING	5 Hours	80 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION, APPROXIMATE ESTIMATES	14
II	SPECIFICATION REPORT WRITING	14
III	MEASUREMENTS & MATERIAL REQUIREMENT, DATA	15
IV	VALUATION, RENT FIXATION	15
V	DETAILED ESTIMATE	15
TEST & MODEL EXAMINATION		7
TOTAL		**80**

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 quantity surveying and costing. This subject covers different methods of taking out quantities, units of measurement, calculation of quantities of materials, preparation of cost estimates, specification writing, Report writing, Valuation and rent fixation.

OBJECTIVES:

At the completion of the study, the students will be able

- To study the types of estimates.
- To know the different methods of taking out quantities
- To prepare the rough cost estimate, detailed estimates, detailed reports, specifications, abstract of cost and material requirements for a small building
- To Calculate quantities of materials and analysis of rates for each items of work
- To value a building and also fix the rate

DETAILED SYLLABUS

4012510- ESTIMATING AND COSTING

Contents: Theory

Unit	Name of the Topic	Hours
I	**1.1 INTRODUCTION** Estimation – Definition of Estimate - Types of Estimates – Approximate Estimate – Detailed Estimate – Revised Estimate – Supplementary Estimate – Sub Estimate – Annual maintenance Estimate – Repair Estimate – Complete Estimate. **1.2 APPROXIMATE ESTIMATES** Approximate estimate – Types – Plinth area method – Cubical content method – Service unit method – Typical bay method – Simple problems on preliminary estimate of a building project.	**5** **9**
II	**2.1 SPECIFICATION & REPORT WRITING** Specification – Necessity – Types of Specification - Essential requirements of Specification - Steps involved in Standard Specification Detailed Specifications for the following items of works ➢ Clearing and Levelling site ➢ Excavation of Trenches for foundations. ➢ Laying plain cement concrete bed, Footings and Plinth with R.R. Masonry and Brick Masonry. ➢ Filling in foundation and Plinth. ➢ Laying Damp Proof course at Plinth level. ➢ Super structure with Brick Masonry in Cement Mortar.	**7**

	➢ R.C.C works. ➢ Plastering works ➢ Cement concrete flooring ➢ Wood works like Doors and Windows **2.2 REPORT WRITING** Report Writing – Points to be considered while a report writing – Writing typical reports for works such as i. Buildings – Residential / Hospital / School ii. Demolishing a building iii. Conservation of a monumental building iv. Water supply system for a village.	**7**
III	**3.1 MEASUREMENTS & MATERIAL REQUIREMENT** Units of measurements for works and materials - Degree of accuracy in measurements - Deduction for openings in masonry, plastering and white washing area – Painting co-efficient – out turn of works - working out of materials requirements – cement, sand, bricks and aggregates. **3.2 DATA** Data – Theory – Main and sub data – Observed data - Lead statement –Schedule of rates – Standard data book - Sundries – Lump sum provision -Preparation of data using standard data and schedule of rates - Brick and Stone masonries – Lime Concrete and Cement Concrete - Flooring Works and weathering course - R.C. works for slab, sunshade, beam and column -Partition wall – Form works for beams and slabs - White washing and Painting works - A.C. sheet roofing – Wall plastering – ceiling plastering -Pointing – Plumbing and sanitary works in Buildings.	**6** **9**
IV	**4.1 VALUATION** Valuation – Purpose of Valuation- Types of Valuation - Book value – Market value – Salvage value – Scrap value - Depreciation – Obsolescence - Sinking fund – Mortgage and lease -Annuity- Definition and types- Simple Problems on Present value of building only	**8**

	4.2 RENT FIXATION Fixation of rent – Out goings – Gross and net income – Years Purchase -Capital Cost -Standard rent – Market rent – Economical rent - Problems on rent calculation only (Simple Problems)	**7**
V	**5.1 STAGES OF DETAILED ESTIMATE** Taking off quantities – Systems – Trade system – Group system – Advantages of group system – Methods – Long wall and Short wall method– Centre line method – Abstract estimate – Lump sum provision and contingencies – quantity surveyor – duties – essential qualities. **5.2 DETAILED ESTIMATE** Detailed estimate for buildings using Trade system. Taking off quantities for all items of works in the following types of buildings by centre line method. Taking the quantities of single storey Residential building with two / three rooms (Load bearing structure) with RCC roof Taking the quantities of single storey Residential building with two / three rooms (Framed structure) with RCC roof	**4** **11**

TEXT BOOKS

1. "B.N.Dutta"-" Estimating and Costing"
2. "S.C.Rangwala"-" Estimating and Costing"
3. " D.D.Kohli & R.D.Kohli"-"Estimating and Costing"

REFERENCE BOOKS

1. "Mahajan"- "Estimating and Costing"
2. "DD Kohli"- "Estimating, Costing and Accounts"

WEBSITE

https://nptel.ac.in

https://ndl.iitkgp.ac.in

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ENVIRONMENTAL ENGINEERING

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012520

Semester : V Semester

Subject Title : ENVIRONMENTAL ENGINEERING

TEACHING AND SCHEME OF EXAMINATION

No. of hours per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ENVIRONMENTAL ENGINEERING	4Hours	64Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	QUANTITY AND QUALITY OF WATER	11
II	TREATMENT OF WATER AND DISTRIBUTION SYSTEM	11
III	ECOSYSTEM, BIODIVERSITY AND ITS CONSERVATION	11
IV	ENVIRONMENTAL POLLUTION AND CONTROL	11
V	DISASTER MANAGEMENT, SANITATION & STORM WATER DRAIN	13
TEST & MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

Profound anthropogenic changes are occurring in the land, water, and air around us, and education needs to respond to these changes. These educate students so that they are well informed about vital, current issues and capable of full political participation. It has a responsibility to provide means for the study of environmental problems and to encourage students to develop their own perspectives on these problems. Environmental studies offers numerous opportunities for rigorous interdisciplinary work, addressing the scientific, engineering, social, political, economic, literary, and philosophical dimensions of environmental topics. The minor helps guide students to the many academic fields that afford a perspective on environmental problems and enables them to explore questions most compelling to them from the vantage point of various disciplines.

OBJECTIVES:

At the completion of the study, the students will be able to

- State the quantity of water for various needs and forecasting future population.
- Describe the quality of water and specifying BIS Standards.
- Describe various treatment process and different distribution system.
- Understand the definitions of environmental studies
- Recognize the importance and public awareness about nature
- Gain knowledge about the eco system patterns and their functions
- Understand bio diversity and conservation
- Understand Causes, effects and control measures of environmental pollution
- Create awareness about Environment Management and disaster management

DETAILED SYLLABUS

4012520- ENVIRONMENTAL ENGINEERING

Contents: Theory

Unit	Name of the Topic	Hours
I	**1.1 QUANTITY OF WATER** Water supply-need for protected water supply-importance aspects of public water supply schemes-demand-types of demand-domestic demand, industrial and commercial demand, demand for public uses, fire demand, demand for compensating various losses-per capita demand - factors affecting the per capita demand - population forecast - methods of forecasting population- arithmetical increase method, Geometrical increase method, incremental increase method (description only) -total quantity of water required for villages/towns-sources of water - surface sources - lakes & streams, ponds, rivers and storage reservoirs- subsurface sources - Infiltration gallery , Infiltration wells - shallow wells - Deep wells, Tube wells (Description only for all sources)– Selection of suitable source for a water supply scheme. **1.2 QUALITY OF WATER** Meaning of pure water – Requirements of potable or domestic water – Impurities in water - Sources, causes and effects of different types of impurities – Water Analysis -physical, Chemical and Bacteriological tests - standards laid down by B.I.S.I for drinking water – Living Organism in water-W.H.O standards - Maintenance of purity of water - water borne diseases and their causes.	**6** **5**
II	**2.1 TREATMENT OF WATER** Layout of treatment plants – sedimentation – plain sedimentation, different types of sedimentation tanks – sedimentation with coagulation – common coagulants – Filtration – Theory of filtration –Types of filters – Description – Rapid sand Filters – Disinfection of water – Methods of Chlorination – Mineral waters – Requirements – Treatment processes – Reverse Osmosis process. **2.2 DISTRIBUTION SYSTEM** Different systems of supplying water - Gravity system, Pumping system and combined system- Continuous and intermittent supply of water- Different	**6** **5**

	layouts of distribution systems – Dead end, Grid iron, Radial and Circular systems – Merits, demerits and suitability of different layout systems – Service reservoirs – underground and over head tanks.	
III	**3.1 ECOSYSTEM** Definition, Scope and importance of environmental study - Need for public awareness. Structure and function of an ecosystem – decomposers - Energy flow in the ecosystem – Ecological succession - Food chains, food webs and ecological pyramids. Types - characteristic features, structure and function of the following Forest ecosystem - Grassland ecosystem - Desert ecosystem – Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) **3.2 BIODIVERSITY AND ITS CONSERVATION** Introduction – Definition of Genetic, species and ecosystem diversity - Value of biodiversity - Consumptive use - productive use, social, ethical, and aesthetic and option values - Hot spots of biodiversity - Threats to biodiversity - Habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India-Conservation of biodiversity- In-situ and Ex-situ conservation of biodiversity	**6** **5**
IV	**ENVIRONMENTAL POLLUTION AND CONTROL** **4.1 WATER, LAND AND NOISE POLLUTION** Environment - Definition – Water pollution – Sources of water pollution – Effects and prevention of water pollution-Land pollution – Sources of land pollution – Effects and prevention of Land pollution – Pollution impact on land due to non – biodegradable waste matters (polythene bags, P.V.C. & other plastic materials, Glass, etc.,) – Remedial measures - Noise pollution management–Effects of noise on people–Noise control methods. **4.2 AIR POLLUTION** Air Pollution – Classification of Air Pollutants–Sources–Natural and Manmade sources– Effects of Air Pollution on human beings, animals, plants and materials – Control of Air Pollution – Forest Management –Direct benefit from forest – deforestation causes and effective measures to conserve the forest wealth – Environmental degradation – Green House effect – Ozone layer depletion – Acid Rain.	**6** **5**

V	**5.1 DISASTER MANAGEMENT** Introduction – Definition for disaster –Types of disaster- major disaster – Floods – causes and Effects – Flood management (Preventive measures) Earth quakes – Definition, occurrence, causes & Effects of earth quake - Earth Quake mitigation (Preventive measures). Tsunami – Definition, Causes and effects of Tsunami – Tsunami management. Cyclone – Definition, Occurrence and effects of cyclone – cyclone management – Cyclone shelters –Warning systems – Man-made disasters. **5.2 SANITATION & STORM WATER DRAIN** **SANITATION** Sanitation in buildings - Primary and secondary treatment Activated sludge - Intermittent and trickling sand filters(Description only) - Connection of house sewers to municipal sewers, ventilation of sewers – Sewage disposal scheme for residence and apartments. **STORM WATER DRAIN** Site planning from drainage point of view - Storm water drains, details of construction, water entrances, gullies, open drains, gradients, ventilation of drains, rainfall maintenance - preparation of drainage layout for residential unit.	**6** **4** **3**

TEXT BOOKS

1 “Miller T.G”, “Environmental Sciences”, “Wadsworth Publishing Co.(TB)”

2 “S.K. Garg,” “Water supply and Sanitary Engineering” “Kanna publishers, Delhi”.

3 “K.S. Rangwala,“ “Water supply and SanitaryEngineering”

4 “G.S. Birdie and JS. Birdie,” “Water supply and Sanitary Engineering” “Dhanpatrai publishers Delhi”,

5. “Howard S.Peavy , Donald R. Rowe , George T chobanoglous”. “Environmental Engineering”

6. “R. Rajagopalan”- “ Environmental Studies from Crisis to Cure”

7. “K.N.Duggal”-“ Elements of Environmental Engineering”

8. “N.N.Basak”-“ Environmental Engineering”

REFERENCES

1. “Suresh K.Dhamija”,”Environmental Studies”, “S.K.Katarial Sons Delhi”,
2. “M.N. Rao & H.V. Rao,” “Air pollution “ “Tata Mcgraw hill Publishing Company Ltd.”
3. “Heywood, V.H & Watson, R.T.”-“ Global Biodiversity Assesment” Cambridge Univ. Press1140p”.
4. “Trivedi R.K”.,”Hand book of Environmental Laws, Rules, Guidelines, Compliances and Standards, Vol. I and II”
5. “McKinney, M. L&Schoch, R.M.”-“.Environmental Science System & Solutions, Web enhanced edition.639p”
6. “Anuj Kumar Purwar”-“ Environment & Ecology”
7. “C.S.Rao”-“ Environmental Pollution Control Engineering”
8. “Khopkar”-“ S.M Environmental Pollution Monitoring & Control”
9. “Majid Husain”-“ Environment & Ecology Biodiversity, Climate Change and Disaster Management “

WEBSITE

https://nptel.ac.in

https://ndl.iitkgp.ac.in

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ELEMENTS OF INTERIOR DESIGN

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012531

Semester : V Semester

Subject Title : ELEMENTS OF INTERIOR DESIGN

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ELEMENTS OF INTERIOR DESIGN	4 Hours	64 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION AND DESIGN THEORY OF INTERIORS	12
II	FUNCTION AND PLANNING	11
III	DETAILING OF SIMPLE HOUSEHOLD FURNITURE	12
IV	FINISHES, FURNISHING & ACCESSORIES	11
V	LAYOUT PLANNING AND DETAILING	11
TEST & MODEL EXAMINATION		7
TOTAL		**64**

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 and principle introducing various building finishing materials. The course would be supplemented with literature and sample of materials.

OBJECTIVES:

At the completion of the study, the students will be able

- To study about the basics of interiors, furnitures, decorative finishes and its applications.
- To know the layout plans of Interiors.

DETAILED SYLLABUS

4012531- ELEMENTS OF INTERIOR DESIGN

Contents: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION AND DESIGN THEORY OF INTERIORS** Importance of Interior Design Environment – Elements of design – Principles of design –Elements and Application of Principles of design in Interiors and their uses in Interior Design	12
II	**FUNCTION AND PLANNING** Activities and Function - Functional contents of an Interior Environment – Planning inter-relationship of Functional Spaces and Interior Elements – Anthropometrical study – Dimension Standards of Interior Elements - Furniture, Activity and Circulation	11
III	**DETAILING OF SIMPLE HOUSEHOLD FURNITURE** Floor and Wall Furniture – Materials – Specification – Joinery and finishes. Ready to assemble modular units in Interior design. Simple design of household furniture such as Tables, Chairs, Sofa Sets, Cupboards, Room dividers, built-in Fitments and Detailed Drawing of two types in each for Residence.	12
IV	**FINISHES, FURNISHING & ACCESSORIES** Various types of Finishes for Walls, Floors and Ceiling. Furnishing – Drapery, Blinds, Upholstery and Household Linen accessories – Artifacts, Paintings, Murals, Sculptures, Plants (Natural & Artificial), Aesthetic and functional Lighting and other accessories, Decorative accessories for Kitchen and Bathroom. - Study on furniture for specific types of interiors like office furniture, children's furniture, residential furniture, display systems, etc.	11
V	**LAYOUT PLANNING AND DETAILING** **(**Including Integrated Service Layouts): Layout of floor plan, wall panels, furniture, false ceiling, Air conditioning and Ducting - Residential Spaces and Restaurant- Develop a working drawing for interior design detailing for residential & office spaces, hotel lobbies etc.	11

TEXT BOOKS

1. “John F. Pile”-“ Interior Design”
2. “Francis D.K. Ching”-“ Interior Design Illustrated”
3. “Ahmed Khasu”-“ Interior Design”
4. “Premavathy Seetharaman & Parveen Pannu”-“ Interior Design & Decoration”
5. “M.Pratap Rao”-“ Interior Design Principles & Practice”
6. “Joseph Dechiara , Julius Panero & Martin Zelnik”-“Time Saver Standards for Interior Design & Space Planning (Second Edition)”

REFERENCE BOOKS

1. “Anna Hong Rutt”-“Home Furnishing”
2. “David Van Dommalan”-“ Designing and Decorating Interiors”
3. “Barbara Brad ford Taylor”-“ Easy steps to successful Decorating”
4. “Maitland Graves”-“ Art of Colour and Design”
5. “Frances M Obst”-“ Art of design in Home Living”
6. “Beitler & Lockhart”-“Design for you”
7. “Mary Gillatt” –“Colour your Home”
8. “IS 5533 – 1969 Dimensions of Spaces- Bureau of Indian Standards”
9. “National Building Code of India”
10. “Derek Phillips” “12 Human Lighting in Architectural Design”
11. “Julius Parcero”-“Dimension and Interior Space”

MAGAZINES:

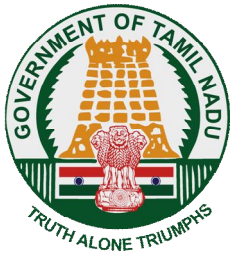
1. Inside outside (Business India group)
2. Homes & Gardens
3. Indian Architect &Builders
4. Fountain Head
5. 80 Designs
6. Interiors Today.
7. Interior Design

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

https://www.architecturaldigest.in/architecture-design/



1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

CONTEMPORARY ARCHITECTURE

(ELECTIVE THEORY - I)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012532

Semester : V Semester

Subject Title : CONTEMPORARY ARCHITECTURE

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
CONTEMPORARY ARCHITECTURE	4 Hours	64Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	19TH CENTURY EUROPE AND AMERICA	11
II	EARLY 20TH CENTURY ARCHITECTURE	12
III	MID 20TH CENTURY ARCHITECTURE	12
IV	2OTH CENTURY ARCHITECTURE – INDIA	11
V	POST INDEPENDENCE	11
TEST & MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

Contemporary architecture is a form of construction that embodies the various styles of building designs stemming from a wide range of influences. Contemporary architecture cuts away from the modern architecture of the late twentieth century by including eco-friendly features and embracing all kinds of creativity. Aside from employing the different styles and influences, the contemporary architecture uses the latest technology and materials

NOTE:

The students are also expected to go through Architecture Journals like Inside – Outside, Interiors Today, Design and Interiors, Architect and builder, Builders Friend etc. They should make scrapbook of relevant brochures.

OBJECTIVES:

At the completion of the study, the students will be able to

- Study of evolution of various styles of art and architecture as a response to climate, culture and socio-political conditions by taking examples from Contemporary Architecture.
- Understand fundamental design principles (visual art principles) and resulting architectural expression; appropriate to place and people.

DETAILED SYLLABUS

4012532- CONTEMPORARY ARCHITECTURE

Contents: Theory

Unit	Name of the Topic	Hours
I	**19TH CENTURY EUROPE AND AMERICA** Introduction to contemporary architecture – industrial revolution – great exhibition – birth to modern architecture – school of taught.New materials and technology. Purpose built buildings for new functions – crystal palace, London, by Joseph Paxton. Wain Wright building. St. Louis. Missouri by alder and Louis Sullivan	11
II	**EARLY 20TH CENTURY ARCHITECTURE** Rejection of previous styles and introduction of contemporary building styles. Fagus shoe factory by Walter Gropius Johnson wax factory, falling water by F.L. Wright Seagram building by Mies Van De Rohe Ronchamp chapel, Villa Savoye by le Corbusier	12
III	**MID 20TH CENTURY ARCHITECTURE** New methods of construction – Shell and Folded Plate Roofs – Engineering developments – Developments of Regional styles. Palazzetto del sports, Rome Olympic stadium by P. Lugi Nervi Sydney opera house by John Utzon St. Mary's cathedral by Kenzo Tange Parliamentary complex, Colombo by Geoffrey	12
IV	**2OTH CENTURY ARCHITECTURE – INDIA PRE INDEPENDENCE** Indo Saracenic Architecture - Rashtrapathi Bhavan, Delhi by Edwin Lutyens Senate house, Madras University by Chislom	11
V	**POST INDEPENDENCE** Chandigarh master plan, High court building by le Corbusier Works of Louis – Is – Khan Kanchenjunga apartments Bombay by Charles Correa, Laurie baker B V doshi - Sangath	11

TEXT BOOKS

1. **“**IAG”-“Contemporary Kitchens”
2. “IAG”-“Contemporary Office Furniture (Middle English)”
3. “Bill Riseboro”-“Modern architecture of design”,
4. “Àlex Sánchez Vidiella”-“The Sourcebook of Contemporary Architecture”

REFERENCE BOOKS

1. “Sir Banister Fletcher”. “History of Architecture. 20th Edition”.
2. “Percy Brown”-“Islamic Architecture”.
3. “St. Lloyd / H. W. Mhller”, “History of Architecture series, Faber & Faber Ltd, London 1986”.
4. “Henristierlin”-“Encyclopedia of world architecture, by Vol. I and II”
5. “Brunozevi” –“Architecture as space”
6. “Mac Milan encyclopedia of Architecture” (4 volumes)
7. “R.nath”,”History of Mughal Architecture” – “Abhinav publications, new delhi”
8. “Peter Collins”, “Changing ideals in modern architecture”
9. “Bill Rise Bero” “modern architecture and design”

WEBSITES

https://www.contemporist.com/

https://www.alanearchitecturepllc.com/

https://www.architecturaldigest.in/

https://design-milk.com/

https://www.themodernhouse.com/

https://nptel.ac.in

https://ndl.iitkgp.ac.in

https://www.re-thinkingthefuture.com/fresh-perspectives/a1935-10-examples-of-contemporary-vernacular-architecture/

https://www.thespruce.com/what-is-contemporary-architecture

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ARCHITECTURAL ACOUSTICS

(ELECTIVE THEORY - I)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012533

Semester : V Semester

Subject Title : ARCHITECTURAL ACOUSTICS

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL ACOUSTICS	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION	11
II	PROPAGATION OF SOUND	11
III	BEHAVIOUR OF SOUND	11
IV	NOISE AND CONTROL	12
V	CONSTRUCTION DETAILS	12
TEST& MODEL EXAMINATION		7
TOTAL		**64**

RATIONALE:

Diploma holders in Architectural Assistantship are supposed to construct buildings, Knowledge of building acoustics and its behavior is necessary one. Building acoustics is the science of controlling noise in buildings. This includes the minimization of noise transmission from one space to another and the control of the characteristics of sound within spaces themselves. Building acoustics are an important consideration in the design, operation and construction of most buildings, and can have a significant impact on health and wellbeing, communication and productivity. They can be particularly significant in spaces such as concert halls, recording studios, lecture theatres, and so on, where the quality of sound and its intelligibility are very important.

NOTE:

The students are also expected to go through Architecture Journals like Inside – Outside, Interiors Today, Design and Interiors, Architect and builder, Builders Friend etc. They should make scrapbook of relevant brochures.

OBJECTIVES:

At the completion of the study, the students will be able to

- Understand architectural acoustics to achieving good speech intelligibility in a theatre, restaurant for railway station, enhancing the quality of music in a concert hall or recording studio, or suppressing noise to make offices and homes more productive and pleasant places to work and live in.

DETAILED SYLLABUS

4012533- ARCHITECTURAL ACOUSTICS

Contents: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION** Introduction to architectural Acoustics – characteristics and measurements of sound; design criteria of sound for various architectural spaces, Noise criteria curves, acoustical problems.	11
II	**PROPAGATION OF SOUND** Free propagation of sound – geometrical spreading – air absorption – effect of landscape elements application of these principles in the design of open-air theatre and planning of buildings.	11
III	**BEHAVIOUR OF SOUND** Behavior of sound in enclosed spaces – principles of geometrical acoustics –Sabine's formula and its interpretation Auditorium acoustics – design criteria for speech and music – Acoustic design for reverberation control – sound amplification.	11
IV	**NOISE AND CONTROL** Principles of noise control – noise sources – sound field determination – sound transmission through walls and partitions, Vibration isolation – damping of noise – noise transmission through ducts – planning considerations, General description on the manufacture and properties of acoustical materials – selective behavior of acoustic materials.	12
V	**CONSTRUCTION DETAILS** Construction details of acoustic treatment on walls, ceiling and floors– floating floor construction – Lecturer halls – seminar hall – auditorium – recording studio.	12

TEXT BOOKS

1. “Dr B J Smith”-“ Acoustics and Noise Control”
2. “David Egan”-“Architectural Acoustics”-“J Ross Publishing Classics”
3. “Paul. E Sabine”-“Acoustics And Architecture”
4. “Clifford Melville Swan”-“Architectural Acoustics”
5. “Raj Patel”-“Architectural Acoustics”-“A guide to integrated thinking”

REFERENCE BOOKS

1. “Jack E Moore”-“Design for Good Acoustics and Noise Control”
2. “Scott D Snyder”-“Active Noise Control Primer (Modern Acoustics and Signal Processing)”.
3. “Mahavir Singh”-“Noise Control in Buildings: Fundamental and Applications”
4. “F. Alton Everest , Ken Pohlmann”-“ Master Handbook of Acoustics, Sixth Edition “
5. “Pradip Kumar Chakrabarti Satyabrata Chowdhury”-“A Textbook on Waves and Acoustics”

WEBSITES

https://exploresound.org/

https://www.acousticgeometry.com/

https://www.acousticfields.com/

https://www.qacoustics.co.uk/

https://overtoneacoustics.com/

https://nptel.ac.in

https://ndl.iitkgp.ac.in

https://www.archdaily.com/

https://www.wiley.com/en-us/Architectural+Acoustics+Illustrated

https://physicsworld.com/a/acoustics-in-architecture/

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

COMPUTER APPLICATION IN ARCHITECTURE – II

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012540

Semester : V Semester

Subject Title : COMPUTER APPLICATION IN ARCHITECTURE- II

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
COMPUTER APPLICATION IN ARCHITECTURE- II	5 Hours	80 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	FLOOR PLANS & TYPICAL FLOOR PLAN	16
II	ROOF PLAN	16
III	ELEVATIONS (FRONT, REAR & TWO SIDE ELEVATIONS) & SECTIONAL ELEVATIONS	16
IV	HATCHING BLOCKS	16
V	PLOTTING DRAWINGS IN AUTOCAD PRACTICE WITH COMPLETE DRAWING	16
TOTAL		**80**

RATIONALE:

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.

GUIDELINES:

- All the exercises given in the syllabus should be completed and given for the end semester practical examination.
- The external examiners are requested to ensure that a single exercise question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations.

OBJECTIVES:

At the completion of the study, the students will be able

- To understand the Fundamentals of software to create a basic 2D and 3D drawing in AutoCAD.
- To enable student the techniques and teaches them to be proficient in the use of AutoCAD to make simple geometric forms, rendering, house plan and other presentation techniques involved.
- To understand the tool for the task, the best way to use that tool and how to create new tools to accomplish tasks more efficiently.
- To prepare complete approval drawing for residential building with help of drawing software. (AutoCAD)

DETAILED SYLLABUS

4012540 – COMPUTER APPLICATION IN ARCHITECTURE- II

Contents: Practical

UNIT	NAME OF THE TOPIC	HOURS
I	**FLOOR PLANS & TYPICAL FLOOR PLAN** Showing dimensions of all rooms / space, thickness of walls, inner & outer plaster line, door / window marking & their position, widths of flight, landing, tread, stairwell (if any), no of treads deep line in floor, drop line in toilet, kitchen & veranda - showing same as above.	16
II	**ROOF PLAN** Ghundi, slope & ridge line, rain water pipe, anti siphonage pipe, soil pipe vent pipe, over head tank, ring main, thickness of parapet wall, and staircase with relevant information.	16
III	**ELEVATIONS (FRONT, REAR & TWO SIDE ELEVATIONS) & SECTIONAL ELEVATIONS** Showing ground level, plinth level, sill level, lintel level, floor level, roof level, their height & total height, height of parapet wall, roof projection (if any) and specification of elevational features - two sectional elevations through staircase, kitchen, toilet, veranda, showing main entrance to staircase, exit from staircase to roof, fights of steps in section and elevation, ground level, floor level, roof level, sill & lintel level, roof / roof parapet height, loft height.	16
IV	**HATCHING BLOCKS** BHATCH, hatch commands - boundary hatch options: quick tab advance tab - hatching around text traces, attributes, shapes and solids - editing hatch boundary - boundary commands the concept of blocks - converting objects into a block: block - block commands - nesting of blocks - inserting blocks: insert, MINSERT commands - creating drawing files: WBLOCK command - defining block attributes- inserting blocks with attributes – -editing attributes	16

V	**PLOTTING DRAWINGS IN AUTOCAD PRACTICE WITH COMPLETE DRAWING** PLOT command - plot configuration - pen assignments - paper size & orientation area - plot rotation & origin - plotting area - scale - each student is required to prepare a set of orthographic projections of a building designed by himself/ herself in the part -I second semester in the subject basic design or of any other design approved by the teacher in charge	**16**

EXERCISES:

1. Draw a center line and foundation detail for an given a double bedroom residence plan.
2. Draw a double bedroom residence plan showing inner & outer plaster line, doors & windows marking to a suitable scale.
3. Draw a site plan for double bedroom residence showing entry, exit, parking, pathway, landscape, building location, water bodies, bore well, sump, septic tank marking to a suitable scale.
4. Draw a apartment building of single bedroom flat showing the details as same as (plate 2).
5. Draw a site plan for apartment building showing entry, exit, parking, pathway, landscape, building location, water bodies, bore well, sump, septic tank marking to a suitable scale.
6. Draw the terrace plan for a (plate1) showing the details of rainwater pipe, overhead tank, parapet wall, headroom details.
7. Draw elevation of (single storey residence) showing the details of ground level, plinth Level, sill level, floor level, lintel level & roof level.
8. Draw elevation of (multi-storey residence) showing the details of ground level, plinth level, sill level, floor level, lintel level & roof level.
9. Draw section of (single storey residence) showing the details of ground level, plinth level, sill level, floor level, lintel level & roof level.
10. Draw section of (multi-storey residence) showing the details of ground level, plinth level, sill level, floor level, lintel level & roof level.
11. Draw a electrical layout for a double bedroom residence.

12. Draw an electrical layout for a apartment building of single bedroom flat.
13. Draw a kitchen plan, section showing the details of cabinets with dimensions.
14. Draw a toilet plan, section showing the details of fixtures, floor trap, and slope line.

BOARD EXAMINATION

ALLOCATION OF MARKS

Plan	-	30marks
Elevation	-	20marks
Section	-	25marks
Dimensioning	-	20marks
Viva-voce	-	5marks

REFERENCES :

1. "Auto CAD REFERENCES S manual - Autodesk UNC, 2010"
2. "Dana.J.Hepler , Paul Ross Wallach , Donald E.Helper"-"Drafting & Design for Architectural & Construction (Ninth Edition)"
3. "S.S.Bhavikatti , M.V.Chitawadagi"-"Building Planning & Drawing"

WEBSITES:

https://nptel.ac.in
https://ndl.iitkgp.ac.in
http://www.sin.fi.edu/-Computer drafting
http://www.ccollege.hccs.cc.tx.us/-Comp.graphic
https://www.autodesk.in
https://www.thesourcecad.com/autocad-tutorials
http://www.cadtutor.net/
https://static.sdcpublications.com/pdf

LIST OF EQUIPMENTS (for a batch of 30 students)

Computer – 30 Nos

SOFTWARE USED

Cad Software

4012540 - COMPUTER APPLICATIONS IN ARCHITECTURE-II

MODEL QUESTION PAPER

Duration:3Hours **Maximum marks:100**

ALLOCATION OF MARKS:

Plan	-	30marks
Elevation	-	20marks
Section	-	25marks
Dimensioning	-	20marks
Viva-voce	-	5marks

1. Draw the working drawing for two bed room residence plan for an area of 1000 sq.ft showing inner & outer plaster lines, doors& Windows marking to a suitable scale with Elevation, Section and Dimensioning and specifications using Auto CAD.

   (BY LOT)

   NOTE:
   The examiner should prepare minimum of 10-line plans (Area approximately equal to 100 sq.m)

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ARCHITECTURAL DESIGN STUDIO - II

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012550

Semester : V Semester

Subject Title : ARCHITECTURAL DESIGN STUDIO - II

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL DESIGN STUDIO - II	6 Hours	96 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	DESIGN PROBLEM – 1	48
II	DESIGN PROBLEM – 2	48
TOTAL		**96**

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 Institutional and Multi- storied 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.

OBJECTIVES:

At the completion of the study, the students will be able

- To develop space visualization application of materials to simple architectural forms.
- To apply the knowledge gained in other subjects and basic design to design of school and apartment buildings of single/ simple activity.

DETAILED SYLLABUS

4012550 - ARCHITECTURAL DESIGN STUDIO - II

Contents: Practical

Single level planning in small scale, small span, horizontal movement and simple vertical movement, data collection, case studies, analysis and presentation of studies. Data collection with respect to design and detailing for physically handicapped persons - Concepts and presentation of design with scales models Examples of exercises include.

DESIGN PROBLEM – 1 **48 Hrs**

Institutional buildings: Nursery / Primary schools/school for children with learning disabilities Design problem shall deal with planning for small group of children and minor activities for the above and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

DESIGN PROBLEM – 2 **48 Hrs**

Multi – storey building: Apartment design / group housing. Design problem shall deal with planning for the above by applying the principles of Intelligent Architecture and shall include data collection, Literature study, Case study, Conceptual design scheme, Detailed Design and presentation drawings which includes Plan, Elevation, Section, Perspective Views etc.,

NOTE:

Case study and measured drawing of the building studied (either School or Apartment) can be 50% of the design problem so that the remaining 50% the Student can understand and design the building.

BOARD EXAMINATION

ALLOCATION OF MARKS

Any one question from Design Problem – I and II - 100 marks. (By lot)

For Design Problem – I

Plan	-	25 marks
Elevation	-	20 marks
Section	-	20marks
Site Plan	-	15 marks
View	-	15 marks
Viva –voce	-	5marks

For Design Problem – II

Plan	-	40 marks
Elevation	-	20 marks
Section	-	20 marks
Site Plan	-	15 marks
Viva –voce	-	5marks

REFERENCES:

1. "De Chiara and Callender"-"Time Saver Standards Building Types", "McGraw Hill Co.,2nd, Edition,1980".
2. "Edward D.Mills", "Planning - The Architects Handbook - 10th Edition"-",British Library C Taloguing in PublishingData,1985".
3. "Wakita/Linde",-"The Professional practice of Architectural working, drawing John Wiley &Sons,1984."
4. "Andrew Alpern", "Handbook of Speciality Elements in Architecture"-"McGraw Hill BookCo.,1982."
5. "Julius Panero & Martin Zelnik"-",Human Dimension and Interior Space, Whitney Library of Design Publication,1979."
6. "RudollHerg"-"Neufet Architect's Data", , "Crosby Lockwood and SonsLtd.,1970".

WEBSITES

http://www.hamptons.com/freshair

http://www.columbiamedical.com/

http://www.mgarchitects.com/

https://nptel.ac.in

https://ndl.iitkgp.ac.in

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool	-	30 Nos
Pin-up board	-	1 No

V SEMESTER

4012550– ARCHITECTURAL DESIGN STUDIO - II

MODEL QUESTION PAPER

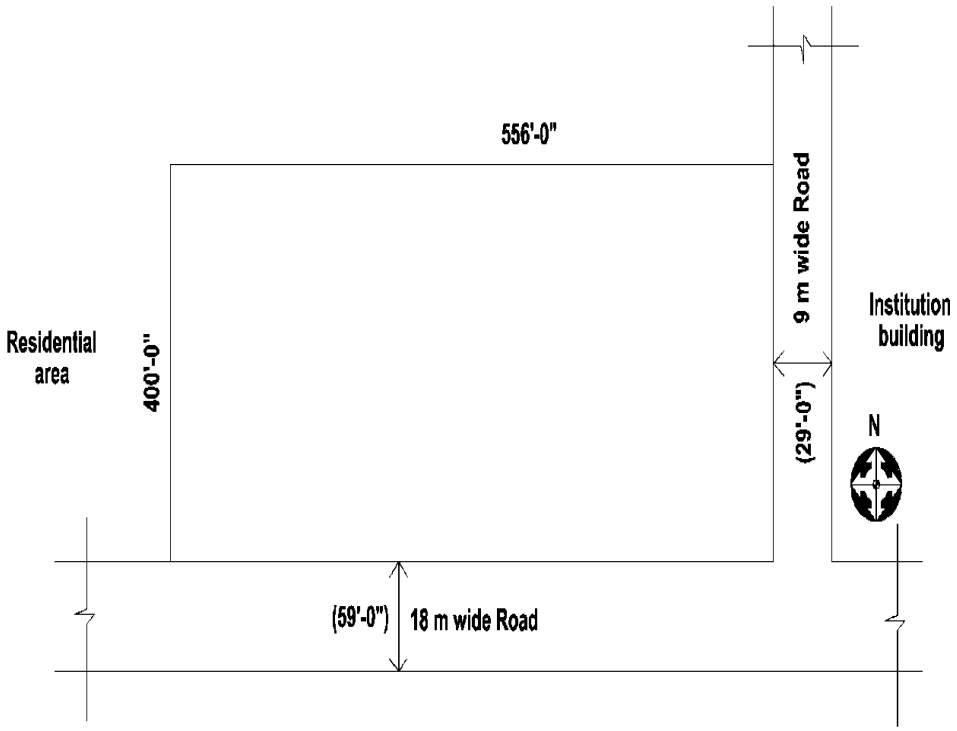
Duration: 3 Hrs **Max. Marks:100**

Any one question from Design Problem – I and II - 100 marks. (By lot)

1 Primary School at Trichy:

The rectangular of land which is located in Trichy amongst residential area. (Please refer to the attached plan).

- Frame the requirements according to the modern trends.
- Apply the rules and regulations of local authority
- The built form that would reflect the educational/ children's activities.



SITE PLAN

Drawing Requirements:

Site plan	-	1:400	-	15Marks
Plan	-	1:100	-	25Marks
Elevation	-	1:100	-	20Marks
Section	-	1:100	-	20Marks
View	-	your own scale	-	15Marks

2 Apartment at Thanjavur:

The proposed apartment building has to be designed with the following requirements:

No. of dwelling units - 8 Nos

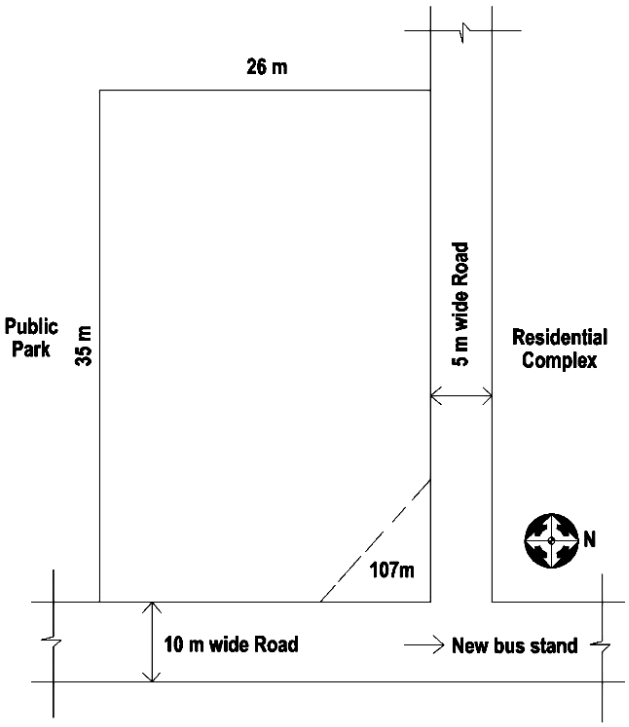
Area of each dwelling unit - 1200 Sq.ft.

- Adequate areas for passages, lobbies, porch, and stair services should be provided wherever necessary.
- Apply the rules and regulations of local authority and also apply the intelligent concepts.

The rectangular piece of land which is located is the New Bus stand area of Thanjavur amongst high rise residential buildings and has a public park situated adjust to it on the south (please refer to the attached site plan).

Front margin (Main Road) - 5m

Side and rear margins - 3m



Drawing Requirements:

Site plan	-	1:200 -	15 Marks
Plan	-	1:100 -	40 Marks
Elevation	-	1:100 -	20 Marks
Section	-	1:100 -	20 Marks

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ARCHITECTURAL MODEL MAKING

(ELECTIVE PRACTICAL – I)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012561

Semester : V Semester

Subject Title : ARCHITECTURAL MODEL MAKING

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ARCHITECTURAL MODEL MAKING	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	SOLID MODELLING	11
II	BLOCK MODELLING	11
III	FURNITURE MODELLING	11
IV	BUILDING INTERIOR COMPONENTS	11
V	DETAILED MODEL	20
TOTAL		**64**

RATIONALE:

In Diploma level Architectural Assistantship development of auto motor skills plays a vital role. The auto motor skill development can be achieved by on hand experience in handling various instruments, apparatus and equipment for preparation of architectural models to the various building elements and buildings. This is accomplished by doing architectural models related to building elements and buildings of different types in architectural workshop. Further the students will guide in making architectural models for their project work.

OBJECTIVES

At the completion of the study, the students will be able

- To develop architectural ideas and can be used at all stages of design. An architectural model shows the scale and physical presence of a proposed design.
- To create 3-dimensional replica or expression of the design, usually at a scale much smaller than full size. Traditionally, architectural models were made exclusively by hand using materials such as foam board, balsa wood and card.
- To develop a presentation model to explain the project in detail and can be used to exhibit, visualize a final design.
- To understand and apply a variety of three-dimensional model construction process and techniques
- To explore the value of physical models as an integral part of a design process for both academic and professional contexts.

DETAILED SYLLABUS

4012561- ARCHITECTURAL MODEL MAKING

Contents: Practical

NOTE: Both drawings and models are to be prepared to all the exercises and evaluated for awarding internal marks.

Unit	Name of the Topic	Hours
I	**SOLID MODELLING:** Basic Geometrical shapes – Cube, Cylinder, Cone, Sphere, pyramids, Prism. (Based on development of surface)	11
II	**BLOCK MODELLING:** **Building Modelling –**(To express scale proportion and colour) – Watchman cabin, Car shed, Reading room, Snack bar, Cafeteria, Shop, Ice cream parlour.	11
III	**FURNITURE MODELLING:** Chairs, Sofa, dining table, Cot, Cabinets, Dressing table, wall units, (Built in units), Kitchen units etc.	11
IV	**BUILDING INTERIOR COMPONENTS:** Staircase, Partition, Ward robe, Room Divider, and Windows	11
V	**DETAILED MODEL:** A building model to express site, landscape, road, and exterior features.	20

REFERENCES

1. "Nick Dunn"-"Architectural model making"
2. "Roark T.Congdon"-" Architectural model building"
3. "Megan Werner"-"Model making"
4. "Miriam Delaney"-"Studio craft and techniques of architects"
5. "David Neat"-"Model making materials and methods".

LIST OF EQUIPMENTS/FURNITURES (for a batch of 30 students)

Working Table with chair - 30 Nos

Pin-up board - 1 No

LIST OF PLATES:

1. Prepare development surface and model for solids cube, cone cylinder and prism, pyramid using Snow white board / mount board. (not for examination)
2. Prepare plan, elevation section and block model for snack bar, cafeteria, and ice cream parlour using mountboard.
3. Prepare plan, elevation section and model for furnitures like sofa, dining table & chair using mount board / snow whiteboard.
4. Prepare plan, elevation and block model for a spiral staircase using mount board.
5. Prepare plan, elevation, section and model for a room divider using mount board/ snow whiteboard.
6. Prepare plan, elevation section and model for a paneled bay window using mount board / snow whiteboard.
7. Prepare plan, elevation section and model for a residential building of area 100 sq.m. With full landscape & exterior finishes using mount board / snow white board.

BOARD EXAMINATION

ALLOCATION OF MARKS

Part A: Any one of exercises (by lot) from 2 to 6 that are done in studio and Architectural workshop using snow white board / mount board during the Semester to carry. **35 marks**.

Part B: Model of a residential building of area 60 sq.m. With full landscape& exterior finishes using mount board / snow white board to carry. **60 marks.**

Viva-Voce: **5 marks**

Total: **100 Marks**

Note: The plan, elevation and section for the Part – B question shall be given to the Students a day before the start of examination.

4012561- ARCHITECTURAL MODEL MAKING

MODEL QUESTION PAPER

Duration: 3 HRS **Max.marks:100**

PART – A

1 Draw the details of a sofa and prepare model for the same using snow white board. Assume suitable scale and dimensions. (Question is chosen by lot.)

35 marks

PART – B

2. Prepare the Model of a residential building of area 60 sq.m. With full landscape & exterior finishes using mount board / snow white board.

60 marks

PART – C

VIVA-VOCE **5marks**

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ELEMENTS OF INTERIOR DESIGN PRACTICAL

(ELECTIVE PRACTICAL – I)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012562

Semester : V Semester

Subject Title : ELEMENTS OF INTERIOR DESIGN PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ELEMENTS OF INTERIOR DESIGN PRACTICAL	4 Hours	64 Hours	25	100*	100	3 Hours

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION TO THE SUBJECT	10
II	PREPARATION OF AN ALBUM WITH PRESENTATION DRAWINGS OF THE ROOMS IN A RESIDENTIAL HOUSE	27
III	PREPARATION OF AN ALBUM WITH PRESENTATION DRAWINGS OF THE ROOMS IN AN APARTMENT	27
TOTAL		**64**

RATIONALE:

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.

GUIDELINES:

- All the exercises given in the syllabus should be completed and given for the end semester practical examination.
- The external examiners are requested to ensure that a single exercise question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations

OBJECTIVES:

At the completion of the study, the students will be able to

- Understand the concept and principles of interior design.
- Apply the methods and techniques of interior designing.
- Learn the innovative trends and materials for interior design.
- Prepare album with presentation drawings of the rooms of residential and apartment building.

DETAILED SYLLABUS

4012562 – ELEMENTS OF INTERIOR DESIGN PRACTICAL

Contents: Practical

UNIT	NAME OF THE TOPIC	HRS.
I	**INTRODUCTION TO THE SUBJECT** Learning to assess interior space and its organization- The role of functionally in interior design-Layout schemes of living, bed room, study room, toilets and residential house-Application of colour in various elements in interior designing	10
II	**PREPARATION OF AN ALBUM WITH PRESENTATION DRAWINGS OF THE ROOMS IN A RESIDENTIAL HOUSE.** Plan of each room of a residential house designed in the earlier terms showing the furniture, fixture etc laid out in a functional and aesthetic manner-Elevation of each wall of the above designed rooms-Rendering the above in colour.	27
III	**PREPARATION OF AN ALBUM WITH PRESENTATION DRAWINGS OF THE ROOMS IN AN APARTMENT** Preparation of one point perspective drawing and rendering with colour of the aforementioned rooms - study finishing materials used in floors, walls, doors windows and furniture - study fittings and fixtures used in the bathrooms and kitchens of a residential house.	27

EXERCISES:

1. Design and draw a furniture layout a living room space of an area of 250 sq.ft. with scale (1:25).
2. Design and draw a kitchen space for an area of 220 sq.ft with store area, uitility space and breakfast counter with scale of (1:25).
3. Design and draw a furniture layout a master bedroom space of an area of 200sq.ft. with scale (1:25).
4. Design and draw a toilet space of an area of 45sq.ft. with scale (1:20).
5. Draw the elevation and detailing of living room with scale of (1:25).
6. Draw the elevation and detailing of kitchen with scale of (1:25).
7. Draw the elevation and detailing of master bedroom with scale of (1:25).
8. Draw the elevation and detailing of toilet with scale of (1:20).
9. One point perspective view for bed room with colour scheme.
10. One point perspective view for kitchen with colour scheme.
11. One point perspective view for living with colour scheme.
12. One point perspective view for toilet with colour scheme

BOARD EXAMINATION

ALLOCATION OF MARKS

For a given line plan of minimum plinth area 100 Sq.m, draw plan, Elevation, Section and dimension the same. (By lot)

Note: The examiners should prepare minimum of 10 line plans

Plan	-	25	marks
Elevation	-	40	marks
Section	-	20	marks
Dimensioning	-	10	marks
Viva-voce	-	5	marks

REFERENCES :

1. “Sherrill Whiton”-“Elements of Interior Design and Decoration”
2. “Seetharaman P”-“Interior Design and Decoration (PB 2019)”
3. “Angelica Lefosse”-“Interior Design: Complete guide on how to design and furnish your home”

5. “Frida Ramstedt”-“The Interior Design Handbook”

6. “Premavathy Seetharaman & Parveen Pannu”-“ Interior Design & Decoration”
7. “M.Pratap Rao”-“Interior Design Principles & Practice”
8. Joseph Dechiara , Julius Panero & Martin Zelnik”-““Time Saver Standards for Interior Design & Space Planning (Second Edition)”

WEBSITES:

https://nptel.ac.in

https://ndl.iitkgp.ac.in

LIST OF EQUIPMENTS/FURNITURES (for a batch of 30 students)

Drawing Table with stool	-	30 Nos
Pin-up board	-	1 No

4012562 - ELEMENT OF INTERIOR DESIGN PRACTICAL

MODEL QUESTION PAPER

Duration: 3 Hours **Maximum marks:100**

ALLOCATION OF MARKS:

Plan - 25 marks

Elevation - 40 marks

View - 20 marks

Dimensioning- 10 marks

Viva-voce - 5 marks

1.Draw and design the Master bedroom for an area of 200 sq.ft with interior layout and detailing

Drawing requirements - scale 1:25

Plan - 25 marks

Elevation (4 Nos) - 40 marks

View - 20 marks- proportionately

Dimensioning - 10 marks

Viva-voce - 5 marks

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

SURVEYING PRACTICE

(ELECTIVE PRACTICAL – I)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

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DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012563

Semester : V Semester

Subject Title : SURVEYING PRACTICE

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours / Semester	Internal Assessment	Board Examination	Total	
SURVEYING PRACTICE	4 Hours	64 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	CHAIN,COMPASS &LEVELLING SURVEY	15
II	THEODOLITE SURVEY	15
III	TACHEOMETRY	15
IV	TOTAL STATION	10
V	GLOBAL POSITIONING SYSTEM	9
TOTAL		**64**

RATIONALE:

This is a field practicing subject which covers the procedure of handling the survey instruments and enables the student to know the field work and office work of the area to be surveyed.

OBJECTIVES:

At the completion of the study, the students will be able

- To know the various survey equipments
- To know the field work and office work
- To know the modern survey equipments and make use of it in the field.

DETAILED SYLLABUS

4012563 – SURVEYING PRACTICE

Contents: Practical

Unit	Name of the Topic	Hours
I	**1.1 – CHAIN SURVEY** Study of chain, tape, accessories used for chain survey. 1**.2-COMPASS SURVEY** Study of Prismatic Compass – setting up over a station and observe bearing of lines – running closed traverse –Finding included angles – determination of distance between two points when their base is inaccessible. 1**.3 – LEVELLING** Study of a Level – temporary adjustment – taking readings and booking in a field book – Fly Levelling – Check Levelling – Reduction by Height of Collimation / Rise and Fall method.	**2** **5** **8**
II	**THEODOLITE TRAVERSING** Study of a Theodolite - temporary adjustment – Reading horizontal and vertical angles – repetition and reiteration methods – determination of elevation of an object when the base is accessible / inaccessible – single plane method – double plane method.	**15**
III	**TACHEOMETRY** Determination of constants of a Tacheometer – distance and elevation of points by stadia tacheometry – gradient between two points.	**15**
IV	**TOTAL STATION** Study of Total Station – general commands used – Instrument preparation and setting – reading distances, angles, co-ordinates and altitude of given points.	**10**

V	**GLOBAL POSITIONING SYSTEM (GPS)** Study of hand-held GPS – Measurement of latitude, longitude and altitude – selection and marking of routing using hand held GPS.	**9**

TEXT BOOKS

1. "Punmia.B.C"-"Surveying Volume-1 & Volume-2", ",Laxmi Publications(p)Ltd"
2. "Duggal .S.K"- "Surveying volume I & II ","Tata McGraw hill New Delhi"
3. "Agor"-"A Text Book of Surveying Levelling ","Khanna publishers"

REFERENCES:

1. "Kanetkar.T.P. &S.V.Kulkarni"- "Surveying and levelling part I &II ",
2. "Rangwala.S.C"-""Surveying & Levelling","Charotar Publishing House",
3. "Sathesh Gopi, R.Sathikumar & N.Madhu"-" Advanced Surveying,(Total Station & Remote sensing),"" Pearson Education, Chennai, 2007".
4. "Burrough P A"-" Principles of GIS for Land Resources Assessment,"- "Oxford Publication 2000",
5. "Michael N Demers"-"Fundamentals of Geographical Information Systems", "Second Edition, John Wiley Publications, 2002"

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

LIST OF EXERCISES:

PART A

1. Running closed compass traverse and finding the included angles from bearings and plotting the traverse.
2. Determine the distance between two points when their base is inaccessible.
3. Fly Levelling – Minimum 6 points with 2 change points – reduction by height of collimation method.
4. Check Levelling – Minimum 6 points with 2 change points – reduction by rise and fall method.
5. Theodolite – Horizontal angle by repetition method – Face left and Face right observation.
6. Theodolite – Horizontal angle by Reiteration method – Face left and Face right observation.
7. Theodolite – Determination of distance between two points when their base is inaccessible.
8. Theodolite –Determination oh height of an object when the base is accessible.
9. Theodolite – Determination of RL at top of an object by single plane method.
10. Theodolite – Determination of RL at top of an object by double plane method.
11. Tacheometer – Determination of constants.
12. Tacheometer – Determination of RL of staff station by stadia tacheometry.

PART B

1. Total Station – Instrument preparation and setting & find the horizontal distance, slope distance and height of the target point from instrument station (minimum two points)
2. GPS – Measurement of latitude and longitude of a given point using hand held GPS.

BOARD EXAMINATION

ALLOCATION OF MARKS

Part – A - Any one from 12 exercises – BY LOT – 75 Marks

Part – B - Any one from 2 exercises – BY LOT – 20 Marks

Viva – Voce – 5 Marks

LIST OF EQUIPMENTS (for a batch of 30 students)

Chain	- 6 Nos
Ranging rod	- 30 Nos
Tape (30m)	- 6 Nos
Arrows	- 60 Nos
Prismatic compass	- 6 Nos
Dumpy level	- 6 Nos
Theodolite	- 6 Nos
Total station	- 1 No
GPS (hand held Receiver)	- 2 Nos

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

V SEMESTER

ENTREPRENEURSHIP AND STARTUPS

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012570

Semester : V Semester

Subject Title : ENTREPRENEURSHIP AND STARTUPS

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
ENTREPRENEURSHIP AND STARTUPS	4 Hours	64 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	ENTREPRENEURSHIP – INTRODUCTION AND PROCESS	10
II	BUSINESS IDEA AND BANKING	10
III	START UPS, E-CELL AND SUCCESS STORIES	10
IV	ARCHITECTURAL PROFESSIONAL STRATEGIES	10
V	ARCHITECTURAL BUSINESS STRATEGIES	10
REVISION,FIELD VISIT AND PREPARATION OF CASE STUDY REPORT		14
TOTAL		**64**

RATIONALE:

Development of a diploma curriculum is a dynamic process responsive to the society and reflecting the needs and aspiration of its learners. Fast changing society deserves changes in educational curriculum particularly to establish relevance to emerging socio-economic environments; to ensure equity of opportunity and participation and finally promoting concern for excellence. In this context the course on entrepreneurship and start ups aims at instilling and stimulating human urge for excellence by realizing individual potential for generating and putting to use the inputs, relevant to social prosperity and thereby ensure good means of living for every individual, provides jobs and develop Indian economy.

OBJECTIVES:

At the completion of the study, the students will be able

- To excite the students about entrepreneurship.
- Acquiring Entrepreneurial spirit and resourcefulness.
- Understanding the concept and process of entrepreneurship.
- Acquiring entrepreneurial quality, competency and motivation.
- Learning the process and skills of creation and management of entrepreneurial venture.
- Familiarization with various uses of human resource for earning dignified means of living.
- Know its contribution in and role in the growth and development of individual and the nation.
- Understand the formation of E-cell.
- Survey and analyze the market to understand customer needs.
- Understand the importance of generation of ideas and product selection.
- Learn the preparation of project feasibility report.
- Understand the importance of sales and turnover.
- Familiarization of various financial and non-financial schemes.
- Aware the concept of incubation and starts ups.

DETAILED SYLLABUS

4012570 –ENTREPRENERUSHIP AND STARTUPS

Contents: Practical

Unit	Name of the Topics	Hours
I	**ENTREPRENEURSHIP – INTRODUCTION AND PROCESS** ● Concept, Functions and Importance ● Myths about Entrepreneurship ● Pros and Cons of Entrepreneurship ● Process of Entrepreneurship ● Benefits of Entrepreneur ● Competencies and Characteristics ● Ethical Entrepreneurship ● Entrepreneurial Values and Attitudes ● Motivation ● Creativity ● Innovation ● Entrepreneurs - as problem solvers ● Mindset of an employee and an entrepreneur ● Business Failure – causes and remedies • Role of Networking in entrepreneurship	10
II	**BUSINESS IDEA AND BANKING** • Types of Business: Manufacturing, Trading and Services • Stakeholders: Sellers, Vendors and Consumers • E- Commerce Business Models • Types of Resources - Human, Capital and Entrepreneurial tools • Goals of Business and Goal Setting • Patent, copyright and Intellectual Property Rights • Negotiations - Importance and methods • Customer Relations and Vendor Management • Size and Capital based classification of business enterprises • Role of Financial Institutions	10

	• Role of Government policy • Entrepreneurial support systems • Incentive schemes for State Government • Incentive schemes for Central Government	
III	**STARTUPS, E-CELL AND SUCCESS STORIES** ● Concept of Incubation centre's ● Activities of DIC, financial institutions and other relevance institutions ● Success stories of Indian and global business legends ● Field Visit to MSME's ● Various sources of Information ● Learn to earn ● Startup and its stages ● Role of Technology – E-commerce and social media ● Role of E-Cell ● E-Cell to Entrepreneurship	**10**
IV	**ARCHITECTURAL PROFESSIONAL STRATEGIES** • Achieving Sustained design excellence. • Coordination of consultants. • Exposure to technological developments. • Specialization in design. • Keeping stakeholders updated about developments in the firm, its work and achievements. • Developing and using a network of contacts. • Identification of the potential of site for any building. • Investing time and money in innovation. • Creating a professional online presence. • Vision about changing design trends.	**10**
V	**ARCHITECTURAL BUSINESS STRATEGIES** • Business and administrative dimensions of architects' firms. • Flexibility to shift direction. • Enhancement of commercial value of the building. • Responsiveness to the client's needs and requirements.	**10**

	• Regular strategic review and planning. • Identification of shifts in the client requirements. • Revisit decisions taken from time to time. • Effective presentation and accepting feedback from clients. • Changing frustrations into a desire to create solutions. • Diversifying and offering new consultancy services.	

REFERENCE BOOKS:

1. “Dr. G.K. Varshney”, “Fundamentals of Entrepreneurship”, “Sahitya Bhawan Publications, Agra – 282002.”
2. “Dr. G.K. Varshney”, “Business Regulatory Framework”, “Sahitya Bhawan Publications, Agra – 282002”.
3. “Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd,”-“ Entrepreneurship”, “McGraw Hill (India) Private Limited, Noida – 201301”.
4. “M.Scarborough, R.Cornwell,”-“ Essentials of Entrepreneurship and small business management”,” Pearson Education India, Noida – 201301.”
5. “Charantimath Poornima M”. “Entrepreneurship Development and Small Business Enterprises”, “Pearson Education, Noida – 201301”.
6. “Trott”, “Innovation Management and New Product Development”, “Pearson Education, Noida – 201301.”
7. “M N Arora”, “A Textbook of Cost and Management Accounting”, “Vikas Publishing House Pvt. Ltd., New Delhi-110044”.
8. “Prasanna Chandra”, “Financial Management”, “Tata McGraw Hill education private limited, New Delhi.”
9. “I. V. Trivedi, Renu Jatana”,” Indian Banking System”-“ RBSA Publishers, Rajasthan.”
10. “Simon Daniel”, “HOW TO START A BUSINESS IN INDIA”-“BUUKS,” Chennai – 600018.”
11. “Ramani Sarada”, “The Business Plan Write-Up Simplified - A practitioner’s guide to writing the Business Plan”, “Notion Press Media Pvt. Ltd., Chennai 600095.”

BOARD EXAMINATION

INTERNAL MARK ALLOCATION

Assignment (Theory portion) *	- 10
Seminar Presentation	- 10
Attendance	- 5
Total	**- 25**

Note: * Two assignments should be submitted. The same must be evaluated and converted to 10 marks.

Guidelines for assignment:

First assignment – Unit I

Second assignment – Unit II

Guidelines for Seminar Presentation-Unit III

Each assignment should have five three marks questions and two five marks questions.

BOARD EXAMINATION

Note:

1. The students should be taught all units and proper exposure and field visit also arranged. All the portions should be completed before examinations.
2. The students should maintain theory assignment and seminar presentation. The assignment and seminar presentation should be submitted during the Board Practical Examinations.
3. The question paper consists of theory and practical portions. All students should write the answers for theory questions (40 Marks) and practical portions (60 Marks) should be completed for board examinations.
4. All exercises should be given in the question paper and students are allowed to select by lot. If required the dimensions of the exercises may be varied for every batch. No fixed time allotted for each portion and students have liberty to do the examination for 3 hours.
5. For Written Examination: theory question and answer: 45 Marks

Ten questions will be asked for 3 marks each. Five questions from each unit 1 & 2.

(10 X 3 = 30).

Three questions will be asked for 5 marks each. One question from each unit 1, 2 & 3 (3 X 5 = 15)

6. For Practical Examination: The business plan/Feasibility report or Report on Unit 4 & 5 should be submitted during the board practical examinations. The same have to be evaluated for the report submission (40 marks).

DETAILED ALLOCATION OF MARKS

Sl. No	Description	Marks
Part A	Written Examination - Theory Question and answer (10 questions x 3 marks:30 marks & (3 questions x 5 marks: 15 marks)	45
Part B	Practical Examination – Submission on Business Plan/Feasibility Report or Report on Unit 4 & 5	40
Part C	Viva voce	15
	Total	**100**

4012570-ENTREPRENEURSHIP AND STARTUPS

MODEL QUESTION PAPER

Time: 1 hour **Max. Marks: 100 marks**

PART A **(10x3=30)**

I. **Answer ten questions in brief.**

1. Define entrepreneurship.
2. State the process of entrepreneurship
3. What are the benefits of being an entrepreneur?
4. How do entrepreneurs act as problem solvers?
5. Outline the role of networking in entrepreneurship.
6. List the various types of business.
7. Outline the business model.
8. Suggest the various goals of business.
9. How selection of human resources is carried out?
10. Specify the role of government policy on entrepreneurship.

II. **Answer three questions in detail.** **(3x5=15)**

11. Describe the importance of innovation on entrepreneurship.
12. Enumerate the various incentive schemes for the central government.
13. How technology will play a major role in E- commerce?

PART B **(40)**

Practical Examination – Submission on Business Plan / Feasibility Report or Report on Unit 4 & 5

PART C

Viva Voce - **15 marks**

VI SEMESTER

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

STRUCTURAL DESIGN

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012610

Semester : VI Semester

Subject Title : STRUCTURAL DESIGN

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
STRUCTURAL DESIGN	6	96	25	100*	100	3

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION TO LIMIT STATE METHOD DESIGN OF BEAMS FOR FLEXURE BY L.S.M	18
II	DESIGN OF SLABS BY L.S.M	18
III	DESIGN OF BEAMS FOR SHEAR BY L.S.M DESIGN OF STAIRCASES	17
IV	DESIGN OF COLUMNS & FOOTINGS BY L.S.M	18
V	STEEL STRUCTURES	18
TEST & MODEL EXAMINATION		7
TOTAL		**96**

RATIONALE:

Diploma holders in Architectural Assistantship find employment with private Architects & Civil Engineers and also some percentage of them start their own enterprises. Therefore, the profession demands the development of basic knowledge and skills of Structural Engineering. This subject covers the analysis and design of reinforced concrete structural elements like slab, beam, column, column footing, staircase, etc. Also the students gain knowledge about the design of steel beam, tension and compression members.

OBJECTIVES:

At the completion of the study, the students will be able to

- know about the materials used in R.C.C.
- study about Limit State Design.
- design the R.C.C. structural elements like beam, slab, column, footing, etc.,
- design the Steel structural elements like simple beam and simple column.

DETAILED SYLLABUS

4012610 – STRUCTURAL DESIGN

Contents: Theory

Unit	Name of the Topic	Hours
I	**PART – A: REINFORCED CONCRETE STRUCTURES**	
	1.1 GENERAL	**4**
	Reinforced Cement Concrete – Concept of Composite material – Purpose of providing reinforcement – materials used in R.C.C and their requirements – different grades of cement and steel – Characteristic strength and grades of concrete – types of loads on structures as per (IS: 875).	**7**
	1.2 INTRODUCTION TO LIMIT STATE METHOD	
	Concept – different limit states- Characteristic strength and design strength of materials – Characteristic loads and design loads - partial safety factors for loads and material strength - Limit state of collapse in flexure – assumptions – stress strain curves for concrete and steel – Stress block – limiting values of neutral axis for different grades of steel	

	(Proof not necessary) – Moment of resistance of singly/ doubly reinforced rectangular sections – Problems. **1.3 DESIGN OF BEAMS FOR FLEXURE BY L.S.M** Effective span of cantilever, simply supported and continuous beams – breadth and depth requirements for beams – control of deflection – minimum depth requirement for stiffness –minimum concrete cover for durability and fire resistance – minimum and maximum reinforcement, spacing for main reinforcement and side face reinforcement as per IS 456-2000-design bending moments – Design of singly and doubly reinforced rectangular beams –cantilever, simply supported beams.	**7**
II	**2.1 DESIGN OF ONE-WAY SLABS BY L.S.M** Classification of slabs – Effective spans - Imposed loads on slabs (IS: 875) – strength and stiffness requirements –minimum and maximum permitted size, spacing and area of main and secondary reinforcement as per IS 456 -2000. Design of cantilever, simply supported slabs and sun shades by limit state method. **2.2 DESIGN OF TWO-WAY SLABS BY L.S.M** Introduction –Effective span –thickness of slab for strength and stiffness requirements - Middle and edge strips – B.M coefficients – design of B.M. – simply supported and restrained slabs – tension and torsion reinforcement requirement– Design of two-way slabs using B.M. coefficients. Simply supported two-way slabs only (Corners not held down only) – curtailment of reinforcement – check for stiffness**.**	**9** **9**
III	**3.1 DESIGN OF BEAMS FOR SHEAR BY L.S.M** Limit state of collapse in shear – design shear strength of concrete – design strengths of vertical / inclined stirrups and bent up bars in shear – principle of shear design – critical sections for shear – nominal shear stress – design of vertical stirrups and bent up bars for rectangular beams using limit state method –simple problems. **3.2 DESIGN OF STAIRCASES** Types of stairs according to geometry and structural behavior – planning a staircase –problems in planning of open well and dog legged staircase-effective span of stairs – effective breadth of flight slab – distribution of loads on flights.	**10** **7**

IV	**PART A – R.C.C STRUCTURES** **4.1 DESIGN OF COLUMNS BY L.S.M** Limit state of collapse in compression – assumptions - limiting strength of short axially loaded compression members - effective length of compression members – slenderness limits for columns – classification of column - minimum eccentricity for column loads – longitudinal and transverse reinforcement as per I S 456-2000-Design of axially loaded short columns with lateral ties – square, Rectangular & circular columns. (With circular ties only) **4.2 DESIGN OF COLUMN FOOTINGS** Types of Footings – Footings with uniform thickness and sloped footings – minimum thickness – critical sections – minimum reinforcement – development length, anchorage value, cover, minimum edge thickness requirements as per IS 456-2000 – Design of isolated footing (Square and Rectangular only) with uniform thickness by Limit State method – For Examination, (i) Problems on Design of size of footing and area of steel only. (ii)For given sizes and other required details of the footing, check for punching shear and transverse shear only. (Any one problem**)**	**9** **9**
V	**PART B - STEEL STRUCTURES** **5.1 DESIGN OF SIMPLE BEAMS BY LSM** Classification of beams – lateral buckling of beams – assumptions – minimum thickness of elements – limiting deflection of beams – Design of laterally supported beams using single rolled steel sections (Built up sections not included). **5.2 DESIGN OF TENSION MEMBERS BY LSM** General – Effective sectional area of Angles /T-sections connected by one leg / flange (welded connections only). Design of ties using single T-Sections and single Channels. **5.3 DESIGN OF COMPRESSION MEMBERS BY LSM** Effective length of compression members – slenderness ratio – minimum thickness of elements – effective sectional area. Design of steel columns using single rolled steel sections without cover plates. (Lacing and battens, Built up sections not included).	**6** **6** **6**

TEXT BOOKS

1. “Ramamrutham”-“Structural Engineering (RCC)”
2. “Vazirani and Ratwani”-“Structural Engineering (RCC)”
3. “M.F Sharief and V.V.S Murthy”-“Structural Engineering (RCC)”
4. “Guru charan Singh”-“R.C.C Structural Engineering”
5. “S.K. Duggal”- “Design of Steel Structures”,”Tata McGraw Hill, 2000”.
6. “Ashok.K.Jain” “LSM Design”
7. “B.C.Punmia” –“R.C.C Design”

REFERENCES

1. “S.R.Karve and V.L.Shah”, ”Limit state Theory and Design of Reinforced Concrete”, “Pune VidyaGriha Prakashan,1986.”
2. “P C Varghese,” “Limit state Design of Reinforced Concrete”, “Prentice-Hall of India Pvt. Ltd”, 1997”.
3. “Dr. S. Ramachandra,” –“Limit State Design of Concrete Structures”, “Scientific publishers, 2004.”
4. “Park. R and Pauley. T, ” “Reinforced Concrete Structures”, “John Wiley & Sons, New York,1975.”
5. “Mallick and Rangasamy,” “Reinforced Cement Concrete” “Oxford-IBH,1982.”
6. “I S 456-2000, I S 875-1974, I S 800 -1984”
7. “Explanatory hand book SP24, Design Aid SP 16, Detailing of Reinforcement SP 34”
8. “Dr. Ram Chandra,” “Design of Steel Structures, Vol-I ”, “Standard Book House, New Delhi, Tenth Edition, 1999”.
9. “Ashok K.Jain” *“Limit state design of R.C.C structures”* “Nemchand brothers, Roorkee”.
10. “Limit state Design of concrete structural elements, continuing Education module prepared by T.T.T.I Chennai and published by I.ST.E continuing education cell,” “university Visveswaraiah College of Engineering (UVCE)Campus, Palare Road, Bangalore – 560001”.

WEBSITE

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1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

PROFESSIONAL PRACTICE & PROJECT MANAGEMENT

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012620

Semester : VI Semester

Subject Title : PROFESSIONAL PRACTICE & PROJECT MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
PROFESSIONAL PRACTICE & PROJECT MANAGEMENT	5 Hours	80 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	ARCHITECT AND HIS SERVICES	14
II	RULES AND REGULATIONS OF THE ARCHITECTURE	14
III	TENDER AND CONTRACT	15
IV	PROJECT MANAGEMENT	16
V	ELEMENTARY ACCOUNTANCY	14
TEST & MODEL EXAMINATION		7
TOTAL		**80**

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 architect's services, CPM, PERT, Banking accounts etc, which are essential attributes for a successful technician.

OBJECTIVES:

At the completion of the study, the students will be able

- To know about the role of Architects in the planning and execution of a project.
- To know about how to start the construction work through tender and contract.
- To understand the various types of Architectural services.
- To know how to scheduling in construction field by using CPM, PERT network techniques.
- To gain knowledge about the banking accounts.

DETAILED SYLLABUS

4012620- PROFESSIONAL PRACTICE & PROJECT MANAGEMENT

Contents: Theory

Unit	Name of the Topic	Hours
I	**ARCHITECT AND HIS SERVICES** Definition of an architect – Role of an architect in the planning and execution of projects – Schedule of fees for various type of projects – Normal services, additional services and special services–Various stages for the fees collection – Calculation of architect's fees for various types of buildings.	14
II	**RULES AND REGULATIONS OF THE ARCHITECTURE PROFESSION** Professional Code of conduct – Architect's Act 1972 – Architectural design competition – Apartment and Flats act – Easement rights in the context of buildings – The role of council of architecture, India – The role of Indian institute of architects – Builders and Promoters – Arbitration.	14
III	**TENDER and CONTRACT** Invitation of tender – Condition of tender – Types of tender – Tender documents – Scrutiny and acceptance of tender – Work order. Various forms of contracts – Agreements – Conditions of contract – Legal aspects Completion period – Maintenance period – Advantages and disadvantages of various types of contracts – M-book –M-book entry – Check measurements Preparation of bills – Payments – Penal actions and penalties for defaults and delays.	15
IV	**PROJECT MANAGEMENT:** Introduction to Project Management – Advantages of Project Management, need and scope of Project management – Construction schedules – Bar charts, Mile stone charts – Event, Activity, Duration, Float, Slack, Range, Variance – CPM and PERT networks – Advantages of Network – Comparison of CPM and PERT – Numbering and forming the network – Tracing the critical path for simple problems.	16

V	**ELEMENTARY ACCOUNTANCY:** Classification of Banks – Various types of bank accounts – Various forms of deposits – FD, RD, Bond, Chit and Shares –Withdrawal – Demand Draft – Mail transfer – Cheque, crossing of cheques, payment through cheque – Transaction through ATM – Credit Card and Debit Cards – Introduction to e- Banking – Maintenance of accounts – Receipts and Vouchers – Formalities related to avail a housing loan from a Govt. authorized bank–Building insurance scheme.	**14**

TEXT BOOKS

1. “Roshan Namavathy” “ Professional Practice”
2. “Ar.Vasants.Apte”-“Architectural practice and procedure”
3. “K.G.Krishnamurthy & S.V.Ravindra”-“ Professional Practice”
4. “R.Panneerselvam & P. Senthil Kumar” “Project Management”

REFERENCES:

1. “Punmia” “CPM and PERT network analysis”
2. “Indian Institute of Architect’s Manual on Professional Practice”
3. “CPWD manual on Tender and Contract documents”
4. “T.S.Reddy”- “Principles of Acountancy”
5. “C.B.Guptha”-“Introduction to Accountancy”
6. “N.Vinayagam, M.Radhaswamy&S.V.Vasudevan”-“A Text book of Banking (Law, Practice, Theory)”
7. “M.Rahdaswamy&S.V.Vasudevan” “Insurance- Principle and Practice”
8. “Christopher.J.Willis & Allan Ashworth”-“ Practice & Procedure for the Quantity Surveyor (ninth edition)”
9. “C.H.Gopinatha Rao” –“Arbitration Act in Building Contracts Scope for Engineers & Architects”
10. “ C.H.Gopinatha Rao”- “Manual on Building Contracts”

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1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

LANDSCAPE ARCHITECTURE

(ELECTIVE THEORY-II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012631

Semester : VI Semester

Subject Title : LANDSCAPE ARCHITECTURE

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
LANDSCAPE ARCHITECTURE	5 Hours	80 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION TO LANDSCAPE ARCHITECTURE	15
II	SITE SURVEY AND ANALYSIS	14
III	SOFT LANDSCAPE	14
IV	HARD LANDSCAPE	15
V	INDOOR LANDSCAPE	15
TEST & MODEL EXAMINATION		7
TOTAL		**80**

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.

OBJECTIVES:

At the completion of the study, the students will be able to

- Describe introduction to landscape architecture.
- Understand site survey and analysis.
- Gain knowledge of soft landscape.
- Understand hard landscape.
- Understand indoor landscape.

DETAILED SYLLABUS

4012631- LANDSCAPE ARCHITECTURE

Contents: Theory

UNIT	TOPICS	Hrs.
I	**INTRODUCTION TO LANDSCAPE ARCHITECTURE** History of Landscape Architecture: Salient features of Italian garden, Japanese Garden, English garden & Mughal Garden with one example each. Components of Landscape: Climate, Light, Water, Soil, Plant Ecology.	15
II	**SITE SURVEY AND ANALYSIS** Location& Type of Site Boundaries: Local Climate, Topography, Geology & Soils, Water & Drainage, Access & Circulation, Surrounding Land use, Existing vegetation, Existing buildings/Structures/Historic features, Services, Views from within and views from outside.	14
III	**SOFT LANDSCAPE** Types of Plants: Trees, Shrubs & Hedges, Climbers & Wall shrubs, Ground covers, Herbaceous plants & Shrubs, Grasses. Plant Selection Criteria: Form, Texture, Colour , Scent, Sound	14
IV	**HARD LANDSCAPE** Site Furniture: Seating, Shelter, Convenience elements, Information, Lighting, Traffic control & Protection, Utilities, Seasonal elements & Special features. Recreational & Athletic Facilities: Basic dimensions of Court games, Track & Field and Swimming pools Fountains & Pools: Purpose of water display, Types of water effects, Operating systems Outdoor Lighting: General design principles, Lamp characteristics, Light Distribution, Categories of light fixtures, Landscape lighting effects.	15
V	**INDOOR LANDSCAPE** Physical requirements of Plants: Light, Temperature, Humidity &Air quality, Water, Planting medium, Space, Weight and Maintenance. Characters of Interior Plants: Size, Growth Habit, Texture, Colour. List of commonly used indoor plants and their characters. Advantages and Disadvantages of Terrace Gardening. Sustainable landscape design – Introduction – Need – Overview - Case study	15

TEXT BOOK:

1 “Time-Saver Standards for Landscape Architecture”:

REFERENCE BOOKS

1. “Harris & Dines Landscape Design Guide, Volume1,”
2. “Soft Landscape: Adrian Lisney & Ken Fieldhouse”.

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1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

TOWN PLANNING

(ELECTIVE THEORY-II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012632

Semester : VI Semester

Subject Title : TOWN PLANNING

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TOWN PLANNING	5 Hours	80 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

TOPICS & ALLOCATION OF HOURS

UNIT	Topics	Hrs.
I	TOWN PLANNING PRINCIPLES, SURVEYS AND ZONING	14
II	HOUSING and SLUMS	15
III	PUBLIC BUILDINGS, PARKS AND PLAY GROUNDS, MASTER PLAN	14
IV	URBAN ROADS, TRAFFIC MANAGEMENT	15
V	BUILDING BYE-LAWS, MISCELLANEOUS TOPICS	15
TEST & MODEL EXAMINATION		7
TOTAL		**80**

RATIONALE:

Some 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 in the mind of students.

OBJECTIVES:

At the completion of the study, the students will be able to

- Understand the principle of Town planning and surveys.
- Study the requirements of housing and slums.
- Study the requirement of public buildings, parks and playgrounds.
- Preparation of Master plan and Re-planning of existing Towns.
- Knows about Building bye laws and other miscellaneous topics.

DETAILED SYLLABUS

4012632 - TOWN PLANNING

Contents: Theory

Unit	Name of the Topic	Hours
I	**1.1 TOWN PLANNING PRINCIPLES** General - evolution of planning-objects of town planning - Economic justification for town planning - principles of Town planning - Necessity of town planning - origin of towns - growth of towns - stages in town development - personality of town - Distribution of land uses - Forms of planning - site for an ideal Town - Requirements of new Towns - Planning of the modern Town - Powers required to enforce T.P. schemes - cost of Town planning - present position of Town Planning in India. **1.2 SURVEYS** General – Necessity - collection of Data - Types of surveys - Uses of surveys. **1.3 ZONING** Meaning of the term - Uses of land – objects -principles of Zoning – Advantages of Zoning - Importance of Zoning - Aspects of Zoning - Transition Zone - Economy of Zoning - Zoning powers - Maps for Zoning.	**7** **3** **4**
II	**2.1 HOUSING** General - Importance of housing - Demand for houses - Building site - Requirements of residential buildings - Classification of residential buildings - Design of residential areas - Rural Housing - Agencies for housing- Investment in housing - HUDCO – CIDCO - Housing problem in India. **2.2 SLUMS** General - Causes of slums - Characteristics of slums - Effects of slums- Slum clearance - Works of improvement -Open plot scheme - Slum clearance and rehousing - Prevention of slum formation - Resources for slum clearance programmes -The Indian slum.	**8** **7**
III	**3.1 PUBLIC BUILDINGS** General - Location of Public Buildings – Classification of public Buildings - Principles of design in public buildings - Town centre - Grouping of public buildings - Civic aesthetics.	**4**

	3.2 PARKS AND PLAY GROUNDS General - Types of recreation - Location of urban green spaces - classification Of parks - park systems - park design - Finance of parks-parkways – playgrounds - space standards - Landscape architecture. **3.3 MASTER PLAN** General – Objects – Necessity - Data to be collected - Drawings to be prepared - Features of master plan - Planning standards - Report-stages of preparation - Method of Execution-conclusion. **3.4 RE-PLANNING EXISTING TOWNS** General - Objects of re-planning - Defects of existing towns - Data to be Collected - Urban renewal projects – Decentralization - Garden city - Surface drains - Refuse of Town.	3 **3** **4**
IV	**4.1 URBAN ROADS** General – Objects - Requirements of good city road - Factors to be considered - Classification of urban roads - Types of street systems - Through and By - pass roads - Outer and inner ring roads – Expressways – Freeways – Precincts - Road aesthetics. **4.2 TRAFFIC MANAGEMENT** General –Object - Traffic survey - Traffic congestion - Traffic control - Road junction – Parking - Traffic capacity of road - Road traffic problems – Road accident - Traffic signal – Road sign – Road marking - Street lighting in a town –Traffic problem of existing towns – Peculiarities of traffic.	**7** **8**
V	**5.1 BUILDING BYE-LAWS** General - Objects of bye-laws - importance of bye-laws - Function of local authority - Responsibility of owner - Applicability of bye-laws - set-back - Light plane - Floor space index - Off-street parking - Fire protection - Minimum plot sizes - Some other terms - Principles underlying building bye -laws-Building bye-laws for residential area of a typical town planning scheme - Building bye-laws -Development control rules - General rules of Metropolitan Area - CMDA Rules.	**8**

	5. .2 MISCELLANEOUS TOPICS Airports – Location - size - Noise control - Parts of an airports - Betterment and compensation - city blocks – conurbations -Cul-de-sac streets - Focal point - Green belt - Public utility services - Rapid transit – Remote sensing application – urban planning using remote sensing – site suitability analysis Transportation planning..	**7**

TEXT BOOKS

1. "K.S.Rangwala and P.S.Rangwala" "Town Planning", "Charotar Publishing House,15thEdition,1999."
2. "Time saver standards for site planning", "Mc Graw Hill Book company".
3. "John Rate life", "An Introduction to town and country planning, London".
4. "S.C Rangwala" "Town Planning"
5. "Abir Bandyopadhyay" "Town Planning"

REFERENCE BOOKS

1. "Michael Hord, R." "Remote sensing methods and application, John Wiley and Sons, New York,1986."
2. "National Building Code of India- Part-III."
3. "Municipal and Panchayat bye-laws, CMDA Rules and Corporation bye-laws."
4. "KA. Ramegowda," "Urban and regional planning, University of Mysore".
5. "M/s Dvan", "The urban pattern, city planning and design".
6. "The art of home landscaping" – "Mc Graw Hill Book company".
7. "Harvey M. Rubenstain", "A Guide to site and Environmental planning, Newyork."
8. "R.Srinivasa kumar""Transportation Engineering"(Railways, Airport, Docks &Harbowrs)
9. "Mike Slinn , Peter Guest & Paul Matthews". "Traffic Engineering Design (Principles & Practice)"

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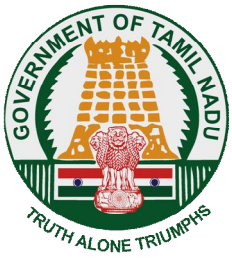

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

SUSTAINABLE ARCHITECTURE

(ELECTIVE THEORY-II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012633

Semester : VI Semester

Subject Title : SUSTAINABLE ARCHITECTURE

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SUSTAINABLE ARCHITECTURE	5 Hours	80Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hrs.
I	INTRODUCTION	14
II	DESIGN PRINCIPLES	14
III	SUSTAINABLE CONSTRUCTION	14
IV	SUSTAINABLE CONSTRUCTION	14
V	LIGHTING DESIGN AND NATURAL VENTILATION	17
TEST & MODEL EXAMINATION		7
TOTAL		**80**

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

OBJECTIVES:

At the completion of the study, the students will be able to

- know the various types of climates, element of climates, effect of wind on climate and lighting.
- study the orientation of buildings and materials with respect to climate.

DETAILED SYLLABUS

4012633 - SUSTAINABLE ARCHITECTURE

Contents: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION** Architecture and the survival of the planet- Assessing patterns of consumption and their alternatives- Profit and politics- Natural building movement – new context for codes and regulations	14
II	**DESIGN PRINCIPLES** Macro-Principle 1: Conserving energy; Principle 2: Working with Climate; Principle 3: minimizing new resources; Principle 4: respect for users; Principle 5: respect for site; Principle 6: holism- Illustrated with examples	14
III	**SUSTAINABLE CONSTRUCTION** Design issues relating to sustainable development including site and ecology, community and culture, health, materials, energy, and water- Domestic and Community buildings using self help techniques of construction; adaptation, repair and management	14
IV	**SYSTEMS MATERIALS AND APPLICATIONS** Adobe- Cob- Rammed Earth- Modular contained earth- light clay- Straw bale- bamboo- earthen finishes, etc.- their sustainability; adaptability to climate; engineering considerations, and construction methods; Waste as a resource	14
V	**LIGHTING DESIGN AND NATURAL VENTILATION** **5.1** Visual response, visual acquity, glare & visual comfort-side lighting concepts, top lighting concepts-controls daylight design-electrical light sources and luminaries-task requirements, point-by-point method, lumen method, qualitative calculation and supplementary artificial lighting. **5.2** Natural ventilation & energy efficiency-wind-its character & significance-wind pressure & wind pressure coefficient-function of ventilation-way of natural ventilation-single side ventilation, cross side ventilation, stack effect and reverse stack effect-effect of building form and orientation, fenestration design of buildings to enhance air movement and ventilation.	17

TEXT BOOKS

1. "Plan"-"Sustainable Architecture (Contemporary Architecture in Detail)"
2. "TERI"-"Sustainable Building - Design Manual: Volume Two: sustainable building design practices"
3. "Rosa Urbano Gutiérrez, Laura de la Plaza Hidalgo". "Elements of Sustainable Architecture"

REFERENCE BOOKS

1. "Arvind Krishnan et al,"- 'Climate Responsive Architecture A Design Handbook for Energy Efficient Buildings", "Tata McGraw Hill Publishing Company Limited, New Delhi, 2001".
2. 'Manual on Solar Passive Architecture", "IIT Mumbai and Mines, New Delhi, 1999."
3. "Ken Yeang", "Eco-design: A Manual for Ecological Design", "Wiley Academy, 2006."
4. "Givoni. B", "Passive and Low Energy Cooling of Buildings", "Van Nostrand Reinhold, New York,1994."
5. "Majumdar M", "Energy-efficient Building in India", "TERI Press, 2009."
6. "David Bergman" "Sustainable Design: A Critical Guide (Architecture Briefs)"
7. "Michael auer ,Peter Mösle ,& Michael Schwarz"-"Green Building: Guidebook for Sustainable Architecture"

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http://www.envinst.conu.edu/~envinst/research/built.htmlwww.terin.org/http://www.pge.com/pec/archives/w98passi.htmlhttp://solstice.crest.org/efficiency/index.shtml

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

COMPUTER APPLICATION IN ARCHITECTURE - III

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012640

Semester : VI Semester

Subject Title : COMPUTER APPLICATION IN ARCHITECTURE - III

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
COMPUTER APPLICATION IN ARCHITECTURE-III	6 Hours	96 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	BASIC TOOLS AND INTERFACE	19
II	PRODUCE MODEL	19
III	FURNITURE AND BUILDINGS	19
IV	RENDERING MODELS	19
V	V-RAY RENDERING MODELS	20
TOTAL		**96**

RATIONALE:

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 3-D architectural drawings for presentation and construction purposes. The student should get familiar with the latest CAD software.

GUIDELINES:

- All the exercises given in the syllabus should be completed and given for the end semester practical examination.
- The external examiners are requested to ensure that a single exercise question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations.

OBJECTIVES:

At the completion of the study, the students will be able to

- Understanding of Google SketchUp and introduce to modeling terminology and concepts.
- Learn how to begin a new project in Google SketchUp and introduce tools and concepts necessary to design and draw.
- Grasp and appreciation for viewing and presenting models in 3D to clients and design team members.
- Gain knowledge of the benefits and uses of 3D modeling and how they are applicable to design business.
- Rendering for the given design with help of V-Ray.

DETAILED SYLLABUS

4012640 – COMPUTER APPLICATION IN ARCHITECTURE-III

Contents: Practical

UNIT	NAME OF THE TOPIC	HOURS
I	**BASIC TOOLS AND INTERFACE** Selecting a Template in Sketch Up. Exploring the Sketch up Interface. Title Bar, Menu Bar, Getting Started Toolbar. Drawing Area. Status Bar. Window Resizes Handle- Learning How to Use Sketch Up Tools. Viewing the Sketch up Quick Reference Card.	19
II	**PRODUCE MODELS** 1. Creating your first 3D model in sketch up. Saving and reopening a model. Backing up a sketch up file or restoring an auto- save file. 2. Drawing lines, shapes, and 3D object. Introducing drawing basics and concepts. Drawing basics shapers. Selecting geometry. Pushing and pulling shapes into 3D. Drawing arcs. Drawing free hand shapes. Dividing, splitting, and exploding lines and faces. Offsetting a line from existing geometry. Measuring angles and distances to model precisely. Modeling complex 3D shapes with the solid tools. Adding text, labels, and dimensions to a model. 3. Viewing a model- Choosing a style- Applying colors, photos, materials, and textures. **Graded exercises:** Basics shapes, freehand shapes, 3D shapes with the solid tools.	19
III	**FURNITURE AND BUILDINGS** **Graded exercises:** 1. Basic furniture. A) Rectangular table. B) Three-Seater Sofa. C) Dining table with chairs. D) Cabinet with doors and drawers. 2. Importing and exporting models from CAD.	19

IV	**RENDERING MODELS** **1.** Materials editor, transparent materials to glass. 2. Practice of rendering by experimenting and exploring. 3. Render & Print.	**19**
V	**V-RAY RENDERING MODELS** 1. Toolbars & interface 2. Materials 3. Objects 4. Environment 5. Lighting 6. Output	**20**

EXERCISES:

1. Study of various menus of sketch-up package.
2. Setting units & selection of toolbars.
3. Create a five different geometrical 3D forms & apply with different colours, materials & textures.
4. Create a three-seater sofa & apply material with proper dimension.
5. Create a rectangular table & apply material with proper dimension.
6. Create a dinning table with chairs & apply material with proper dimension.
7. Create a cot with side table & apply material with proper dimension.
8. Create a wardrobe & apply material with proper dimension.
9. Create a false celling design for an size of 14'x10' bedroom (minimum 2 options) & apply material with proper dimension.
10. Create a kitchen cabinets & apply material with proper dimension.
11. Import a file from CAD and create a 3D exterior model apply suitable material and render it.
12. Create a master bedroom interior with all details, apply suitable material and render it.
13. Render the bedroom interior by using V-ray settings.
14. Render the kitchen by using V-ray setting as day time render.
15. Render the kitchen by using V-ray setting as night time render.

BOARD EXAMINATION

ALLOCATION OF MARKS

3D model	- 40marks
Material application	- 20 marks
Render	- 25marks
Dimensioning	- 10marks
Viva-voce	- 5marks

REFERENCES :

1. “SKETCHUP References manual”

2. “Aidan Chopra,Laura Town Chris Pichereau”-“ Introduction to Google SketchUp”

WEBSITES:

https://help.sketchup.com/en/sketchup/getting-started-self-paced-tutorials.

https://web.iit.edu/sites/web/files/departments/academic-affairs/academic-resource-center/pdfs/Google_SketchUp.pdf

http://www.thesketchupessentials.com/sketchup-tutorial-beginners-part-1-basic-functions.

LIST OF EQUIPMENTS (for a batch of 30 students)

Computer – 30 Nos

SOFTWARE USED:

GOOGLE SKETCHUP.

4012640–COMPUTER APPLICATION IN ARCHITECTURE- III

MODEL QUESTION PAPER

Duration:3 Hours **Maximum marks:100**

ALLOCATION OF MARKS:

3d model	-	40 marks
Material application	-	20 marks
Render	-	25 marks
Dimensioning	-	10 marks
Viva-voce	-	5 marks

1. Design and Draw the kitchen cabinets & apply material with proper dimension & render the final view.

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

STRUCTURAL DETAILING AND DRAWING

(ELECTIVE PRACTICAL – II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012651

Semester : VI Semester

Subject Title : STRUCTURAL DETAILING AND DRAWING

TEACHING AND SCHEME OF EXAMINATION:

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours /Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
STRUCTURAL DETAILING AND DRAWING	4 Hours	64Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	SLABS	14
II	BEAMS	17
III	COLUMN AND FOOTING	17
IV	STEEL MEMBERS	16
TOTAL		**64**

RATIONALE:

This is a detailing subject which covers broad elements of Structural Engineering. Study of this subject enables the student to know the position and placement of reinforcement for the RCC structural elements; connection of Steel structural elements.

OBJECTIVES:

At the completion of the study, the students will be able to

- know the disposition of reinforcement in R.C.C Structural elements.
- know the connection details of the Steel members.
- workout the Bar bending Schedule for R.C.C members.

DETAILED SYLLABUS

4012651-STRUCTURAL DETAILING AND DRAWING

Contents: Practical

Unit	Name of the Topic	Hours
I	**SLABS:** Detailing of 1. One way slab 2. Two-way slab	14
II	**BEAMS:** Detailing of the following Beams 1. Singly reinforced Beam **2.** Doubly reinforced Beam **3.** Lintel cum sunshade	17
III	**COLUMN AND FOOTING:** Detailing of Columns and Foundations – Square and Rectangular footings with Column.	17
IV	**STEEL MEMBERS:** Detailing of 1. Beam to Beam connection 2. Beam to Column connection (Framed and Seated connections) **3.** Roof Truss	16

LIST OF EXERCISES:

PART A

1. Detailing of a simply supported one way Slab.
2. Detailing of a Two-way Slab with corners held down.
3. Detailing of a Two-way Slab with corners not held down
4. Detailing of Lintel Beam with Sunshade.
5. Detailing of a Singly Reinforced Rectangular Beam. (Cantilever)
6. Detailing of a Singly Reinforced Rectangular Beam. (Partially fixed)
7. Detailing of a Singly Reinforced Rectangular Beam. (Fixed)
8. Detailing of a Doubly Reinforced Rectangular Beam. (Partially fixed)
9. Detailing of a Singly Reinforced Rectangular Beam. (Fixed)
10. Detailing of a Square sloped Footing with Column.
11. Detailing of a Rectangular Footing with Column

PART B

12. Detailing of a Steel Beam to Beam connection. (Welded connection only)
13. Detailing of a Steel Beam to Column connection. (Framed and seated Connections – Welded connection only)
14. Detailing of a Roof Truss, with welded joint details.

Note: Prepare bar bending schedule for all the RCC works (Exercise 1 to 11)

BOARD EXAMINATION

ALLOCATION OF MARKS

EVALUATION

Detailing of a RCC Structure (Units I-III) – 65 MARKS

Detailing of a Steel Structure (Unit IV) – 30 MARKS

Viva – Voce – 5 MARKS

REFERENCES

1. "Krishna Raju"-"Structural Design & Drawing: 3rd Edition"
2. "Krishnamurthy D"-"Structural Design And Drawing Vol. II: Concrete Structures (Elementary Structural Design:Concrete Structure)"
4. "Wagh Sajjan , Chaudhari V.A , Rathod Ramesh" "Structural Design and Drawing III"
5. "Dr. R. P. Rathaliya"-"Elementary Structural Design [R.C.C.]"
6. "Tangri M.K.Garg"-"Structural Drawing (RCC & Steel)"

WEBSITE

https://nptel.ac.in

https://ndl.iitkgp.ac.in

LIST OF EQUIPMENTS/FURNITURES (for a batch of 30 students)

Drafting Table with stool – 30 Nos

Pin-up board - 1No

4012651- STRUCTURAL DETAILING AND DRAWING

MODEL QUESTION PAPER

Duration: 3 Hours **Maximum marks: 100**

NOTE : Answer all Questions.

PART – A (65 Marks)

I) The following are the details of a singly reinforced partially fixed beam:

Clear span : 6000mm

Width of supports : 300mm

Size of beam : 300 x 600 mm

Clear cover to reinforcement : 25 mm

Reinforcement Details:

Tension reinforcement : 5 Nos. of 20mm dia Fe 415 steel

Hanger bars : 2 nos. 10 mm dia Fe 415steel
(Approximately 20% of main bars)

Stirrups : 8 mm dia2 legged Fe 415 steel @ 340mm c/c

Negative reinforcement: 2 nos. of 20mm dia at support to a distance of
0.10 l (or) L_d whichever is greater.

Use standard anchorage and curtailment practices wherever necessary.

Assume any other data required.

Draw to a suitable scale:

1. The longitudinal section of the beam (25 marks)
2. The cross section of the beam at support (10 marks)
3. The cross section of the beam at mid span (10 marks)
4. Prepare the bar bending schedule forth beam. (20 marks)

PART – B (30 Marks)

II) The following are the details of beam-to-beam connections.

Size of main beam : ISMB 400 @ 616 N/m

Size of cross beam : ISMB 300 @ 442 N/m

Size of cleat Angles : 2 Nos. of ISA 90x90x8mm

Assume any other data required suitably.

Draw to a suitable scale the following:

Beam to beam connection – Top of main and cross beam at different level.

1) Elevation with main beam in section (15 marks)

2) Elevation with cross beam in section (15 marks)

PART – C

VIVA-VOCE - 5 MARKS

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

LANDSCAPE AND DETAILING

(ELECTIVE PRACTICAL-II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012652

Semester : VI Semester

Subject Title : LANDSCAPE AND DETAILING

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
	Hours /Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
LANDSCAPE AND DETAILING	4Hours	64Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topics	Hrs.
I	INTRODUCTION TO LANDSCAPE DRAWINGS	10
II	INTRODUCTION TO LANDSCAPE DRAWINGS	20
III	DETAIL DRAWINGS	34
TOTAL		**64**

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.

OBJECTIVES:

At the completion of the study, the students will be able to

- To Describe introduction to landscape architecture.
- To Understand site survey and analysis.
- To gain knowledge of soft landscape.
- To understand hard landscape.
- To understand indoor landscape

DETAILED SYLLABUS

4012652-LANDSCAPE AND DETAILING

Contents: Practical

UNIT	TOPICS	HOURS
I	**INTRODUCTION TO LANDSCAPE DRAWINGS** Graphical understanding of drawing lines, plants, trees, shrubs, hedges, rocks, human, plant groups, water feature, pergolas& other elements of landscape in plan, section and elevations	10
II	**INTRODUCTION TO LANDSCAPE DRAWINGS** Evolving Schematic drawings, working drawing, planting plan and details for residential landscape design.	20
III	**DETAIL DRAWINGS** To understand sectional details such as soil medium, planter sections, water features, road ways, pathways, mound, boulders, boulevards, furniture, terrace garden, waterproofing detail in the terrace garden, courtyard details, indoor planters, electrical layout, plumbing layout, pavilions are to be studied and drawings to be prepared.	34

LIST OF EXERCISES:

Lab practice for landscape design and detail

1. Graphical representation of lines, rocks, grass, shrubs, hedges.
2. Graphical representation of tress, plants, plant groups, humans.
3. Graphical representation of water features, pergolas.
4. Working drawing of residential landscape – plan & Sectional elevations.

5. Planting plan of residential landscape.
6. Detailed drawings of soil medium, planter sections, mounds.
7. Detailed drawings of roadways, pathways, drainage details.
8. Details of terrace garden roof.
9. Electrical layout in residential landscape design.
10. Design of boulevards.

REFERENCES:

1. Time-Savers Standards for Landscape Architecture:
2. Harris & Dines Landscape Design Guide, Volume1,
3. Soft Landscape: Adrian Lisney& Ken Fieldhouse.
4. Landscape Architecture: A Very Short Introduction (Very Short Introductions) Illustrated Edition, by Ian Thompson (Author)
5. Landscape Architecture: An Introduction by Robert Holden (Author), Jamie Liversedge (Author)
1. Time-Saver Standards for Landscape Architecture by Charles Harris (Author), Nicholas Dines (Author)

WEBSITE

https://nptel.ac.in

https://ndl.iitkgp.ac.in

BOARD EXAMINATION

ALLOCATION OF MARKS

Drawing	- 45 Marks
Specification	- 20 Marks
Rendering	- 30 Marks
Viva-voce	- 05 Marks

LIST OF EQUIPMENTS (for a batch of 30 students)

Drafting Table with stool – 30 Nos

Pin-up board - 1No

4012652-LANDSCAPE AND DETAILING

MODEL QUESTION PAPER

Duration:3 Hours **Maximum marks: 100 marks**

ALLOCATION OF MARKS:

Drawing	- 45 Marks
Specification	- 20 Marks
Rendering	- 30 Marks
Viva-voce	- 05 Marks

1. Planting plan of residential landscape (by lot)

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

BUILDING SERVICES PRACTICAL

(ELECTIVE PRACTICAL-II)

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name: 1012:DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code: 4012653

Semester : VI Semester

Subject Title : BUILDING SERVICES PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No. of hours per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
BUILDING SERVICES PRACTICAL	4 Hours	64 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

Sl. No	Topics	Time (Hrs)
1	WATER SUPPLY	13
2	DRAINAGE AND SANITATION	13
3	ELECTRICAL AND ALLIED INSTALLATIONS	13
4	AIR CONDITIONING	13
5	ACOUSTICS	12
TOTAL		**64**

RATIONALE:

Note: The course is to be taught with respect to residential buildings

On completion of the study of the subject, the student should be able to

OBJECTIVES:

At the completion of the study, the students will be able to

- Know the principles of laying water supply pipe lines within the premises of building.
- Sketch the water supply arrangement in single and multi-storey buildings.
- Draw sketches of septic tank with a soak pit and know its operation.
- Draw the drainage arrangement for a single and multi-storey building.
- Draw different sanitary fittings used in building.
- Sketch rainwater harvesting pit.
- Know various electrical energy consuming devices.
- Electrical energy distribution systems.
- Know the various systems of wiring.
- List out wiring accessories.
- Know about the types of lamps and lamp circuits.
- Estimate the no. of circuits and sub circuits.
- Study the working of various A/C systems.
- Estimate the capacity of A/C system.
- Classify the A/C equipment and their functions
- List out various sound absorptive materials.
- Know the principles of acoustics.

DETAILED SYLLABUS

4012653- BUILDING SERVICES PRACTICAL

Contents :Practical

UNIT	TOPICS	HOURS
I	**1.0 WATER SUPPLY** **1.1 Conveyance of water** Definitions- a) residual head b) plumbing system c) water main d) service pipe e) communication pipe f) supply pipe g) distribution pipe h) back flow I) air gap. **1.2 Water supply arrangements in buildings.** Identification of different types of water supply pipes - draw the sketch as per NBC. General layout of water supply arrangement for single and multi storey building as per NBC. Principles and precautions in laying pipelines within the premises of a building. Sketch for Water supply connection from water main to a building, water supply fittings, stop cock, ferrule, goose neck. **1.3 Water supply and Sanitary appliances** Fixtures – Meaning of the term fixture, soil appliances- water closets (floor mounted and wall hung), squatting pans, bidets, urinals, and waste appliances-wash basins. Fittings- meaning of the term fitting; fittings- coupling, flange, branch, bend, tees, elbows, unions, waste with plug, P or S trap with vent, stop ferrule, bib tap, pillar tap, ball valve, etc. Faucets- kitchen and toilet faucets, showers- bath and shower Fixtures.	13

II	**2.0 DRAINAGE AND SANITATION** **2.1 Sewerage treatment methods-** Septic tank – construction and operation. Design of a septic tank with a soak pit for a given quantity of sewage Draw Plan and cross section. **2.2 Drainage and sanitation in buildings** Aims of building drainage. Requirements of good drainage system in buildings. Preliminary data for design. (i) Site plan not smaller than 1:500 scale and (ii) Drainage plan not smaller than 1:100 scale Layout of sanitary fittings to house drainage arrangements – Draw layout plan. Pipes used in drainage arrangement -Soil pipes, waste pipes, ventilating pipes. Plumbing systems - single stack, one - pipe, two - pipe system. **2.3 Drainage appurtenances** Drainage appurtenances –floor drains - Fitting and fixtures, closets, flushing cisterns, urinals and Inspection chambers. Inspection of building drainage system, testing, maintenance. **2.4 Storm water drainage** Natural infiltration, combined system. Roof drainage. **2.5 Rain water harvesting** Rain water harvesting - various methods & explanatory sketches.	13
III	**3.0 ELECTRICAL AND ALLIED INSTALLATIONS** **3.1. House wiring systems** **Introduction –** definitions of ampere, cable, circuit breaker, conduit, cut-out, earthing system. Definition of wiring system, a sketch for typical house wiring. **3.2. Systems of wiring-** Cleat wiring, wooden casing capping, conduit wiring (surface or open type, recessed or	13

	concealed type- advantages and disadvantages), **General rules for wiring.** **3.3 Wiring Accessories** Switches, lamp holders, ceiling rose, socket outlets, plug ins, conduit wiring accessories- PVC conduit, elbows, bends, junction box, fuses etc. **3.4. Estimation of domestic Installation** Electrical symbols. **3.5 Estimation of circuits** Load ratings for different electrical appliances- (i) Fluorescent lamp-40 watt. (ii) Incandescent lamp- 60 watt. (iii) Fan point- 80 watt. (iv) Socket outlet- 100 watt. (v) Power socket- 1000 watt. **Number of sub circuits** **Problems** on calculation of no. of circuits- graphical representation in plans. Problems- 1. Estimate the no. of circuits in wiring installations as per IEE rules for the following loads: (i) 80 watt fans- 7 nos. (ii) 60 watt lamps- 12 no. (iii) 100-watt plug points- 6 no. (iv) Refrigerator- 1 no. (v) 1/2HP pump motor- 1 no.	
IV	**4.0 AIR CONDITIONING SYSTEMS** **4.1 Introduction-** need and definition-Classification of A.C. systems- Central A.C,Split A.C and Window A.C, Principles of A.C. Parts of A.C., layout diagram. Capacity of A.C. systems **4.2 Air conditioning equipment-** Air filters and dust collectors, fans and blowers, ducts, grills, humidifiers and dehumidifiers.	13

	Functions of A.C. equipment. Quantities of AC requirement for various interior spaces of various buildings.	
V	**5.0 ACOUSTICS** **5.1 Introduction** Meaning of the term acoustics. Terminology- velocity of sound, decibel scale, co-efficient of absorption, noise, reverberation time, sound insulation. Reflection and diffraction of sound in rooms. **5.2 Sound absorptive materials** **5.3 Principles of room acoustics.** Requirements for good acoustics. Design of room shape- floor plan, elevation of seats, ceilings, side walls, rear wall; volume per seat. Reverberation time, optimum and control of RT. Principles of acoustics in auditoriums.	12

EXERCISES (To be done in CADD Laboratory)

1.0 WATER SUPPLY

1. Draw different types of water supply pipes as per NBC, Connection from water main to a building, fixtures, fittings, faucets and accessories.
2. Draw the layout of water supply for a two-bed room house.

2.0 DRAINAGE AND SANITATION

3. Typical sketch of a single/double compartment septic tank.
4. Draw the types of sewage systems.
5. Typical sketch of a rain water harvesting pit.
6. Draw the layout of drainage system of a two-bed room house.

3.0 ELECTRICAL AND ALLIED INSTALLATION

7. Draw a typical house wiring diagram.
8. Draw a layout plan of all electrical installations of a two-bedroom house.

4.0 AIR CONDITIONING

9. Layout of central A/C system diagram.
10. Layout of window A/C diagram.
11. Layout of Split A/C diagram.

5.0 ACOUSTICS

12. Plan and cross section of an auditorium for a capacity of 1000 persons based on Acoustical Requirements and naming various parts and specifying various standards.

Note:

1. The students should be given proper training in all the exercises. All the exercises must be completed before the examinations.
2. The students should maintain observation notebook/manual and record notebook. The record note should be submitted during the Board Practical Examination. Common print out to the record note book should not be allowed. Individual student output for every exercise should be kept in the record note book.
3. All the exercises must be given in the question paper and a student is allowed to select any one by lot. All exercises with the hardcopy of the template related to the exercise should be provided by the external examiner for the examination. Template can be varied for every batch.
4. The external examiner should verify the availability of the infrastructure for the batch strength before the commencement of practical examination.

REFERENCE BOOKS:

1. "National Building code of India. 1983"
2. "S. Gokulachari"- "Building Services"
3. "A. Balasubramaniyan" "Advanced Constructions Technology"
4. "David Guntee"- "Fire& Human Behaviours" "Jhon Willy & Sons"
5. "E.G. Bercher& A.C. Pernall" "Designing for fire safety".
6. "Thomas Adam and Charles Black"-"Fire Safety in Building"
7. "E.G. Bucher & A.C. Parhall"-" Designing for Fire Safety" " John Wiley & sons."
8. "Alan Obrart , Richard Parlour , Vince Aherne"-" Building Services: Engineering for Architects and Building Design Professionals"
9. "Cybil M. Harris"-"Handbook of Utilities and Services for Buildings"
10. "Roger Greeno , .F.Hall , Roger Green"-"Building Services Handbook"
11. "A.K. Mittal"-"Electrical and Mechanical Services in High Rise Building: Design and

Estimation Manual: Including Green Buildings”

12. “Mouafak Zaher , Richard Parlour , Vince Aherne” “Building Services “

WEBSITES

https://nptel.ac.in

https://ndl.iitkgp.ac.in

https://www.autodesk.in

https://www.thesourcecad.com/autocad-tutorials

http://www.cadtutor.net/

https://static.sdcpublications.com/pdf

LIST OF EQUIPMENTS (for a batch of 30 students)

Computer - 30 Nos

SOFTWARE

CADD software

BOARD EXAMINATION

ALLOCATION OF MARKS

S.NO	Description	Marks allotted
1	Aim &Procedure	20
2	Execution*	50
3	Output Printout#	25
4	Viva voce	5
Total Marks		100

*Should be evaluated during the execution by examiners only.

#Students – All actual output should be printed and submitted with the exam paper for evaluation.

VI SEMESTER

4012653- BUILDING SERVICES PRACTICAL

MODEL QUESTION PAPER

Duration:3 Hours **Maximum marks: 100 marks**

ALLOCATION OF MARKS

S.NO	Description	Marks allotted
1	Aim &Procedure	20
2	Execution*	50
3	Output Printout#	25
4	Viva voce	5
Total Marks		100

*Should be evaluated during the execution by examiners only.

#Students – All actual output should be printed and submitted with the exam paper for evaluation.

PART-A

1. Draw a typical house wiring diagram (by lot)

1012

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

III YEAR

N – SCHEME

VI SEMESTER

PROJECT WORK & INTERNSHIP

IMPLEMENTED FROM 2020-2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION
CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION &TRAINING-TAMILNADU

DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP SYLLABUS

N-SCHEME

(To be implemented for the students admitted from the year 2020-2021 onwards)

Course Name : 1012: DIPLOMA IN ARCHITECTURAL ASSISTANTSHIP

Subject Code : 4012660

Semester : VI Semester

Subject Title : PROJECT TWORK & INTERNSHIP

TEACHING AND SCHEME OF EXAMINATION

No. of weeks per Semester: 16 Weeks

Subject	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
PROJECT WORK AND INTERNSHIP	6 Hours	96 Hours	25	100*	100	3 Hours

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

RATIONALE:

The aim of this course is to articulate and develop a focused argument for a particular approach to a question. The project work is conducted as group work at diploma level during the final semesters, and thus attempts to test this approach in a project where intellectual ideas and design objectives merge.

This course provides a forum for discussion on a broad range of social, political, technical and aesthetic interests and issues related to design, which prepares students to develop research interests for their thesis. First, the course will introduce methodologies and strategies used in architectural research. Second, it will expose students to case studies/former theses related to research areas. Third, it will guide students in the development of a thesis proposal. Finally, it will help craft a program and/or schedule for the thesis proposal.

The course will involve discussions, lectures, and presentations. Each student is expected to participate in, and at times, lead discussions, develop a thesis proposal, and make a presentation. Out of these presentations and discussions, a detailed research plan for their thesis project should emerge. Students will be expected to

demonstrate the strategies and methodologies thus exhibiting a full understanding of the context that their project inhabits and validating the notion that their work is an original and unique statement.

OBJECTIVES:

At the completion of the study, the students will be able to

- Develop innovative skills in project designs.
- Apply the knowledge and skills gained through the course work in the design of particular project or by undertaking a project.
- Contribute to offer a solution to real life problem.
- Apply the technical or professional (computer) skills which the students had learned throughout the programme.

GUIDELINES:

- The project assignment can be individual assignment or a group assignment. There should not be more than 6 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.
- The objective of the project work is to enable the students to work inconvenient groups of not more than six members in a group on a Project involving theoretical and real studies related to Architecture.
- Every project Work shall have a Guide who is a member of the faculty.
- Six Hours per week shall be allotted in the Time table for this important activity and this time shall be utilized by the students to receive directions from the Guide, Case studies, Library reading, computer analysis, field work or model making as assigned by the Guide.
- Each group shall present periodical seminars in the progress made In the Project.
- Each student shall finally produce a comprehensive report covering the Project Work details such as Architectural Design, Working Drawing, Model and Approximate estimate of the Project and Conclusion.
- The continuous assessment and a final evaluation may be carried out for the award of marks.

- Each student shall finally submit a neatly prepared project report at the time of project viva-voce.
- Each student shall finally submit a report of internship training at the time of project viva-voce.

(**Note**: The project assignments may consist of:

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

Effort should be made to provide actual field problem as project work to students. Project selected should be not too large in size and complexity and be related to local situations)

4012660- PROJECT WORK AND INTERNSHIP

(PROJECT WORK NORMS AS PER THE LATEST REGULATIONS ONLY)

The Project shall be Planning and designing of any one of the following:

1. Residential Building
2. College Building
3. Hostel Building
4. Hotel Building
5. Hospital Building
6. School Building
7. Guesthouse
8. Bank Building
9. Shopping Complex
10. Community Hall
11. Theatre
12. Apartment
13. Staff Quarters
14. Restaurant
15. Hospital Building

(The building selected should have a minimum of TWO floors.)

- Minimum Marks for Pass is 50 out of which minimum 35 marks should be obtained out of 100 marks in the board Examination alone.
- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Understand what entrepreneurship is and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.

INTERNAL ASSESSMENT:

The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	**Period of assessment**	**Max. Marks**
First Review	6^{th} week	10
Second Review	12^{th} week	10
Attendance	Entire semester	5
Total		25

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	**Max Marks**
Demonstration and presentation	25
Report	25
Viva-Voce	30
Internship Report	20
Total	**100**