6.1 QUANTITY SURVEYING AND VALUATION

L	T	P
5	-	-

RATIONALE

Diploma holders in Architectural Assistantship are supposed to prepare material estimates for various civil works namely; buildings, irrigation works, public health works and roads etc. In addition, they must have basic knowledge regarding analysis of rates, contracting principles of valuation. Therefore, this subject has great importance for diploma holders in Architecture Assistantship.

DETAILED CONTENTS

1. Introduction to quantity surveying and its importance. Duties of quantity surveyor (02 hrs)

2. Types of estimates (04 hrs)

   - Preliminary estimates
     - Plinth area estimate
     - Cubic rate estimate
     - Estimate per unit base
   - Detailed estimates
     - Definition
     - Stages of preparation – details of measurement and calculation of quantities and abstract

3. Measurement (04 hrs)

   - Units of measurement for various items of work as per BIS:1200
   - Rules for measurements
   - Different methods of taking out quantities – centre line method and long wall and short wall method

4. Preparation of Detailed and Abstract Estimates from Drawings (16 hrs)

   - A small residential building with a flat roof
   - Temporary shelters/sheds
   - Water supply lines for a house
   - Sanitary and water supply fittings

- Septic tank for a domestic building
- Roads/streets network of group housing project
- RCC work in footings, beams, slab, column and lintel

5. Calculation of quantities of materials for (14 hrs)

- Cement mortars of different proportion
- Cement concrete of different proportion
- Brick masonry in cement mortar
- Plastering and pointing
- Painting and polishing
- Cement concrete flooring
- Terrazo flooring
- Steel reinforcement of RCC elements – Beam, lintels, slab and column

6. Analysis of Rates (14 hrs)

- Steps involved in the analysis of rates. Requirement of material, labour, sundries, contractor's profit and overheads
- Analysis of rates for finished items when data regarding labour, rates of material and labour is given:
  - Earthwork in excavation hard/ordinary soil and filling with a concept of lead and lift
  - Cement concrete in foundation
  - RCC in roof slab
  - Brick masonry in cement mortar
  - Cement Plaster
  - Painting and polishing
- Running and maintenance cost of construction equipment

7 Measurement Book and Billing (6 hrs)

Entries in measurement book, standard measurement book, checking of measurement, preparation of bill, first and final bill, running account bill, advance payment, secured advance payment, refund of security money

8 Valuation (6 hrs)

- Purpose of valuation, principles of valuation
- Definition of various terms related to valuation like – depreciation, sinking fund, salvage and scrap value, market value, fair rent, year's purchase etc
- Methods of valuation

- Replacement cost method
- Rental return method

9. Contractorship (6 hrs)

- Meaning of contract
- Qualities of a good contractor and their qualifications
- Essentials of a contract
- Types of contracts, their advantages, dis-advantages and suitability, system of payment
- Single and two cover-bids; tender, tender forms and documents, tender notice, submission of tender and deposit of earnest money, security deposit, retention money, maintenance period

10 Preparation of Tender Document based on Common Schedule Rates (CSR) (8 hrs)

- Introduction to CSR and calculation of cost based on premium on CSR
- Exercises on preparing tender documents for the following

a) Earth work
b) Construction of a small house as per given drawing
c) RCC works
d) Pointing, plastering and flooring
e) White-washing, distempering and painting
f) Wood work including polishing
g) Sanitary and water supply installations
h) False ceiling, aluminum (glazed) partitioning
i) Tile flooring including base course

INSTRUCTIONAL STRATEGY

This is an applied engineering subject. Teachers are expected to provide working drawings for various civil works and students be asked to calculate the quantities of materials required for execution of such works. Teachers should conceptualize making analysis of rates for different items of works. It will be advantageous if students are given valuation reports for reading.

RECOMMENDED BOOKS

1. "Estimating, Costing and Valuation (Civil)", Pasrija, HD; Arora, CL and S. Inderjit Singh, Delhi, New Asian Publishers
2. Estimating and Costing", Rangwala, BS; Anand, Charotar Book Stall

3. "A Text Book on Estimating and Costing (Civil) with Drawings"Kohli, D; and Kohli, RC;Ambala ; Ramesh Publications

4. "Estimating, Costing and Specification in Civil Engineering", Chakraborti, M; Calcutta

5. "Estimating and Costing"Dutta, BN;

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	02	02
2	04	06
3	04	06
4	16	20
5	14	18
6	14	18
7	06	06
8	06	08
9	06	08
10.	08	08
Total	**80**	**100**

6.2 GENERIC SKILLS AND ENTREPRENEURSHIP DEVELOPMENT

L	T	P
3	-	-

RATIONALE

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

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

DETAILED CONTENTS

1. Introduction to Generic Skills (4 hrs)

    1.1 Importance of Generic Skill Development (GSD)
    1.2 Global and Local Scenario of GSD
    1.3 Life Long Learning (LLL) and associated importance of GSD.

2. Managing Self (8 hrs)

    2.1 Knowing Self for Self Development
        - Self-concept, personality, traits, multiple intelligence such as language intelligence, numerical intelligence, psychological intelligence etc.

    2.2 Managing Self - Physical
        - Personal grooming, Health, Hygiene, Time Management

    2.3 Managing Self – Intellectual development

        - Information Search: Sources of information
        - Listening: Effective Listening
        - Speaking: Effective Oral Communication
        - Reading: Purpose of reading, different styles of reading, techniques of systematic reading; Note Taking: Importance and techniques of note taking
        - Writing: Correspondence - personal and business

    Note: Practical sessions should be coupled with teaching of effective listening, speaking, reading and writing.

2.4 Managing Self – Psychological

- Stress, Emotions, Anxiety-concepts and significance (Exercises related to stress management)
- Techniques to manage the above

3. Managing in Team (6 hrs)

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

4 Task Management (3 hrs)

4.1 Task Initiation, Task Planning, Task execution, Task close out
4.2 Exercises/case studies on task planning towards development of skills for task management

5. Problem Solving (5 hrs)

5.1 Prerequisites of problem solving- meaningful learning, ability to apply knowledge in problem solving
5.2 Different approaches for problem solving.
5.3 Steps followed in problem solving.
5.4 Exercises/case studies on problem solving.

6. Entrepreneurship

6.1 Introduction (22 hrs)

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

6.2 Market Survey and Opportunity Identification (Business Planning)

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

6.3 Project Report Preparation

- Preliminary Project Report
- Techno-Economic Feasibility Report
- Exercises on Preparation of Project Report in a group of 3-4 students

INSTRUCTIONAL STRATEGY

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

RECOMMENDED BOOKS

1. Soft Skills for Interpersonal Communication by S.Balasubramaniam; Published by Orient BlackSwan, New Delhi
2. Generic skill Development Manual, MSBTE, Mumbai.
3. Lifelong learning, Policy Brief (www.oecd.orf)
4. Lifelong learning in Global Knowledge Economy, Challenge for Developing Countries – World Bank Publication
5. Towards Knowledge Society, UNESCO Paris Publication
6. Your Personal Pinnacle of Success by DD Sharma, Sultan Chand and Sons, New Delhi
7. Human Learning, Ormrod

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

SUGGESTED DISTRIBUTION OF MARKS

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

6.3 BASICS OF MANAGEMENT

L	T	P
3	-	-

RATIONALE

The diploma holders are generally expected to take up middle level managerial positions, their exposure to basic management principles is very essential. Topics like Structure of Organization, Leadership, Motivation, Ethics and Values, Customer Relationship Management (CRM), Legal Aspects of Business, Total Quality Management (TQM), Intellectual Property Rights (IPR) etc. have been included in the subject to provide elementary knowledge about these management areas.

DETAILED CONTENTS

1. Principles of Management (06 hrs)

   1.1. Introduction, definition and importance of management.

   1.2. Functions of Management

   Planning, Organizing, Staffing, Coordinating, Directing, Motivating and Controlling

   1.3. Concept and Structure of an organization

   Types of industrial organization
   a) Line organization
   b) Functional organization
   c) Line and Functional organization

   1.4. Hierarchical Management Structure

   Top, middle and lower level management

   1.5. Departmentalization

   Introduction and its advantages.

2. Work Culture (06 hrs)

   2.1. Introduction and importance of Healthy Work Culture in organization

   2.2. Components of Culture

   2.3. Importance of attitude, values and behaviour

   Behavioural Science – Individual and group behaviour

   2.4. Professional ethics – Concept and need of Professional Ethics

3. Leadership and Motivation (06 hrs)

3.1. Leadership

a) Definition and Need of Leadership
b) Qualities of a good leader
c) Manager vs. leader

3.2. Motivation

a) Definition and characteristics of motivation
b) Factors affecting motivation
c) Maslow's Need Hierarchy Theory of Motivation

3.3. Job Satisfaction

4. Legal Aspects of Business: Introduction and need (06 hrs)

4.1. Labour Welfare Schemes

a) Wage payment : Definition and types
b) Incentives: Definition, need and types

4.2. Factory Act 1948

4.3. Minimum Wages Act 1948

5. Management Scope in different Areas (12 hrs)

5.1. Human Resource Development

a) Introduction and objective
b) Manpower Planning, recruitment and selection
c) Performance appraisal methods

5.2. Material and Store Management

a) Introduction, functions and objectives of material management
b) Purchasing: definition and procedure
c) Just in time (JIT)

5.3. Marketing and Sales

a) Introduction, importance and its functions
b) Difference between marketing and selling
c) Advertisement- print media and electronic media
d) Market-Survey and Sales promotion.

5.4. Financial Management – Introduction

a) Concept of NPV, IRR, Cost-benefit analysis

b) Elementary knowledge of Income Tax, Sale Tax, Excise duty, Custom duty, Provident Fund

5.5 Maintenance Management

a) Concept
b) Preventive Maintenance

6. Miscellaneous topics (12 hrs)

6.1. Customer Relationship Management (CRM)

a) Definition and Need
b) Types of CRM
c) Customer satisfaction

6.2. Total Quality Management (TQM)

a) Inspection and Quality Control
b) Concept of Quality Assurance
c) TQM

6.3. Intellectual Property Rights (IPR)

a) Introduction, definition and its importance
b) Infringements related to patents, copyright, trade mark

INSTRUCTIONAL STRATEGY

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

RECOMMENDED BOOKS

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

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (hrs)	Marks Allotted (%)
1.	06	15
2.	06	10
3.	06	15
4.	06	10
5.	12	25
6.	12	25
Total	**48**	**100**

6.4 STEEL STRUCTURES DESIGN

L	T	P
4	-	-

RATIONALE

Students of Architectural Apprenticeship Diploma are expected to understand the behaviour of structures under load. They should understand the theory and design of simple structures and should be able to sketch structural details.

DETAILED CONTENTS
THEORY

1. Structural Steel and Sections: (02 hrs)

   1.1 Properties of structural steel as per IS Code
   1.2 Designation of structural steel sections as per IS handbook and IS:800:2007

2. Riveted Connections: (08 hrs)

   Types of rivets, permissible stresses in rivets, types of riveted joints, specifications for riveted joints as per IS 800. Failure of a riveted joint. Assumptions in the theory of riveted joints. Strength and efficiency of a riveted joint. Design of riveted joints for axially loaded members (No Staggered riveting).

3. Welded connections: (06 hrs)

   Types of welds and welded joints, advantages and disadvantages of welded joints design of fillet and butt weld.

4. Tension Members (12 hrs)

   Analysis and design of single section tension members and their rivetted and welded connections with gusset plate as per IS:800

5. Compression Members (14 hrs)

   Analysis and design of single angle sections compression members (struts) and their rivetted and welded connections with gusset plate as per BIS:800

6. Roof Trusses (06hrs)

Form of trusses, pitch of roof truss, spacing of trusses, spacing of purlins, connection between purlin and roof covering. Connection between purlin and principal rafter (Descriptive, No Numericals)

7. Columns: (08 hrs)

7.1 Concept of buckling of columns, effective length and slenderness ratio, permissible stresses in compression as per IS:800 for different end conditions. Analysis and Design of axially loaded single section steel column

7.2 Types of column bases (Descriptive only)

8. Beams (08 hrs)

Analysis and design of single section simply supported laterally restrained steel beams.

Important Note:

Use of IS: 800 and Steel Tables are permitted in examination.

INSTRUCTIONAL STRATEGY

Teachers are expected to give simple problems for designing various steel structural members. For creating comprehension of the subject, teachers may prepare tutorial sheets, which may be given to the students for solving. It would be advantageous if students are taken at construction site to show fabrication and erection of steel structures. IS:800 may be referred along with code for relevant clauses

RECOMMENDED BOOKS

1. Duggal SK, "Design of Steel Structures" by Standard Publishers, Delhi
2. Birinder Singh, "Steel Structures Design and Drawing", Kaption Publishing House, Ludhiana
3. LS Negi, "Design of Steel Structure" Tata McGraw Hill, New Delhi
4. S Ramamurthan, "Design of Steel Structures",
5. Harbhajan Singh,"Analysis and Design of Steel Structures for Architects" , Abhishek Publishing, Chandigarh
6. IS Code: 800-2007

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	02	04
2	08	12
3	06	08
4	12	18
5	14	20
6	06	08
7	08	14
8	08	16
Total	**64**	**100**

Elective

6.5.1 LANDSCAPE DESIGN (ELECTIVE-I)

L	T	P
3	-	-

RATIONALE

The basic knowledge of elements related to landscaping and their principles are very essential for the students of Architecture Assistantship. Through this subject, the students shall be introduced to relationship of landscaping and climate, besides an understanding of outdoor functional spaces.

DETAILED CONTENTS

1. Elements of Landscape (06 hrs)

   a) Plants (Trees, shrubs, ground covers, Flowering species)
   b) Water
   c) Earth forms and stones
   d) Artificial or man-made elements

2. Principles of landscape design with respect to architectural functions (20 hrs)

   a) Form
   b) Symmetry and Balance
   c) Texture
   d) Colour
   e) Contrast
   f) Proportions and scale
   g) Simplicity
   h) Focus
   i) Rhythm
   j) Aesthetics (Visual aspects and functional aspects)

3. Relationship of landscape & climate (06 hrs)

   a) Orientation
   b) Sun Control by Plants
   c) Wind control by plants
   d) Microclimate and Human comfort

4. Outdoor functional spaces with respect to different building types (06 hrs)

5. Exercises (10 hrs)

- Landscape design of an outdoor area within an existing building or group of buildings/ Park design
- Landscape design of the architectural design project students are currently working on.
- Representation of Landscape drawings (1 sheet)

INSTRUCTIONAL STRATEGY

Independent assignments for drawings and case studies followed by viva-voce way and may be given to the students. Students should be encouraged to prepare reports/audio visual presentation of the observations made by them during the field visits. Experts from the field may be invited to deliver lectures and presentations.

RECOMMENDED BOOKS

1. Landscape Architecture by John O. Simonds published by MC. Graw Hill, Book Company
2. Urban Landscape Design by Garnett Eckko Published by M.C. Graw Hill, Book Company
3. Landscape Design that save energy by Anne Simon Majfat & Marc Schiler
4. Flowering trees of India and beautiful gardens of India by M.S. Randhawa
5. The Landscape of Man – Geoffrey Jellicoe, Publisher Thames and Hudson London (1995)
6. A Visual Approach to Park Design – Albert J Rutledge, Publisher Garland STPM Press, New York (1981)
7. Landscape Architecture – Simonds John O, Publisher Mc Graw Hill Book Company London (1961)
8. Earthscape : A Manual of Environmental Planning – John O. Simonds, Publisher Mc Graw Hill Book Company London (1978)
9. Trees of Chandigarh – Chhattar Singh, Dhillon and Rajnish Wattas,

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	06	15
2	20	35
3	06	15
4	06	15
5	10	20
Total	**48**	**100**

6.5.2 INTERIOR DESIGN (ELECTIVE-II)

L	T	P
-	-	3

RATIONALE

Students 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 materials is required. With the knowledge of this subject the students can help in handling interior projects from the concept stage to the project implementation stage. Also this exercise is necessary since the interiors are becoming more integral part of architecture and considerable stress is being laid in interior design.

Teachers while imparting instructions are expected to explain concepts and principles introducing various building finishing materials. The course would be supplemented with literature and samples of materials.

Note:- There shall be no theory in this subject. However, relevant theory shall be taught along with drawing work only.

DETAILED CONTENTS

1. Space Analysis (3 sheets) (06 hrs)

   a) Living Room
   b) Dinning
   c) Kitchen
   d) Bedrooms, Children bedrooms
   e) Toilets (Public, Residential)
   f) Restaurants/fast foods
   g) Lobbies/Waiting space
   h) Office
   i) Shops

2. Case Studies of Live projects with respect to circulation, activities, furniture, colour scheme, wall, floor finishes, Electrical fixtures and other items (Paintings, murals, water falls etc.) (08 hrs)

   a) Houses
   b) Offices
   c) Shops
   d) Restaurant/Fast Food

   Note: Any one case study to be taken in the form of report with the help of sketches and photographs.

3. Materials (12 hrs)

Market survey of materials, appropriate uses of materials for wall finishes, flooring/ceiling and arrangement of electrical fixtures and other items. Collection of samples and catalogue from market

4. Interior Design problem of Restaurants, Houses, Offices, Shop (Any one project to be taken) (5 sheets) (18 hrs)

a) Detailed Plan showing furniture, partition, storage and plants etc.
b) Elevations
c) Sectional elevations (wall treatments)
d) Colour schemes and one point perspective
e) False ceiling and electrical layout

5. Others (one sheet) (4 hrs)

Total No. of sheets= 9 sheets; Samples and Report

Following books/magazines may be used for reference study material:

BOOKS

1. Time Saver standards for Interior Design and space planning.
2. Interior Design by Ahmed Kasu.
3. Nufert Architect's data

MAGAZINES

a) Inside Outside Magazine
b) Indian design magazine
c) Society exteriors
d) Architecture + Design (A+D)

INSTRUCTIONAL STRATEGY

While imparting the instructions in the class room, teachers should present case studies of some typical interior design works of houses, offices, shops, restaurants and other public buildings of national and international fame. esenting case studies. Students may be encouraged to take up some independent assignment for interiors of local buildings with the help of practicing interior designers. Students should maintain portfolio and give seminar towards the end of the session

RECOMMENDED BOOKS

1. Time saver for store planning and design-Charles E. Brondy, *publishing, Charles* H. Kerr & Company began
2. The best interiors and life styles of India-by the Indian and Eastern Engineering Co Ltd.,
3. Human Relations oliver (latest volume), *Publishers*: *New* Brunswick, NJ, 2007)
4. Indian Interiors (by Angelika Tashen.). Publisher*:* Taschen *GmbH; Greene Street, New York*
5. Inter-wood (Publiched by Monica International)
6. Design & decorate: Living room; Wardell Publications Inc, P.O. Box 480069, Fort Lauderdale, FL, USA 33348-0069
7. Design & decorate: Bathroom; Publisher: Adams Media Corporation, UK

6.5.3 ADVANCED MODEL-MAKING (ELECTIVE-III)

L	T	P
-	-	3

RATIONALE

Students of Architectural Assistantship at diploma level are expected to assist in the preparation of architectural models of various kinds in their professional career. This skill can also form a basis of self-employment. This subject aims at developing advance-model making skills in the students.

DETAILED CONTENTS

1. Making of Models of (10 hrs)

   1.1 Detail of jali
   1.2 Gate and gril details
   1.3 Railing details

2. Model of any one design problem (18 hrs)

   2.1 Block Model (preferably using thermocoal/wooden blocks)
   2.2 Site Presentation Model including vehicles, roads layout, landscape elements etc.

3. Detailed Model of any double storeyed building; With site, roads, trees, vehicles (20 hrs)

Note: The materials to be used for making models shall be at the discretion of teacher depending on the availability.

INSTRUCTIONAL STRATEGY

Students should be given maximum practice developing appropriate skills in model-making. They may be asked to visit some practicing Architects and undertake live projects.

6.5.4 ADVANCED COMPUTER APPLICATIONS

L	T	P
-	-	3

RATIONALE

This subject is introduced to make the diploma students of architecture aware of the applications of computer technology in the field of architectural visualization. The aim is to provide an opportunity to the students to learn and develop themselves as professionals who can work of their own and are able cater to the needs of architecture industry. This is a highly skilled field and can generate a lot of job opportunities for the diploma students.

The subject will be taught through practical classes using the 3D visualization software such as Revit, 3DS max and Sketch Up etc. The faculty for the subject has to be well trained in developing the architectural 3D models and architectural animation.

DETAILED CONTENTS

Note: Teachers will give theoretical inputs (instructions) while conducting practicals.

1. File management 1 hr

Import, export, file link, file save, merge etc.

2. Customization 1 hr

Setting units, grids, snap setting etc.

3. Layer management 1 hr

Naming layers, renaming layers deleting layers etc.

4. Creating and Editing objects and parameters 10 hrs

Standard primitives, extended primitives compound objects, splines, nurbs, patches, solid objects, 3D mesh etc. working on AutoCAD drawing to develop 3D model

5. Edit tools 5 hrs

Mirror, array, align, copy, move, rotate, rename objects, hide, unhide, group objects, ungroup objects etc.

6. Modifiers and application 5 hrs

Simple exercises

7. Utilities and application 5 hrs

Simple exercises

8. Materials and mapping 5 hrs

Simple exercises

9. Rendering 5 hrs

Environment, camera, lights, rendering, saving the views

10. Animation and walkthrough 10 hrs

Simple exercises

ASSIGNMENTS

- Develop a 3 D model from an AutoCAD drawing of an existing building or design studio project.
- Develop a 3D animation/walkthrough of the final semester Design project.

6.6 PORTFOLIO (MAJOR PROJECT) & PROFESSIONAL TRAINING

L	T	P
-	-	6
-	-	14
-	-	20

PROJECT WORK

Project work aims at developing skills in the students whereby they apply the totality of knowledge and skills gained through the course in the solution of particular problem or undertaking a project. The students have various aptitudes and strengths. Project work, therefore, should match the strengths of students. For this purpose, students should be asked to identify the type of project work, they would like to execute. It is also essential that the faculty of the respective department may have a brainstorming session to identify suitable project assignments. The project assignment is an individual/group assignment. The student should identify a given project assignment at least two to three months in advance. The project work identified in collaboration with industry may be preferred.

Each teacher is expected to guide the project work of 5-6 students.

The purpose of the portfolio (major project) should be to design and represent a chosen realistic Architectural design problem for presentation to a client and execution on site.

Students will be sent to Professional Architects for training during winter vocations after 5th semester and they shall continue this training in Sixth semester for about 2-3 weeks (LTP:: - - 6). After joining the polytechnics in sixth semester, after completing professional training the students will be assigned to complete one portfolio (Major Project) for about 2 months (LTP :: - - 14). This consolidated time for portfolio and professional training should preferably be given at a stretch, during which there will be no other subject teaching

TRAINING WITH AN ARCHITECT {for about 5-6 weeks (- - 6), including vacation period after 5th semester}

It will be carried out in 2 parts:

a) Working in the Architect office and producing a minimum of four blueprints on which the student has itself worked. This would be evaluated through a viva-voce at the commencement of the VI semester.

b) During the training period, the students must identify the CASE STUDY for his/her team major project and procure its necessary data

PORTFOLIO (Major Project) {for about 7-8 weeks (- - 14)}

One project chosen by individual student/team to be developed in the following stages:

(The project should be having coverage of about 1000 Sqm.)

- Pre-design studies culminating in a report comprising study of activity, users, individual space analysis, inter-relationship of spaces and conclusions regarding above mentioned aspects. (To be completed, while undergoing training in Architect's Office)
- Detailed design of the project showing structural systems used to be presented through rendering presentation drawings and detailed model to be presented through preliminary and final stage.

- Complete working drawings with details of the design project.

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

Sr. No.	Performance criteria	Max.** marks	Rating Scale				
			Excellent	Very Good	Good	Fair	Poor
1.	Selection of project assignment	10	10	8	6	4	2
2.	Planning and execution of considerations	10	10	8	6	4	2
3.	Quality of performance	20	20	16	12	8	4
4.	Providing solution of the problems or production of final product	20	20	16	12	8	4
5.	Sense of responsibility	10	10	8	6	4	2
6.	Self expression/ communication skills	5	5	4	3	2	1
7.	Interpersonal skills/human relations	5	5	4	3	2	1
8.	Report writing skills	10	10	8	6	4	2
9.	Viva voce	10	10	8	6	4	2
Total marks		100	100	80	60	40	20

Note: It is recommended that the project for Portfolio (Major Project) may be conducted as a continuous studio exercise spanning 7-8 weeks.

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

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

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

Important Notes

1. This criteria must be followed by the internal and external examiner and they should see the daily, weekly and monthly reports while awarding marks as per the above criteria.

2. The criteria for evaluation of the students have been worked out for 100 maximum marks. The internal and external examiners will evaluate students separately and give marks as per the study and evaluation scheme of examination.

3. The external examiner, preferably, a person from industry/organization, who has been associated with the project-oriented professional training of the students, should evaluate the students' performance as per the above criteria.

4. It is also proposed that two students or two projects which are rated best be given merit certificate at the time of annual day of the institute. It would be better if specific nearby industries are approached for instituting such awards.