

**NEP-2020 Aligned Curriculum for
Three Year (Six Semester) Diploma Programme in**

**ARCHITECTURAL ASSISTANTSHIP
(5th and 6th semester)**

For the State of Uttar Pradesh



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PREFACE

An important issue generally debated amongst the planners and educators world over is how technical education can contribute to sustainable development of the societies struggling hard to come in the same bracket as that of the developed nations. The rapid industrialization and globalization has created an environment for free flow of information and technology through fast and efficient means. This has led to shrinking of the world, bringing people from different culture and environment together and giving rise to the concept of world turning into a global village. In India, a shift has taken place from the forgettable years of closed economy to knowledge based and opens economy in the last few decades. In order to cope with the challenges of handling new technologies, materials and methods, we have to develop human resources having appropriate professional knowledge, skills and attitude. Technical education system is one of the significant components of the human resource development and has grown phenomenally during all these years. Now it is time to consolidate and infuse quality aspect through developing human resources, in the delivery system. Polytechnics play an important role in meeting the requirements of trained technical manpower for industries and field organizations.

In order to meet the requirements of future technical manpower, we will have to revamp our existing technical education system and one of the most important requirements is to develop outcome-based curricula of diploma programmes. The curricula for diploma programmes have been revised by adopting time-tested and nationally acclaimed scientific method, laying emphasis on the identification of learning outcomes of diploma programme.

The real success of the diploma programme depends upon its effective implementation. However best the curriculum document is designed, if that is not implemented properly, the output will not be as expected. In addition to acquisition of appropriate physical resources, the availability of motivated, competent and qualified faculty is essential for effective implementation of the curricula.

It is expected of the polytechnics to carry out job market research on a continuous basis to identify the new skill requirements, reduce or remove outdated and redundant courses, develop innovative methods of course offering and thereby infuse the much needed dynamism in the system.

Director

Institute of Research Development & Training

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1. SALIENT FEATURES OF DIPLOMA PROGRAMME IN ARCHITECTURAL ASSISTANTSHIP

- 1) Name of the Programme : Diploma Programme in Architectural Assistantship
- 2) Duration of the Programme : Three years (Six Semesters)
- 3) Entry Qualification : Matriculation or equivalent NSQF Level as Prescribed by State Board of Technical Education, UP
- 4) Pattern of the Programme : Semester Pattern
- 5) NSQF Level : Level – 5
- 6) Ratio between theory and : 40 : 60 (Approx.) Practice

7) Industrial Training

Four and six weeks of industrial training is made mandatory after the II and IV semesters during summer vacation. Total marks allotted to industrial training will be respectively 50 & 100. In the last (6th Semester) we have made the one semester Industrial training/Internship as optional along with usual classroom training.

8) Ecology and Environment

As per Govt. of India directives a subject on Environmental Science has been incorporated in the curriculum.

9) Entrepreneurship and Start-ups

A full subject Entrepreneurship & Start-ups has been incorporated in the curriculum. A full subject on Construction Management, Accounts and Professional Practice has been incorporated in the curriculum.

10) Student Centred Activities

A provision of min.4 hrs per week has been made for organizing Student Centered Activities for overall personality development of students. Such activities will comprise of co-curricular activities such as expert lectures, self-study, games, hobby classes like photography, painting, singing etc. seminars, declamation contests, educational field visits, NCC, NSS, library and other cultural activities.

11) Project work

project work has been included in the curriculum to enable the student get familiarize with the practices and procedures being followed in the industries and provide an opportunity to work on some live projects in the industry.

2. PROGRAM OUTCOMES (POs)

PO1: Basics and Discipline specific Knowledge

Assimilate knowledge of basic mathematics, science and engineering fundamentals.

PO2: Problem's Analysis and solution

Identify, analysis and solve problems using standard methods and established techniques.

PO3: Design and Development

Design solutions for technical problems.

Assist in designing components, systems, or processes to meet specific requirements.

PO4: Engineering Tools, Experimentation, and Testing

Use modern engineering tools and appropriate techniques to conduct experiments as per BIS standard.

PO5: Socio/Economic/Environmental impact assessment/remedy.

Apply relevant technologies while considering societal needs, environmental impact keeping in view sustainable and ethical responsibilities.

PO6: Project Management and Communication

Apply engineering management principles, work effectively as an individual or in a team, and communicate clearly on activities.

PO7: Lifelong Learning

Recognize the importance of continuous learning and actively pursue self-improvement to keep pace with technological developments.

3. EMPLOYMENT OPPORTUNITIES FOR DIPLOMA HOLDERS IN ARCHITECTURAL ASSISTANTSHIP

Keeping in view, the present scenario of activities in the field of Architecture, following employment opportunities are visualized for diploma holders in Architectural Assistantship:

a. Wage Employment in:

- i. State Department of Architecture
- ii. State Department of Town and Country Planning
- iii. Central Public Works Department
- iv. State Housing Boards and Corporations
- v. State Urban Development Agency
- vi. Railways
- vii. Military Engineering Services
- viii. Local Bodies
- ix. Survey of India
- x. State Electricity Department/Boards
- xi. Telecommunication Department
- xii. Teaching profession
- xiii. Public sector / private construction companies/ Architectural firms or Offices.
- xiv. Service sector i.e. Estate Offices of Business organizations/ Universities/Colleges, Hotels , Hospitals etc. specially for repair and maintenance of buildings and their upkeep.
- xv. Supervision work for various construction sites.
- xvi. Drafting on AutoCAD / Revit for Outsourcing companies
- xvii. Technical institutions.

b. Self-employment opportunities:

- i. Approved building planner from Local Authorities
- ii. Execution and supervision of Renovation projects
- iii. Preparation of 3-D Perspective views of buildings for Architects and consultants
- iv. Own unit / enterprise for
 1. Model Making
 2. Landscaping
 3. Drawings on CAD/ REVIT

- v. Interior design related works like: White washing, distempering, repair and maintenance of buildings, POP work, texture work, false ceiling, specialized flooring, Anti - termite treatment etc.
- vi. Establishing an Outsourcing company of Computerized Drafting
- vii. Construction material suppliers/ marketing
- viii. Estimating and costing jobs/ bill of Quantities
- ix. Water proofing of existing and new building
- x. Rain water harvesting system installation
- xi. Services to architectural and construction firms:
 - Site Supervision
 - Site Surveying and layout
 - Estimation and Billing
 - Site/ marketing of building components
 - Liaison work

4. LEARNIG OUTCOME OR COMPETENCY PROFILE OF DIPLOMA HOLDERS IN ARCHITECTURAL ASSISTANTSHIP

Keeping in view the employment opportunities given above, following are the important activities (priority-wise) of diploma holders in Architectural Assistantship:

- i) Preparation and Interpretation of drawings:
 - Preliminary drawings (Line plans, sketching, tracing)
 - Presentation drawings (Rendering in black and white, colour, perspective drawings)
 - Submission drawings
 - Structural drawings
 - Working drawings and detailing
 - Preparation of prints and plots and their upkeep
 - Maintenance of drawing records and files
 - Services drawings
- ii) Preparation of small building designs, master plans and layouts
- iii) Site supervision/ management i.e. measuring, surveying and inspection
- iv) Preparation of models:
 - Study models
 - Block models
 - Detailed Model
- v) Assistance in preparation of tender documents and cost estimates, including valuation
- vi) Preparation of submission documents for approval from Development Authorities
- vii) Interior designing, execution and layout
- viii) Management of Architect's office
- ix) Market survey of construction materials

Keeping in view the employment opportunities and job profile of diploma holders of Architectural Assistantship, following LEARNING OUTCOME or competencies are required to be developed in the students:

- i) Development of skills in free-hand sketching, lettering and preparation of presentation, submission, structural and working drawings and detailed thereof
- ii) Development of basic knowledge and skills for preparing small building designs and layouts
- iii) Development of skills in model making using different materials
- iv) Development of skills in preparation of municipal drawings/ submission drawings, corporation drawings and related documents
- v) Development of knowledge and skills in site management comprising of measurement, surveying and inspection
- vi) Development of basic knowledge and skills in preparing rough estimates, preparation of detailed estimates and tender documents for small buildings
- vii) Development of skills in taking out prints/ plots, cloth mounting, colouring and folding of prints and their up keep
- viii) Appreciation of basic knowledge regarding various building materials and construction techniques
- ix) Development of basic knowledge about elements & principles of theory of design
- x) Development of basic knowledge of history of architecture, town planning and building bye-laws, with emphasis on construction techniques
- xi) Development of knowledge and skills in applications of computers in architecture
- xii) Development of basic understanding of resource systems helping in the financing of small enterprises
- xiii) Development of basic knowledge of climatology, environment and ecology
- xiv) Understanding the behavior of structural elements of building
- xv) Development of basic understanding of building services
- xvi) Development of communication and managerial skills
- xvii) Development of basic hand-on practice skills
- xviii) Demonstrate appropriate values and attitude.

5. DERIVING CURRICULUM AREAS FROM LEARNING OUTCOME / COMPETENCY PROFILE

Sr.	Competency Profile	Curriculum Areas
1.	Apply basic principles of Mathematics and Science to solve engineering problems	• Applied Mathematics • Applied Physics • Applied Chemistry
2.	Development of skills in free-hand sketching, lettering and preparation of presentation, submission, structural and working drawings and detailed thereof	• Graphic Presentation and Art • Architectural Design • Construction and Material • Building Science (Climatology, P.H.E. and Electrical services) • Structure
3.	Development of basic knowledge and skills for preparing small building designs and layouts	• Architectural Design • Building Science (Climatology, P.H.E. and Electrical services) • Construction and Material • Landscape Design
4.	Development of skills in model making using different materials	• Architectural Design
5.	Development of skills in preparation of municipal drawings /submission drawings / corporation drawings	• Architectural Design • Municipal Drawing
6.	Development of knowledge and skills in site management comprising of measurement, surveying and inspection	• Construction and Material • Surveying • Construction Management, Accounts and Professional Practice

7.	Development of basic knowledge and skills in preparing tender documents, rough estimates and also preparation of detailed estimates for small buildings	• Surveying • Estimating, Costing and Specifications
8.	Development of skills in taking out prints, cloth mounting, colouring and folding of prints/ plots and their up keep	• Working Drawing • Architectural Design • Construction Management, Accounts and Professional Practice • Basics of Information Technology
9.	Development of basic knowledge regarding various building materials and construction techniques	• Construction and Material • Project and Professional Training
10.	Appreciation of basic knowledge about elements and principles of theory of design	• Graphic Presentation and Art • Architectural Design
11.	Development of basic knowledge of history of architecture, town planning and building drawings with emphasis on computer techniques	• Computer Aided Design • Town Planning • History of Architecture
12.	Development of basic knowledge and skills in applications of computers in architecture	• Basics of Information Technology • Software Applications in Architecture
13.	Development of basic understanding of resource systems helping in the financing of small enterprises	• Construction Management, Accounts and Professional Practice
14.	Development of basic knowledge of climatology, environment, Energy conservation and ecology	• Building Science (Climatology, P.H.E. and Electrical services) • Environmental Studies • Energy conservation

15.	Understanding the behaviour of structural elements of building	• Structures
16.	Development of basic understanding of building services	• Building Science • Architectural Design
17.	Development of communication and Soft skills	• Communication Skills • Student Centred Activities
18.	Use basic concepts and principles of fluid mechanics as applied to Architectural practices.	• Applied Mechanics
19.	Development of basic hand-on practice skills	• Workshop Practice
20.	Demonstrate appropriate values and attitude.	• Student Centred Activities • Universal Human Values

6. ABSTRACT OF CURRICULUM AREAS

i. HUMANITIES & SOCIAL SCIENCES COURSES (HS)

1. Communication Skills in English
2. Sports & Yoga
3. Entrepreneurship and Starts-ups

ii. BASIC SCIENCES COURSE (BS)

4. Mathematics
5. Applied Physics
6. Applied Chemistry*

iii. ENGINEERING SCIENCE COURSE (ES)

7. Engineering Graphics
8. Engineering Workshop Practice
9. Introduction to Information Technology
10. Fundamental of Mechanical and Electrical Engg.
11. Engineering Mechanics

iv. PROGRAMME CORE COURSE (PC)

1. History of Architecture
2. Graphic Presentation and Art*(Student of Architectural Assistantship may opt for this subject in place of Applied Chemistry)
3. Construction and Material-I
4. Architectural Design-A (Theory of Design)
5. Building Sciences (Climatology, P.H.E. and Electrical services)
6. Architectural Design-B (Model Making, Working Drawings, Perspective view)
7. Surveying
8. Construction and Material-II
9. Computer Aided Design
10. Structure-A
11. Architectural Design-B (Interior Schemes, Landscape Design, Municipal Drawings)
12. Town Planning
13. Estimating, Costing and Specifications
14. Professional Training (Internship)
15. Structure-B

16. Architectural Design-C (Group Housing, Commercial Complex, Community Buildings)
17. Earthquake Engineering Concepts
18. Software Applications in Architecture
19. Construction and Material-III
20. Construction Management, Accounts and Professional Practice
21. Portfolio (Major Project)

v. PROJECT WORK, SEMINAR AND INTERNSHIP IN INDUSTRY OR ELSE WHERE

- Summer Internship-I (4 weeks) after IIInd Semester.
- Summer Internship-II (6 weeks) after IVth Semester.
- Major Project (In-House)/Internship / Industrial Training.

vi. AUDIT COURSES (AU)

- Environmental Science
- Essence of Indian Knowledge and Tradition
- Indian Constitution

OR

OPEN ELECTIVE (ADVANCED SKILL CERTIFICATE COURSE)

SR.NO.	COURSE NAME
1.	Course Conducted By Infosys Pringboard
2.	Course Conducted By Tcs Ion
3.	Course Conducted By Nasscom - Futureskills
4.	Course Conducted By Nptel
5.	Moocs Through Swayam
6.	Conducted By Aicte-Elis And Centrally Funded Technical Institutes
7.	Conducted By C-Dac
8.	Conducted By Certifications Conducted B Y The Institute Of National Importance (Iit,Nit,Iit Etc.)
9.	Conducted By Isro E-Learning
10.	Conducted By Other Relevant Government, International/National Platforms Of Repute
11.	Conducted By Neilit

Or

Proposed Courses from TATA Technologies Ltd.

1. Fundamentals of Innovation and Design Thinking
2. Product Design and Development
3. Product Verification and Analysis
4. Advanced Automobile
5. Electric Vehicle
6. Internet of Things
7. Advanced Manufacturing
8. Advanced Welding & Painting using Simulator
9. Process Control & Automation
10. Industrial Robotics
11. Artisan using advanced tool
12. Advanced Plumbing

Note: Students may opt for any of the above advanced skill development courses and may get certificate against 02 credits (as mentioned in open elective-01).

7. STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN ARCHITECTURAL ASSISTANTSHIP

FIFTH SEMESTER

Sr. No.	SUBJECTS	STUDY SCHEME Periods/Week			Credit(C) (L+T)+P =C	MARKS IN EVALUATION SCHEME									Total Marks of Internal & External	COURSE TYPE & CATEGORY
		L	T	P/Drg		INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT							
						Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot			
5.1	Architectural Design-C	2	-	8	2+4=6	40	60	100	100	12	50 (Viva)	3	150	250	(PRACTICUM / THEORY+VIVA)	
5.2	Town Planning	2	-	2	2+1=3	20	20	40	60	3	-	-	60	100	PROGRAM CORE (THEORY)	
5.3	Construction And Materials-III	1	-	4	1+2=3	20	40	60	90	3	-	-	90	150	(PRACTICUM / THEORY)	
5.4	Structure-B	2	1	-	3+0=3	40	-	40	60	3	-	-	60	100	PROGRAM CORE (THEORY)	
5.5	Program Elective –2 A)Software Application in Architecture	2^ (1L for PE-A)	-	2^ (4P for PE-A)	2+1=3	20	40	60	-	-	40	3	40	100	PROGRAM CORE (PRACTICAL)	
	B)Earthquake Engineering Concepts	(3L for PE-B)	-	-		40*	-	40*	60*	3	-	-	60*		PROGRAM CORE (THEORY)	
5.6	Indian Constitution (Q)	2	-	-	-	50*	-	50*	-	-	-	-	-	-	(AUDIT COURSE)	
5.7	Summer Internship -II (6Weeks after 4 th Sem.)	-	-	-	2	-	60	60	-	-	40	3	40	100	(PRACTICAL)	
#Student Centered Activities(SCA)		-	-	8	-	-	50	50	-	-	-	-	-	50		
Total		11	1	24	20	140	270	410	310		130		440	850		

NOTE:-

(Q) - It is compulsory to appear & to pass in internal assessment, But marks will not be included for division and percentage of obtained marks.

Student Centered Activities will comprise of co-curricular activities like extension lectures, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visit, Library, N.C.C., NSS, Cultural Activities and self-study etc.

^Subject 5.5 (program elective-2) has different nature of PE-A and PE-B, so the allotment of L,T,P is different for both as per table in detailed content of subject..

STUDY AND EVALUATION SCHEME FOR DIPLOMA PROGRAMME IN ARCHITECTURAL ASSISTANTSHIP
SIXTH SEMESTER – (NORMAL PATHWAY)

Sr. No.	SUBJECTS	STUDY SCHEME			Credit(C) (L+T)+P =C	MARKS IN EVALUATION SCHEME									Total Marks of Internal & External	COURSE TYPE & CATEGORY
		Periods/Week				INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT							
		L	T	P/Drg		Th	Pr	Tot	Th	Hrs	Pr	Hrs	Tot			
6.1	Entrepreneurship and Startups*	3	-	-	3+0=3	40	-	40	60	3	-	-	60	100	HUMANITIES (THEORY)	
6.2	Construction Management, Accounts & Professional Practice	3	-	-	3+0=3	40	-	40	60	3	-	-	60	100	PROGRAM CORE (THEORY)	
6.3	Open Elective –2 a) Product Design b) Artificial Intelligence c) *Advance skill dev. (Tata Tech.)	2	-	-	2+0=2	50*	-	50*	-	-	-	-	-	-	(OPEN ELECTIVE / THEORY)	
6.4	Portfolio (Project Work)	-	-	16	0+8=8	-	240	240	-	-	160	3	160	400	PROGRAM CORE (PRACTICAL)	
#Student Centered Activities(SCA)		-	-	8	-	-	50	50	-	-	-	-	-	50		
Total		11	1	24	20	80	290	370	120		160		280	650		

NOTE:-

- The students have a choice to opt for regular class room teaching in Sixth Semester within their institute according to above mentioned scheme.
- (Q) - It is compulsory to appear & to pass in internal assessment, But marks will not be included for division and percentage of obtained marks.
- # Student Centered Activities will comprise of co-curricular activities like extension lectures, games, hobby clubs e.g. photography etc., seminars, declamation contests, educational field visit, Library, N.C.C., NSS, Cultural Activities and self-study etc.

OR

INDUSTRIAL PATHWAY

Sr. No.	SUBJECTS	CATEGORY & COURSE TYPE	STUDY SCHEME Periods/Week			Credits(C) (L+T)+P=C	MARKS IN EVALUATION SCHEME										Total Marks of Internal & External	ASSESSMENT
							INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT								
			L	T	P		Th	Pr	Tot	Th	Hrs.	Pr	Hrs	Tot				
6.1	ENTREPRENEURSHIP AND START-UPS (ONLINE MODE)	HUMANITIES & SOCIAL SCIENCE (THEORY)	-	-	-	2	-	-	-	100	03	-	-	100	100	THEORY		
6.2	INDUSTRIAL HANDS-ON PRACTICE	INDUSTRIAL TRAINING	-	-	-	12	150*			200**					350			
6.3	INDUSTRIAL PROJECT	INDUSTRIAL TRAINING	-	-	-	4	50*			50**					100			
6.4	SEMINAR	IN HOUSE	-	-	-	2	-	100	100	-	-	-	-	-	100			
Total			-	-	-	20									650			

NOTE:

- The Industrial training tenure should not be less than 14 weeks.
- Industry must be registered with MSME/Directorate of industries/Limited Organization/State/Central Government establishments.
- Monthly progress reports of Intern/ Trainee should be attested and forwarded by industrial supervisor (allotted to Intern/Trainee) during industrial Internship/Training.
- The Industrial unit/organisation must evaluate students using the format provided by polytechnic in the form of marks.
- The Industrial Hands on Practice, Industrial Project and seminar must be evaluated on the basis of the AICTE Internship Policy: Guidelines and procedures (Chapter -9 Procedures / format for organizing internship)
- "Entrepreneurship and Start-up" course is also mandatory in Industrial internship/training mode. It will be conducted online mode by his/her polytechnic institute. After completing the online course, students must appear for exam conducted by the Board of Technical Education, Lucknow.
- *Evaluation by faculty mentor**
The institute will depute one faculty member for mentoring at least 20-30 students undertaking apprenticeship training. Such mentors will monitor, guide and provide counselling to the students as and when required. Faculty mentor of the institute(s) may make a surprise visit to the internship/apprenticeship site to check the student's presence physically. (The Proforma attached as the Annexure -1)
- ** Evaluation by industry** : The industry shall assess the candidates based on the following parameters attendance, discipline and punctuality, familiarity of tools and material, engineering skills, application of knowledge and problem-solving skills, comprehension and observation, professional ethics, safety and environmental consciousness, communication skills, supervisory skills and general conduct during the period (The Proforma of the evaluation is attached as the Annexure -2)
- # Evaluation through seminar presentation/Viva-Voce at the institute** : The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

1. GUIDELINES FOR ASSESSMENT OF STUDENT CENTRED ACTIVITIES (SCA)

It was discussed and decided that the maximum marks for SCA should be 50 as it involves a lot of subjectivity in the evaluation. The marks may be distributed as follows

- i) 15 Marks for general behavior and discipline.
(by HODs in consultation with all the teachers of the department)
- ii) 10 Marks for attendance as per following:
(by HODs in consultation with all the teachers of the department)
 - a. 75 - 80% 06 Marks
 - b. 80 - 85% 08 Marks
 - c. Above 85% 10 Marks
- iii) 25 Marks maximum for Sports / NCC / Cultural / Co-curricular / NSS activities as per following:
(by In-charge Sports/NCC/Cultural/Co-curricular/NSS)
 - a. 25 - State/National Level participation
 - b. 20 - Participation in two of above activities
 - c. 15 - Inter-Polytechnic level participation

Note: There should be no marks for attendance in the internal sessional of different subjects.

FIFTH SEMESTER

PRACTICUM	5.1 ARCHITECTURAL DESIGN-C	L	T	P
		2	-	8

Course objective

To appreciate the complexities and constraints in the design of a simple building complex, comprising two or more individual building blocks. The paper deals with the design of many more buildings of common / Public utility and their interior decoration and surrounding landscape design and details.

Course outcome

- Select appropriate materials and basic construction methods in design projects.
- Understand how materials influence form and function.
- Incorporate climate, culture, and site conditions into design thinking.
- Demonstrate basic understanding of sustainable and environmentally responsive design.
- Work effectively in teams and participate in design critiques.

DETAILED CONTENTS

Unit I: (14 Periods)

Three exercises of up to 3-storied buildings of 4 weeks duration each to be done individually. The exercise could be any of the following:

- Small housing complex.
- Museum, exhibition center
- Hotel up to 25 rooms.
- Shopping center
- Inter college / Degree College

Special Emphasis to be laid on site planning, landscaping, building Services, Parking. Note: 1. Case study and library study must be done for each exercise.

Note: 2. Site Visits and related case studies to be carried out

Unit II: Working Drawing (14 Periods)

Working drawing of at least two design to be prepared. All drawings submitted will be rendered, design seminar be added like IInd year Architectural Design-B.

Unit III: Model

(14 Periods)

One model of a design to be prepared by the students for which materials may be selected out of photographic mount board, Wood, Acrylic sheet to be used for making models.

Unit IV: HVAC System

(14 Periods)

(Students should be given brief idea of Heating, Ventilation and Air- Conditioning system to install and implement in their above mentioned project drawings) :

Comfort cooling system and their working - window ac and split ac. package ac system, Evaporative cooling system, Central air-conditioning; their parts - A.H.U., Cooling plant, Cooling tower.

NOTE: At least one Submission should be drawn on AUTOCAD and to be presented on suitable size of sheet with desired scale.

Instructional Strategy

This is one of the most important practical oriented subject for diploma in Architectural Assistantship. While imparting instruction, special visits may be arranged to demonstrate and explain important architectural features of different types of residential, commercial and public buildings. Practicing architects may be invited from time to time to present case studies and to deliver expert lectures on important elements like form, function, balance, light of shadow, shape, plane, volume, line, rhythm, proportions, textures and other such element appropriate to various designs. Teacher may present some of the already completed design works of practicing architects to the students and explain the important features and elements. Audio-visual material available in this field may be procured and presented to the students from time to time. Students should be encouraged to visit relevant web-sites and teachers should develop the design problems/assignments which can be taken up by the students using relevant and appropriate software. Students should be given group and independent design / drawing assignments and they should also maintain sketch book / portfolio of all the assignments given to them throughout the session. Teachers may conduct viva-voce on completion of each assignment. Students may present seminars towards the end of the session.

RECOMMENDED BOOKS

1. Time Saver Standards for Building Types by Joseph De Chiara and John Callendera
2. Architects Data by Neufert
3. Landscape Architecture by John O. Simonds published by MC. Graw Hill, Book Company
4. Urban Landscape Design by Garnett Eckko Published by M.C. Graw Hill, Book Company
5. Landscape Design that save energy by Anne Simon Majfat & Marc Schiler
6. Flowering trees of India and beautiful gardens of India by M.S. Randhawa

SUGGESTED DISTRIBUTION OF MARKS

Unit	Time Allotted (Hrs.)	Marks Allotted (%)
1	14	30
2	14	25
3	14	25
4	14	20
Total	56	100

PRACTICUM	5.2 TOWN PLANNING	L	T	P
		2	-	2

Course Objective

In the developmental work of town and country planning, various agencies are involved like Department of Town planning, Housing and Development Boards of various states, Development Authorities, Corporations and Municipalities of various towns and cities. Students getting employment in these organizations are expected to prepare master plan, layout of housing schemes showing roads, parks, etc. The paper aims to fulfill the need.

Learning Outcomes

After completing the course, the students will be able:

- To acquire knowledge about various components of town planning in terms of bye laws and other regulations of the authorities.
- To understand the planning and details of roads and circulation to make it's easy approach and design of minimum required road width .
- To plan the various segments (plotted development, roads, open/green spaces, community spaces, EWS quota, commercial, tot-lots, services etc. required for a small town.
- To draw the details of common services like electrical, water supply , sanitation and drainage system.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	L	T	P/drg.
1.	Introduction	12	-	12
2.	City Planning	16	-	16
TOTAL		28	-	28

DETAILED CONTENTS

Unit 01 Introduction

(14 Periods)

Historical background of the modern city planning movement. Objects, importance and principles of town planning. Ancient town planning in India. Plans of old Indian cities

- Mohenjo-Daro and Harappa, Taxila and Nalanda.

Unit 02 City Planning

(14 Periods)

An introduction to the fundamental principles of city planning. Planning process, site selection, site planning in relation to Physical conditions, Landscape. Land use plan, Master plan, regional plan in relation to Chandigarh, Jaipur, Zoning for houses, Social centers, Layout of roads, Surface and subsurface drainage, Community services. Slums and their improvement. Development of garden.

RECOMMENDED BOOKS

1. Town Planning by Rangwala, BSC Publishers and Distributers .
2. Fundamental of Town Planning by G.K. Hiraskar Published by Dhanpat Rai Publication.
3. The Great Ages of World Architecture by G.K. Hiraskar Published by Dhanpat Rai Publication.
4. Text Book of Urban Planning and Geography by Sameer Sharma , Published by PHI learning Pvt .Ltd. Delhi.
5. Urban Planning: Theory and Practice by M. Pratap Rao Publised by CBS
6. City Planning in India 1947-2017 , by Ashok Kumar ,Sanjeev Vidhyarthi , Poonam Prakash Publised by Rontledge india.
7. Urban and regional Planning in india by Kulshrastha S.K., Publishers SAGE Publication India Pvt. Ltd.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs.)	Marks Allotted (%)
1	14	50
2	14	50
Total	56	100

PRACTICUM	5.3 CONSTRUCTION AND MATERIALS - III	L	T	P
		1	-	4

Course Objective

The fundamentals of the paper have already been dealt within the previous years and the students are aware of the materials and construction principles involved. With the development of the technology, many a more materials have come up. Their use in modern architecture is inevitable, so to keep their knowledge is also vital. These materials have been given place in this paper to remain updated with the complete knowledge.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	L	T	P
1.	Materials	2	-	8
2.	Foundations	3	-	8
3.	Temporary Work	2	-	8
4.	Roofs	2	-	8
5.	Partitions	2	-	8
6.	Interiors	2	-	12
7.	Hardware and Construction Equipments	1	-	4
TOTAL		14	-	56

DETAILED CONTENTS

Unit 01 Materials

(10 Periods)

R.C.C. as structural material, acoustical and insulating materials, Finishing veneer's, cladding and paneling, Jali and Hollow Brick work, M.S. Grill work, Aluminium Composite Panel (ACP), Different types of adhesives Painting/ Polishing material- Lime/ Colour wash, Dry distemper, Oil-bound distemper, Cement paints, Acrylic emulsions, Synthetic enamels, Wall texture etc. Polishes and Varnishes.

Unit 02 Foundations

(10 Periods)

R.C.C. independent footing, Raft foundation, Pile foundation, Grillage Foundation.

Unit 03 Temporary Work

Timbering in trenches, Shoring, under pinning scaffolding, shuttering and form work for R.C.C., Centering for arches.

Unit 04 Roofs

R.C.C. and R.B. slabs, Cantilevers, portico, Projections, Balcony, Treatment of expansion joints.

Unit 05 Partitions

Constructional details, Suitability and uses of Brick, Wooden, Glazed, Semi-glazed partition walls, details of false ceiling and paneling in various materials.

Unit 06 Interiors

An introduction to furniture, built-in-furniture and interior details in designing residential and commercial furniture.

Modern: various types of new building materials mentioned along with specifications be included from time to time as an advance study to upgrade subject.

Studies with models, visits to Five-Star Hotels or similar building sites, the studio periods should be devoted to preparation of detailed construction drawings.

Unit 07 Hardware and Construction Equipments

• Hardware:

Hinges, Handles, Knobs, Bolts, L-drop, Locks, Stoppers, Stays, Silencers, Chain guards, Closers, Catchers, Knockers, etc in various materials, Patch fittings for glazed shutters.

• Construction Equipments:

Electric Hand Tools : Vibrators, Pumps, Compactors/Rollers. Earth Moving and Excavation : Dozers, Scrapers, Graders, Shovels, Backactor, Dragline, Trenchers.

Transportation: Lorries, Trucks, Dumpers, Hoist, Cranes (Mobile, Static, Tower), Concrete mixers and pumps for ready mix concrete.

RECOMMENDED BOOKS:

1. Building Construction by WB Mackay; Khanna Publisher, New Delhi
2. Building Construction by SP Bindra and SP Arora; ; publisher Dhanpat Rai & Co. New Delhi
3. Building Construction by BC Punmia; Publisher Laxmi Publication, New Delhi
4. Building Construction by Sushil Kumar; Standard Publisher, New Delhi
5. Construction of Buildings (Vol I and II) by Barry
6. Building Construction by VB Sikka; Publisher Tata McGraw Hill Publisher, New Delhi
7. Building Construction by Rangwala; Publisher Charotar Publishing House Pvt. Ltd., New Delhi
- 8.

SUGGESTED DISTRIBUTION OF MARKS

Unit	Time Allotted (Hrs.)	Marks Allotted (%)
1	10	15
2	11	15
3	10	10
4	10	15
5	10	15
6	14	20
7	05	10
Total	70	100

THEORY	5.4 STRUCTURE - B	L	T	P
		2	1	-

Course Objective

This subject follows the subject of Applied Mechanics and Structures-A taught during the previous years, the acquired analytical skills of which are applied here to design simple structural elements. A diploma holder in Architectural Assistantship will be required to handle such simple structures in his professional life. This subject covers designing of simple structures out of heterogeneous materials (RCC). The student will also learn to use the latest relevant IS codes in their design practice. (Use of IS:456-2000 is allowed)

Course Outcome:

After completing the course, the students will be able:

- Understand RCC Fundamentals and Design Philosophies
- To calculate bending moment and shear force for a particular structural member.
- To draw the details of load bearing members like footings, columns, beams and slabs.
- Design RCC Structural Elements Using Limit State Method.
- Design Compression and Tension Members.
- Comprehend the Concept of Pre-stressed Concrete.
- Interpret Structural Design and Detailing Drawings

TOPIC WISE DISTRIBUTION OF PERIODS

Sl. No.	Topics	L	T	P
1.	Introduction to RCC structures	2	1	-
2.	Design based on limit state method			
	i. Fundamentals	2	1	-
	ii. Singly reinforced beam	3	1	-
	iii. Lintels	1	1	-
	iv. Cantilever beam and slabs	2	1	-
	v. Doubly Reinforced Beam	2	1	-
	vi. Reinforced concrete Slabs	3	1	-
	vii. Reinforced brick work	1	1	-
	viii. Tee beams	2	1	-
	ix. Columns & Column Footings	2	1	-
3.	Introduction To working stress Method	4	2	-
4.	Pre-Stressed Concrete	2	1	-
5.	Introduction To Tension & Compression Members	2	1	-
TOTAL		28	14	

DETAILED CONTENTS

Unit 01 Introduction to RCC structures (3 Periods)

Concept of reinforced concrete structures, advantages and disadvantages. Different materials used in RCC with their properties. Load and loading standard as per IS:875
Concept of design of reinforced concrete based on working stress method and limit state method and their difference.

Unit 02 Design based on Limit State Method (27 Periods)

(A) Fundamental of limit state method:

- i.** Assumptions in the theory of simple bending for RCC beams.
- ii.** Flexural strength of a singly reinforced RCC beam. Position of the Neutral Axis. Resisting moment of the section, critical neutral axis, actual neutral axis, concept of balanced, under reinforced and over-reinforced sections.
- iii.** Shear Strength :
Permissible shear stresses as per IS: 456.
Development of stresses in reinforcement, development length and anchoring of bars.
- iv.** Bond Strength: Concept of bond, local and average, permissible bond stresses for plain and deformed bars as per IS, minimum length of embedment of bars, minimum Splice length, actual bond stress in RCC beams and slabs, bond length as per IS: 456.

(B) design of singly reinforced concrete beams as per IS: 456 from the given data such as span load and properties of materials used.

(C) Design of lintel.

(D) Design of a cantilever beam and slab.

(E) Design of Doubly Reinforced Concrete Beams:

- i.** Doubly reinforced concrete beam and its necessity.
- ii.** Strength of a double reinforced concrete beam section.
- iii.** Method of design: Simple problems only.

Reinforcement details of doubly reinforced concrete beam.

(F) Design of RCC Slabs:

- i.** Structural behaviour of slab under uniformly distributed load (UDL).
- ii.** Types of end supports.
- iii.** Design of one way slab.

- iv. Design of Two-way slab with the help of tables of IS: 456.(Corners not held down)- IS-code method.

Detailing of reinforcement.

(G) Design of Reinforced Brick-Work

- i. Plain brick masonry, permissible stresses.
- ii. Reinforced Brick work and its use in slabs and lintels.
- iii. Limitations of the use of R.B. Work.
- iv. General principles of design of reinforced brick lintels and slabs.
- v. Design of R.B. slab and lintels.

(H) Design of Tee Beams:

- i. Structural behaviour of a beam and slab floor laid monolithically.
- ii. Rules for the design of T-Beams.
- iii. Economical depth of T-Beams, Strength of T-Beams.
- iv. Design of Tee-Beams.
- v. Detailing of reinforcement.

(I) Design of Columns & Column Footings

- i. Concept of long and short columns.I.S. specifications for main and lateral reinforcement
- ii. Behaviour of RCC column under axial load.
- iii. Design of Axially loaded short and long columns with hinged ends (circular, square and rectangular as per IS specifications).
- iv. Concept of column footing. Design criteria. Design of square isolated column footings.
- v. Detailing of reinforcement.

Unit 03 Design based on Working Stress Method

(6 Periods)

Introduction to Limit state design fundamentals, Design of simple problems of beams and slabs only.

Unit 04 Pre-stressed Concrete

(3 Periods)

Introduction to pre-stressed concrete.

Unit 05 Tension and Compression Members

(3 Periods)

Introduction to tension and compression members of steel roof trusses (No numerical problems should be asked in the examination).

INSTRUCTIONAL STRATEGY

Teachers are expected to give simple problems for designing various RCC 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 form work for RCC as well as placement of reinforcement in various structural members. Commentary on BIS:456 may be referred along with code for relevant clauses.

RECOMMENDED BOOKS:

1. Singh Harbhajan "Design of Reinforced Concrete Structures for Architects"
Abhishek Publishers, Chandigarh
2. Ramamurtham, S; "Design and Testing of Reinforced Structures", Dhanpat Rai and Sons,
Delhi
3. Singh Harbhajan "Limit State Designs for Architects" Abhishek Publishers, Chandigarh
4. Gambhir, M.L., "Reinforced Concrete Design", Macmillan India Limited
5. Singh, Birinder "RCC Design and Drawing", Kaption Publishing House, New Delhi
6. Mallick, SK; and Gupta, AP; "Reinforced Concrete", Oxford and IBH Publishing Co,
New Delhi.

SUGGESTED DISTRIBUTION OF MARKS

Units	Time Allotted (Periods)	Marks Allotted (%)
1	3	12
2	27	50
3	6	18
4	3	10
5	3	10
Total	42	100

PROGRAM ELECTIVE-2	5.5A) SOFTWARE APPLICATION IN ARCHITECTURE	L	T	P
		1	-	4

Course Objective

To enable the student to develop the confidence to prepare the drawings of a given project through knowledge acquired in previous semester by preparing a set of drawings for any one project. To enable the student to create three dimensional objects in space with special emphasis on presentation and visualization of interiors and exteriors of building using different rendering techniques using auto CAD 2024 or the latest programme.

Course Outcome

After completing the course, the students will be able:

- Demonstrate proficiency in basic and advanced functions of architectural design software such as AutoCAD, SketchUp or other relevant tools.
- Prepare 2D architectural drawings including plans, elevations, and sections with appropriate layers, line types, and annotations.
- Create and modify 3D digital models of buildings and structures using appropriate modeling techniques.
- Apply rendering and visualization tools to present architectural designs realistically and effectively.
- Convert manual design concepts into digital formats and manage digital files for professional documentation and presentation.

DETAILED CONTENTS

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

Unit 01 Project (Rendering of CAD drawing) (20 Periods)

The design problem done in 4th semester as main project shall be taken up for preparing a complete set of drawings. These include all plans, elevations (minimum 2) and sections (2 minimum), showing all interior layouts, joinery schedule, tree plantations, parking layout etc.

Unit 02 Fundamentals of 3-D Drafting (10 Periods)

1.1 Basic Features

1.2 Coordinate system

1.3 3-D entities and surfaces

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

Unit 03 Making an existing 2-D plan drawing compatible to 3-D drafting (16 Periods)

1.4 Commands and modifications to 2-D drawings

1.5 B. Poly, rectangle, elevation, extrude – requirements and applications

1.6 3-D of exterior of blocks – preparation, modification of 2-D drawing

1.7 3-D of interiors of block – preparation, modification of 2-D drawings

Unit 04 3-D Modeling (16 Periods)

1.8 Wire frame, surface and 3-D solid modeling

1.9 Viewing 3-D models

1.10 Rendering, shading , hide commands, lights and Camera

1.11 Material representation

1.12 Importing, exporting library and printing 3-D

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

Unit 05 Demonstration of 3D max, Corel Draw, Adobe Photoshop as rendering tool for 3D blocks/ walk through etc. (8 Periods)

Exercises

1. Converting simple geometrical shapes into 3-D objects

2. Students will take their second year design proposals and convert them in 3-dimensional presentation mod.

INSTRUCTIONAL STRATEGY

This is a highly practical oriented subject. Efforts should be made by the teachers to procure relevant software and give practical exercises to individual students, so that they develop proficiency in operating computer software as applied to the profession of architecture. The theoretical instructions should be dovetailed with practical work.

Toward the end of the session each student should be given independent computer based project assignment. Expert lectures from practicing architectural field may be invited to deliver talks and for presentation of live case studies on computers to motivate the students and increase their level of awareness. Special efforts should be made by the teachers to develop well defined small tutorial exercises on each topic and supervise the exercises being

performed by the student throughout the session. If need be some basic operational fundamental exercises may be repeated in the beginning of the session.

Special emphasis may be laid in training the students, to avail help from the user friendly software so that they develop confidence and are able to work independently.

Note:- The Board will set the Question Paper for exercises for external examination

RECOMMENDED BOOKS:

1. "AutoCAD for Architects and Designers" By: Sham Tickoo (Autodesk Press / CADCIM Technologies)
2. "Mastering AutoCAD Architecture" By: Paul F. Aubin
3. "The SketchUp Workflow for Architecture" By: Michael Brightman
4. "Revit Architecture 2024 for Designers" By: Douglas R. Seidler
5. "Revit Architecture: No Experience Required" By: Eric Wing

SUGGESTED DISTRIBUTION OF MARKS

Units	Time Allotted (Periods)	Marks Allotted (%)
1	20	35
2	10	15
3	16	20
4	16	20
5	08	10
Total	70	100

PROGRAM ELECTIVE-2	5.5B) EARTHQUAKE ENGINEERING CONCEPTS	L	T	P
		3	-	-

Course Objective

In view of earthquake risk in the country, it is important that students of architectural assistantship should have knowledge, concept, and principles of earthquake engineering, so as to build a safe and secure environment for the society.

Course Outcome

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

- Understand the basic causes, types, and effects of earthquakes on buildings and built environments.
- Explain key concepts such as seismic waves, magnitude, intensity, and seismic zoning applicable to architectural design.
- Identify the behavior of different building materials and structural systems under seismic loads.
- Apply principles of earthquake-resistant design in planning and designing low-rise buildings.
- Suggest architectural planning strategies such as symmetry, proper mass distribution, and appropriate building configuration to minimize seismic risks.
- Identify retrofitting techniques and materials to enhance the seismic performance of existing buildings.
- Demonstrate awareness of disaster preparedness, risk reduction, and post-earthquake safety measures for architectural projects.

TOPIC WISE DISTRIBUTION OF PERIODS

S.No.	Topics	L	T	P
1.	Topic-1	6	-	-
2.	Topic-2	10	-	-
3.	Topic-3	12	-	-
4.	Topic-4	6	-	-
5.	Topic-5	8	-	-
	Total	42	-	-

DETAILED CONTENTS

Unit 01 Nature and Characteristics of Ground Motion

(6 Periods)

- Consequences of earthquake
 - Ground rupture and Ground Failure
 - Liquefaction
 - Land-slides, etc.
- Ground Motion
 - Fire
 - Tsunamis

Unit 02 Engineering Seismology

(10 Periods)

- Structure of the earth,
- Plate Tectonics
- Evolution of Indian subcontinent,
- Waves generated by ground motion and their characteristics,
 - Body Waves
 - Longitudinal waves,
 - Transverse waves,
 - Surface waves
 - Rayleigh waves,
 - Love waves,
 - Attenuation of waves,
- Distribution of earthquake
 - Global,
 - Indian,
- Measurement of earthquake
 - Introduction of instruments used for measuring earthquakes
 - Seismograph,
 - Accelerograph,
 - Various scales of magnitude,
 - Various scales of intensity
- Basic

Terms

- Fault line,
- Focus,
- Epicenter,
- Epicenter distance,
- Focal depth,
- Peak ground acceleration, etc.
- Seismic Zoning and Micro Zoning.

Unit 03 Behaviour of buildings During Earthquake

(12 Periods)

- Ground motion and earthquake forces;
- Sitting of structure
- Typology and classification of buildings-
 - Load bearing masonry walls
 - Brick masonry,
 - Stone masonry,
 - Mud
 - Reinforced Concrete Buildings
 - RC framed building
 - RC shear wall building
 - Dual system building
 - Steel Buildings
- Dynamic characteristics of building and its relation with built form
 - Symmetry,
 - Regularity,
 - Stiffness,
 - Flexibility,
 - Strength,
 - Time period,
 - Damping,
 - Ductility,

- Material and method of construction, etc.
- Earthquake resistance of various forms of building
 - Configuration
 - Scale of building,
 - Size in horizontal plane,
 - Size in vertical plane,
 - Building proportions,
 - Symmetry of the building,
 - Re-entrant corners,
 - Redundancy, etc.;
- Irregularities in Building
 - Horizontal plane,
 - Vertical Plane
- Building corners
 - Outward corners,
 - Inward corners
- Special Aspects
 - Torsion,
 - Appendages,
 - Staircases,
 - Pounding,
 - Repair and maintenance,
 - Construction management.

Unit 04

(06 Periods)

Introduction to ductile detailing of RC buildings as per IS-13920.

Unit 05 Disaster Management

(08 Periods)

Definition of disaster - Natural and Manmade, Type of disaster management, how disaster forms, Destructive power, Causes and Hazards, Case study of Tsunami Disaster, National policy- Its objective and main features, National Environment Policy, Need for central intervention, State Disaster Authority- Duties and powers, Case studies of various Disaster in the country, Meaning and benefit of vulnerability reduction, Factor promoting vulnerability reduction and mitigation, Emergency support function plan. Main

feature and function of National Disaster Management Frame Work, Disaster mitigation and prevention, Legal Policy Frame Work, Early warning system, Human Resource Development and Function, Information dissemination and communication.

RECOMMENDED BOOKS

1. Arnold C. and Reltherman R., "Building Configuration and Seismic Design", John Wiley and Sons, 1982.
2. Lagorio, H. J., "Earthquake: An Architect's Guide To Nonstructural Seismic Hazards", John Wiley and Sons, 1990.
3. Stratta, J L, " Manual of Seismic Design", Persons Education, New Delhi, 2003 reprint.
4. IIK-BMTPC Earthquake Tips is a project for twenty four tips of two pages each. Written in simple language. These are available at www.nicee.org for anyone to download. These are very suitable for teachers and students of polytechnics. Hindi translation of the Tips are expected to become available shortly.
5. Guidelines for Earthquake Resistant Non-Engineered Construction is a publication of the International Association for Earthquake Engineering. This is written in a very simple language targeted at a common man. Soft copy of the same is available at www.nicee.org. Limited number of paper copies may be available free of charge from the National Information Center of Earthquake Engineering (NICEE) and can be requested through an email to nicee@iitk.ac.in. Separate Hindi and English versions of the same are available.
6. A number of reports on past earthquakes are available on internet. NICEE web site has materials on all past earthquakes in recent years in India. NICEE is also distributing of charge two CDS on the Bhuj earthquake: One containing a four hundred page report on a multidisciplinary investigation of the earthquake, and the other containing annotated images of the earthquake for easy presentation.

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	6	10
2	10	25
3	12	35
4	6	15
5	8	15
Total	42	100

THEORY	5.6 INDIAN CONSTITUTION	L	T	P
		2	-	-

COURSE OBJECTIVES:

1. Understand the history, principles, and key interpretations of the Indian Constitution.
2. Understand the structure and key roles of the Indian Union Government, including the President, Prime Minister, and Council of Ministers.
3. Understand the composition, powers, and functions of the Lok Sabha, Rajya Sabha, and the Supreme Court.
4. Understand the roles and powers of the Governor, Chief Minister, Council of Ministers, and the State Secretariat.
5. Understand the structure and functions of local administration, including District, Municipal, and Zila Panchayat levels.
6. Understand the structure, role, and functions of the Election Commission of India.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

1. The historical process of the Indian Constitution's creation.
2. The structure and roles of the President, Prime Minister, and Council of Ministers.
3. The composition, powers, and functions of the Lok Sabha, Rajya Sabha, and Supreme Court.
4. The roles and powers of the Governor, Chief Minister, Council of Ministers, and State Secretariat.
5. The structure and functions of local administration, including District Administration, Municipal Corporations, and Zila Panchayats.
6. The structure, role, and functions of the Election Commission of India.

DETAILED CONTENT

Unit 1 – The Constitution – Introduction

(06 Periods)

- The History of the Making of the Indian Constitution
- Preamble and the Basic Structure, and its interpretation
- Fundamental Rights and Duties and their interpretation

Unit 2 – Union Government

(06 Periods)

- Structure of the Indian Union Government
- President – Election, Role and Power
- Prime Minister and Council of Ministers

Unit 3- Indian Legislature & Judiciary

(06 Periods)

- Composition of Lok Sabha and Rajya Sabha
- Powers & Functions of Lok Sabha and Rajya Sabha
- Structure of Supreme Court including Appointment of Judges
- Powers & Functions of Supreme Court

Unit 4 – State Government

(03 Periods)

- Governor – Role and Power
- Chief Minister and Council of Ministers
- State Secretariat

Unit 5 – Local Administration

(04 Periods)

- District Administration
- Municipal Corporation
- Zila Panchayat

Unit 6 – Election Commission

(03 Periods)

- Structure of Election Commission of India
- Role and Function of Election Commission

Suggested Distribution of Books

1. Ethics and Politics of the Indian Constitution Rajeev Bhargava Oxford University Press, New Delhi, 2008
2. The Constitution of India B.L. Fadia Sahitya Bhawan; New edition (2017)
3. Introduction to the Constitution of India DD Basu Lexis Nexis; Twenty-Third 2018 edition
4. Our Constitution Subhash Chand Kashyap NBT New Delhi.

Suggested Software/Learning Websites:

- a. <https://www.constitution.org/cons/india/const.html>
- b. <http://www.legislative.gov.in/constitution-of-india>
- c. <https://www.sci.gov.in/constitution>
- d. <https://www.toppr.com/guides/civics/the-indian-constitution/the-constitution-of-india/>
- e. <https://ncert.nic.in/textbook.php>

SUGGESTED DISTRIBUTION OF MARKS

SR No	Topic Time Allotted (periods)	Marks Allotted
1	6	20
2	6	20
3	6	20
4	3	12
5	4	16
6	3	12
TOTAL	28	100

SIXTH SEMESTER

THEORY	6.1 ENTREPRENEURSHIP AND START-UPS	L	T	P
		3	-	-

Course Objectives

1. Acquiring Entrepreneurial spirit and resource fullness.
2. Familiarization with various uses of human resource for earning dignified means of living.
3. Understanding the concept and process of entrepreneurship - its contribution and role in the growth and development of individual and the nation.
4. Acquiring entrepreneurial quality, competency, and motivation.
5. Learning the process and skills of creation and management of entrepreneurial venture.

Course Outcome

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

- Understanding the dynamic role of entrepreneurship and small businesses
- Organizing and Managing a Small Business
- Financial Planning and Control
- Forms of Ownership for Small Business
- Strategic Marketing Planning
- New Product or Service Development
- Business Plan Creation

COURSE CONTENT

Unit 1 - Introduction to Entrepreneurship and Start – Ups (06 Periods)

- Definitions, Classification of Entrepreneur
- Traits of an Entrepreneur, Intrapreneurship, Motivation
- Types of Business Structures- On the Basis of size and On the basis of ownership
- Similarities/differences between entrepreneurs and managers

Unit 2 – Business Ideas and their implementation (06 Periods)

- Discovering ideas and visualizing the business
- Activity map
- Business Plan (Case Study)

Unit 3 – Ideas to Start-up**(09 Periods)**

- Marketing and Accounting- Definition and Importance.
- Market Analysis – STP (Segmentation, Targeting, Positioning)
- Competition evaluation and Strategy Development – Vision, Mission, Goal, Objectives.
- Risk analysis- SWOT Analysis.

Unit 4 – Management**(07 Periods)**

- Definition Concept and Functions of Management
- Company's Organization Structure- Concept and Classification
- Recruitment and Selection- Definition,
- Training and Development- Importance.

Unit 5 - Financing and Protection of Ideas**(09 Periods)**

- Financing methods available for Entrepreneurship/ Startups in India (Government Scheme, Banking, NBFCs, SHG and Micro Financing).
- Intellectual Property Rights- Overview of - Copyrights, Trademark, Geographical Indicators, Patenting and Licenses
- Communication of Ideas to potential investors – Investor Pitch.

Unit 6: Succession, Dissolution and Harvesting strategy**(05 Periods)**

- Ways of succession
- Types of Dissolution

SUGGESTED LEARNING RESOURCES:

S. No.	Title of Book	Author	Publication
1.	The Startup Owner's Manual: The Step-by-Step Guide for Building a Great Company	Steve Blank and Bob Dorf	K & S Ranch ISBN – 978-0984999392
2.	Entrepreneurship Development (A new Venture creation)	Vasant Desai	Himalaya Publication
3.	Entrepreneurship Development	Khanka S.S.	S Chand & Company Limited New Delhi
4.	Entrepreneurship Development	Gupta and Srinivsan	S Chand & Company Limited New Delhi
5	Demand: Creating What People Love Before They Know They Want It	Adrian J. Slywotzky with Karl Weber	Headline Book Publishing ISBN – 978-0755388974

6	The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses	Eric Ries	Penguin UK ISBN – 978-0670921607
7	The Innovator's Dilemma: The Revolutionary Book That Will Change the Way You Do Business	Clayton M. Christensen	Harvard Business sISBN: 978-142219602

SUGGESTED SOFTWARE/LEARNING WEBSITES:

- <https://www.fundable.com/learn/resources/guides/startup>
- <https://corporatefinanceinstitute.com/resources/knowledge/finance/corporate-structure/>
- <https://www.finder.com/small-business-finance-tips>
- <https://www.profitbooks.net/funding-options-to-raise-startup-capital-for-your-business/>
- NPTEL Course on Entrepreneurship https://onlinecourses.nptel.ac.in/noc23_mg74/ preview
- National Geographic Channel you tube Video on “GI Tag Crafts of Bharat”
-

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Periods)	Marks Allotted (%)
1	06	15
2	06	15
3	09	20
4	07	18
5	09	20
6	05	12
Total	42	100

THEORY	6.2 CONSTRUCTION MANAGEMENT, ACCOUNTS & PROFESSIONAL PRACTICE	L	T	P
		3	-	-

[Common to three year Diploma Course in Interior Design & Decoration]

Course Objective

This paper aims to develop the students as professional architects to face the challenges in the world of work. To face these challenges, they should have thorough knowledge of various Architect's Act, Code of conduct in effect, handling the accounts and personnel management. The paper is expected to fulfill such a need.

Course Outcome

Upon completion of the course, the student will be able to demonstrate knowledge of the following topics:

- Explain the basic principles and functions of construction project management, including planning, scheduling, and resource allocation.
- Prepare and interpret bar charts, CPM and PERT charts for efficient project execution and time management.
- Understand the roles and responsibilities of various professionals involved in the construction industry.
- Maintain and interpret basic accounts related to construction works such as measurement books (MB), muster rolls, and bills.
- Understand tendering procedures, contract types, specifications, and related documentation used in architectural practice.
- Prepare working estimates, quantity take-offs, and cost analysis for small-scale building projects.

TOPIC WISE DISTRIBUTION OF PERIODS

S.No.	Topics	L	T	P
1.	Management	12	-	-
2.	Accounts	12	-	-
3.	Professional Practice	12	-	-
4.	Intellectual Property Rights	06	-	-
	Total	42	-	-

Unit 01 Management

(12 periods)

Introduction, Classification of construction - Light and Heavy, Stages of construction, Construction team - Owner, Engineer and Contractor their functions and interrelationship, Resources of construction industry -Man, Material, Machine, Money. Functions of construction management, Planning, Organization and building contracts. Acquaintance with building bye-laws (R.B.O. Act), Accident and Safety.

Unit 02: Accounts

(12 periods)

Introduction, Necessity of accounts, Cash - Definition of cash, Treasury challan and its Procedure of filling Imprest account.

Unit 03: Professional practices

(12 periods)

Introduction, Code of practice, Scale of charges, Code of conduct as per Architects Act- 1972, Council of Architects, Tender documents, Stages of payments, Settlement of disputes and arbitrations.

Unit 04: Intellectual Property Rights

(06 periods)

Introduction to IPR (Patents, Copy Right, Trade Mark), Protection of undisclosed information, Concept and history of patents, Indian and International Patents Acts and Rules, Patentable and Non patentable invention including product versus Process. Basic terms used in land acquisition, Khasra, Khatauni, possession, allotment, free hold, Mutation (Dakhil-Kharij)

RECOMMENDED BOOKS

- 1- Construction planning and Management by Ketaki B. Dalal & Rangwala, charotar publishing house Pvt. Ltd.
- 2- Construction Engineering and Management of project by S.C.Sharma ,Khanna Publishers .
- 3- Professional practice by K.G. Krishnamurthy, and S.V.Ravindra : Published by prentice hall India learning Pvt. Ltd.
- 4- Professional Practice of Architecture by Prof. S.C. Garg and Dr. Yogesh K.Garg, Satya publishers , New Delhi .
- 5- The Architecture student's handbook of professional practice published by John Wiley and sons, New Jersey, United States.

SUGGESTED DISTRIBUTION OF MARKS

Unit	Time Allotted (Hrs.)	Marks Allotted (%)
1	12	30
2	12	30
3	12	30
4	06	10
Total	42	100

OPEN ELECTIVE-2	6.3 A) PRODUCT DESIGN	L	T	P
		2	-	-

Course Objectives

- To acquire the basic concepts of product design and development process
- To understand the engineering and scientific process in executing a design from concept to finished product
- To study the key reasons for design or redesign.

Course Outcomes

At the end of the course, the student will be able to:

• Understand the basic concepts of product design and development process.
• Illustrate the methods to define the customer needs.
• Describe an engineering design and development process.
• Understand the intuitive and advanced methods used to develop and evaluate a concept.
• Apply modeling and embodiment principles in product design and development process.

DETAILED CONTENT

Unit 01

(05 periods)

Definition of a product; Types of product; Levels of product; Product-market mix; New product development (NPD) process; Idea generation methods; Creativity; Creative attitude; Creative design process; Morphological analysis; Analysis of interconnected decision areas; Brain storming.

Unit-02

(06 periods)

Product life cycle; The challenges of Product development; Product analysis; Product characteristics; Economic considerations; Production and Marketing aspects; Characteristics of successful Product development; Phases of a generic product development process; Customer need identification; Product development practices and industry-product strategies.

Unit-03

(06 periods)

Product design; Design by evolution; Design by innovation; Design by imitation;

Factors affecting product design; Standards of performance and environmental factors; Decision making and iteration; Morphology of design (different phases); Role of aesthetics in design.

Unit-04 (06 periods)

Introduction to optimization in design; Economic factors in design; Design for safety and reliability; Role of computers in design; Modeling and Simulation; The role of models in engineering design; Mathematical modeling; Similitude and scale models; Concurrent design; Six sigma and design for six sigma; Introduction to optimization in design; Economic factors and financial feasibility in design; Design for manufacturing; Rapid Prototyping (RP); Application of RP in product design; Product Development versus Design.

Unit-05 (05 periods)

Design of simple products dealing with various aspects of product development; Design starting from need till the manufacture of the product,

REFERENCE BOOKS:

1. Product Design and Development, Karl T. Ulrich and Steven D. Eppinger, Tata McGraw-Hill edition.
2. Engineering Design –George E. Dieter.
3. An Introduction to Engineering Design methods Vijay Gupta.
4. Merie Crawford : New Product management, McGraw-Hill Irwin.
5. Chitale A K and Gupta R C, “Product Design and Manufacturing”, Prentice Hall of India, 2005.
6. Kevin Otto and Kristin Wood, Product Design, Techniques in Reverse Engineering and New Product Development, Pearson education.

SUGGESTED DISTRIBUTION OF MARKS

Unit	Time Allotted (Periods)	Marks Allotted (%)
1	05	20
2	06	20
3	06	20
4	06	20
5	05	20
Total	42	100

OPEN ELECTIVE-2	6.3 B) ARTIFICIAL INTELLIGENCE	L	T	P
		2	-	-

COURSE CONTENT:

Unit 1 – Introduction to Artificial Intelligence

- Artificial Intelligence (AI) definition
- Goals of AI
- History of AI
- Applications of AI

Unit 2 – Agents and Environments

- Agent Terminology, Types of Agents – Simple Reflex Agents, Model Based Reflex Agents, Goal Based Agents
- Nature of Environments, Properties of Environments

Unit 3 – Search Algorithms

- Terminology
- Brute Force Search Strategies – Breadth First Search, Depth First Search.
- Heuristic Search Strategies, Local Search Algorithms.

Unit 4 – Fuzzy Logic Systems

- Introduction to Fuzzy Logic and Fuzzy systems,
- Membership functions,
- Fuzzification /Defuzzification

Unit 5 – Neural Networks

- Basic structure of Neural Networks
- Perceptron
- Back-propagation

SUGGESTED LEARNING RESOURCES:

S. No.	Title of Book	Author	Publication
1	Artificial Intelligence By Example: Develop machine intelligence from scratch using real artificial intelligence use cases	Denis Rothman	Packt Publishing ISBN – 978-1788990547

10. RESOURCE REQUIREMENT:

- **Physical Resources:**
- **Total Space Requirements**

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

$$N = (N_s/C_s)(H/H_w)(1/f_u)$$
 where
N = Number of rooms required for each type.
N may be number of class rooms(N_c),
Number of tutorial rooms (N_t) or
Number of drawing halls (N_d)

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

C_s = Class size (Number of students)

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

H_w = Number of working hours per week

F_u = Utilisation factor (taken as 0.75)

Number of class rooms $N_c = 10$

Number of Tutorial rooms $N_t = 2$

Number of Drawing Halls $N_d = 6$

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

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

LAB REQUIREMENT:**1. Name of Laboratory: Drafting Studio**

Sr. No	Particular	Qty.	Tentative Cost (Rs)
1.1	Adjustable drafting machines, AO size with drafter and adjustable	60	4,80,000
	a. Soft board panels for pinning drawing 4'x 8', 3/4" thick	04	12,000
	b. Rapidograph pens (set of 8 pens) (Rotering)	04	10,000
1.4	Set up templates (for lettering, furniture, sanitary, geometric forms, kitchen, electric symbols)	04 each	1,600
1.5	Drawing instrument box (Stadtler) set of 12 pieces	04 set	8,000
1.6	Beam compass 36" long	04	2000
1.7	Miscellaneous drawing equipment: Scales, french curves, different kind of colours (water, oil and poster) brushes of different sizes, coloured inks, clutch pencils, razors, mixing Pallets, cutters for model making, vanishing stick, spray gun, drawing sheets etc.	LS	10,000
	Total		5,23,600
2.	Name of Laboratory/Workshop : Art Studio		
2.1	Donkey 1' x 3' with stand for sketch book	60	1,20,000
2.2	Wooden platform (revolving) for life study	01	1,500
2.3	Still life stand	02	1,000
2.4	Reflector with stand	02	5,000
2.5	Draperies for still life and model drawing	LS	2,500
2.6	Still life objects made of different materials	LS	5,000
2.7	Other miscellaneous items like: Calligraphy pen set, instrument box, inking pens, french curves, scissors, steel rules, mount cutters, pencils, erasers, sketch pens, brushes and papers, inks drawing pins, palettes etc	LS	20,100
	Total		1,47,100

2. Name of Laboratory/Workshop : Materials and Building Museum

S.No.	Particular	Qty.	Tentative Cost (Rs.)
3.1	Different types of bricks		Rs. 300,000/-
3.2	Different types of building stones		
3.3	Different types of sands		
3.4	Different types of paints and distempers		
3.5	Different types of wood		
3.6	Different types of wood products		
3.7	Different types of glass samples		
3.8	Different types of fasteners and adhesives		
3.9	Different types of sanitary wares	LS	
3.10	Samples of plumbing, fixtures to be installed as working Prototypes		
3.11	Samples of electric wires and conducting materials		
3.12	Samples of electric fixtures and fittings		
3.13	Samples of floor finishes and wall finishes		
3.14	Samples of different roofing materials		
3.15	Samples of false ceiling fixtures and finishes		
3.16	Samples of acoustics materials		
3.17	Samples of thermal insulating materials		
3.18	Samples of building hard ware		
3.19	Models, charts and other teaching aids		
	Total		300,000/-

3. Name of Laboratory/Workshop: Workshops

S.No.	Particular	Qty.	Tentative Cost (Rs.)
	Carpentry Shop		
4.1	Jig saw, 300 mm x 300 mm with 1/2 horse power motor	1	4,500
4.2	Wood planner, 2 horse power, 440 volts, width of plank 300 mm and length of table 1100 mm	1	15,000
4.3	Drilling machine, bench type 600x4000 rpm, size of table 250x250 mm	1	8,000
4.4	Universal wood working machine - 14 in one	1	1,50,000
4.5	Bench grinder	1	5,000
4.6	Carpentry work benches 4'x8'	10	20,000
4.7	Chain and chisel mortising machine	1	25,000
4.8	Wood turning lathe	1	10,000
4.9	Vertical sander	1	10,000
4.10	Carpentry hand tools, vices, holds, gauges and measuring tools	LS	35,000
4.11	Cutters, saws, blades for Acrylic Model Making	LS	10,000
	Welding Shop		
4.12	Oil cooled arc welding transformer, 3-phase with standard accessories	1	4000
4.13	M-4 Bench Spot welder	1	5,000
4.14	Oxy-acetylene gas welding set	1	12,000
4.15	Brazing equipment and accessories	1	5,000
	Painting Shop		
4.16	Spray painting gun with a small compressor	1	5,000
4.17	Miscellaneous painting brushes and materials	LS	500
	Electrical Shop		
4.18	General hand tools i.e. Screw driver sets, pliers, wrenches, tweezers, workshop scissors, hand drill machine, chisel, hammers	LS	5,000
4.19	Different types of wires, conduits, batteries, switches and other fixtures, testers, soldering iron	LS	10,000
	Total		3,39,000

5. Name of Laboratory/Workshop : Building Yard

5.1	The material required for Building Yard is mostly bricks, stones, cement, sand, mason tools, mild steel rods and timber planks	LS	5,000
Total			5000

6. Name of Laboratory/Workshop : Survey Laboratory

S.No.	Particular	Qty.	Tentative Cost (Rs.)
6.1	Metric Chain 20 m length and set of arrows as per IS 1492	08	1,600
6.2	Metallic tape 20 m length in leather case and winding device as per IS 1492	06	1,200
6.3	Ranging rods made of conduit pipe 30 mm dia painted white and black with iron shoe	25	2,500
6.4	Optical square, prism type as per IS 7009	06	1,200
6.5	Prismatic Compass as per IS 1957 100m diameter made of brass	06	4,200
6.6	Plane table with all accessories as per IS 2539	06	7,200
6.7	Dumpy level as per IS 9613, Telescope lens 300 mm with plate bubble	06	15,000
6.8	Levelling staff, telescope type, 4m long	05	5,000
6.9	Transit vernier theodolite telescope lens 150-210 mm magnification 25 to 30 x Minimum focusing distance 1.5 m	02	40,000
Total			76,900

7. Name of Laboratory / Workshop : Computer Laboratory

S.No.	Particular	Qty.	Tentative Cost (Rs.)
7.1	Intel Core-i 7 or the Latest configuration in the market With Min. 16GB RAM and Nvidia Graphic Card 4 4GB Min.	20	1600000
7.2	Laser Printer HP 1200 series or Equivalent UPS 0.652 Kw (one for each system)	20	120000
7.3	Software: Word processor, Spread sheet Storyboard, AutoCAD AutoCAD-2026 or Latest , Revit (latest Version) ,3Ds max (latest Version), Adobe Photoshop (latest Version) , Sketchup (latest Version), Coral draw (latest Version)	LS	8,00,000

7.4	Video LCD Projector	1	2,40,000
7.5	Computer Furniture	10	20,000
	Total		28,80,000

8. Name of Laboratory/Workshop: Reprographic & AV

S.No.	Particular	Qty.	Tentative Cost (Rs.)
8.1	Electronic stencil cutting machine (with 2 speeds 300/600 rpm 230V)	01	30000
8.2	Photocopier (1.5 kw, 240 V, 50 Hz, warm Uptime 60 sec, 240 paper capacity 2000 sheets)	01	90,000
8.3	Duplicating machine electric operated	01	20,000
8.4	Overhead Projector (240 V, 650 W, focal length 254 mm at f/2.86, lens dia 90mm)	01	50,000
8.5	TV & VCR with remote control set	01	40,000
8.6	Automatic slide projector (240 W)	01	5,000
8.7	Edge binding machine, trimming machine and large stapler	01	8,000
8.8	Glass Top Tracing Table	01	3,000
		LS	20,000
8.9	Drawing Sheet (4 Nos)	LS	12,000
	Total		2,15,000

NOTE:

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

10.3 Furniture Requirement

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

10.4 Human Resources:

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

11. EVALUATION STRATEGY

INTRODUCTION

Evaluation plays an important role in the teaching-learning process. The major objective of any teaching-learning endeavor is to ensure the quality of the product which can be assessed through learner's evaluation.

The purpose of student evaluation is to determine the extent to which the general and the specific objectives of curriculum have been achieved. Student evaluation is also important from the point of view of ascertaining the quality of instructional processes and to get feedback for curriculum improvement. It helps the teachers in determining the level of appropriateness of teaching experiences provided to learners to meet their individual and professional needs. Evaluation also helps in diagnosing learning difficulties of the students. Evaluation is of two types: Formative and Summative (Internal and External Evaluation)

Formative Evaluation

It is an on-going evaluation process. Its purpose is to provide continuous and comprehensive feedback to students and teachers concerning teaching-learning process. It provides corrective steps to be taken to account for curricular as well as co-curricular aspects.

Summative Evaluation

It is carried out at the end of a unit of instruction like topic, subject, semester or year. The main purpose of summative evaluation is to measure achievement for assigning course grades, certification of students and ascertaining accountability of instructional process. The student evaluation has to be done in a comprehensive and systematic manner since any mistake or lacuna is likely to affect the future of students.

In the present educational scenario in India, where summative evaluation plays an important role in educational process, there is a need to improve the standard of summative evaluation with a view to bring validity and reliability in the end-term examination system for achieving objectivity and efficiency in evaluation.

- **STUDENTS' EVALUATION AREAS**

The student evaluation is carried out for the following areas:

- Theory
- Practical Work (Laboratory, Workshop, Field Exercises)
- Project Work
- Professional Industrial Training

A. Theory

Evaluation in theory aims at assessing students' understanding of concepts, principles and procedures related to a course / subject, and their ability to apply learnt principles and solve problems. The formative evaluation for theory subjects may be caused through sessional / class-tests, home-assignments, tutorial-work, seminars, and group discussions etc. For end-term evaluation of theory, the question paper may comprise of three sections.

Section-I

It should contain objective type items e.g. multiple choice, matching and completion type. Total weightage to Section-I should be of the order of 20 percent of the total marks and no choice should be given in this section. The objective type items should be used to evaluate students' performance in knowledge, comprehension and at the most application domains only.

Section-II

It should contain short answer/completion items. The weightage to this section should be of the order of 40 percent of the total marks. Again, no choice should be given in section-II

Section-III

It may contain two to three essay type questions. Total weightage to this section should be of the order of 40 percent of the total marks. Some built-in, internal choice of about 50 percent of the questions set, can be given in this section

Table II : Suggested Weightage to be given to different ability levels

Abilities	Weightage to be assigned
Knowledge	10-30 percent
Comprehension	40-60 percent
Application	20-30 percent
Higher than application i.e. Analysis, Synthesis and Evaluation	Upto 10 percent

B. Practical Work

Evaluation of students performance in practical work (Laboratory experiments, Workshop practicals/field exercises) aims at assessing students ability to apply or practice learnt concepts, principles and procedures, manipulative skills, ability to observe and record, ability to interpret and draw conclusions and work related attitudes. Formative and summative evaluation may comprise of weightages to performance on task, quality of product, general behaviour and it should be followed by viva-voce.

C. Project Work

The purpose of evaluation of project work is to assess students ability to apply, in an integrated manner, learnt knowledge and skills in solving real life problems, manipulative skills, ability to observe, record, creativity and communication skills. The formative and summative evaluation may comprise of weightage to nature of project, quality of product, quality of report and quality of presentation followed by viva-voce.

D. Professional Industrial Training

Evaluation of professional industrial training report and viva-voce/ presentation aims at assessing students' understanding of materials, industrial processes, practices in the industry/field and their ability to engage in activities related to problem-solving in industrial setting as well as understanding of application of learnt knowledge and skills in real life situation. The formative and summative evaluation may comprise of weightages to performance in testing, general behaviour, quality of report and presentation during viva-voce.

12 - RECOMMENDATIONS FOR EFFECTIVE CURRICULUM IMPLEMENTATION

This curriculum document is a Plan of Action and has been prepared based on exhaustive exercise of curriculum planning and design. The representative sample comprising selected senior personnel (lecturers and HODs) from various institutions and experts from industry/field have been involved in curriculum design process.

The document so prepared is now ready for its implementation. It is the faculty of polytechnics who have to play a vital role in planning instructional experiences for the courses in four different environments viz. class-room, laboratory, library and field and execute them in right perspective. It is emphasized that a proper mix of different teaching methods in all these places of instruction only can bring the changes in stipulated student's behaviour as in the curriculum document. It is important for the teachers to understand curriculum document holistically and further be aware of intricacies of teaching-learning process (T-L) for achieving curriculum objectives. Given below are certain suggestions which may help the teachers in planning and designing learning experiences effectively. These are indicative in nature and teachers using their creativity can further develop/refine them. The designers of the programme suggest every teacher to read them carefully, comprehend and start using them.

(A) Broad Suggestions:

- 1- Curriculum implementation takes place at programme, course and class-room level respectively and synchronization among them is required for its success. The first step towards achieving synchronization is to read curriculum document holistically and understand its rationale and philosophy.
1. An academic plan needs to be prepared and made available to all polytechnics well in advance. The Principals have a great role to play in its dissemination and, percolation upto grass-root level. Polytechnics, in turn are supposed to prepare institutional academic plan.
2. HOD of every Programme Department along with HODs and in-charge of other departments are required to prepare academic plan at department level referring to institutional academic plan.
3. All lecturers/Senior lecturers are required to prepare course level and class level lesson plans referring departmental academic plan.

(B) Course Level Suggestions

Teachers are educational managers at class room level and their success in achieving course level objectives lies in using course plan and their judicious execution which is very important for the success of programme by achieving its objectives.

Polytechnic teachers are required to plan various instructional experiences viz. theory lecture, expert lectures, lab/workshop practical, guided library exercises, field visits, study tours, camps etc. In addition, they have to carry out progressive assessment of theory, assignments, library, practical and field experiences. Teachers are also required to do all these activities within a stipulated period of time. It is essential for them to use the given time judiciously by planning all above activities properly and ensure execution of the plan effectively.

Following is the gist of suggestions for subject teachers to carry out T-L process effectively:

1. Teachers are required to prepare a course plan, taking into account departmental academic plan, number of weeks available and courses to be taught.
2. Teachers are required to prepare lesson plan for every theory class. This plan may comprise of contents to be covered, learning material for execution of a lesson plan. They may follow steps for preparing lesson plan e.g. drawing attention, state instructional objectives, help in recalling pre-requisite knowledge, deliver planned subject content, check desired learning outcomes and reinforce learning etc.
3. Teachers are required to plan for expert lectures from field/industry. Necessary steps are to plan in advance, identify field experts, make correspondence to invite them, take necessary budgetary approval etc.
4. Teachers are required to plan for guided library exercises by identification of course specific experience requirement, setting time, assessment, etc. The assignments and seminars can be thought of as terminal outcome of library experiences.
5. Concept and content based field visits may be planned and executed for such content of course which is abstract in nature and no other requisite resources are readily available in institute to impart them effectively.
6. There is a dire need for planning practical experiences in right perspective. These slots in a course are the avenues to use problem based learning/activity learning/experiential learning approach effectively. The development of lab instruction sheets for the course is a good beginning to provide lab experiences effectively.

7. Planning of progressive assessment encompasses periodical assessment in a semester, preparation of proper quality question paper, assessment of answer sheets immediately and giving constructive feed back to every student
8. The student centered activities may be used to develop generic skills like task management, problem solving, managing self, collaborating with others etc.
9. Where ever possible, it is essential to use activity based learning rather than relying on delivery based conventional teaching all the time.
10. Teachers may take initiative in establishing liaison with industries and field organizations for imparting field experiences to their students.
11. Students be made aware about issues related to ecology and environment, safety, concern for wastage of energy and other resources etc.
12. Students may be given relevant and well thought out project assignments, which are purposeful and develop practical skills. This will help students in developing creativity and confidence for their gainful employment.
13. A Project bank may be developed by the concerned department of the polytechnics in consultation with related Industry, research institutes and other relevant field organizations in the state.

13- LIST OF EXPERTS:

The following experts have participated/ contributed in workshop for Developing Curriculum Scheme / Competency Profile according to AICTE and NEP-2020, of Three Year Diploma course in Architectural Assistantship at IRDT Kanpur.

1. Ar. Kuldeep Srivastava, H.O.D. Architecture, Government Polytechnic, Lucknow
2. Ar. Komal Yadav, H.O.D. Architecture, Government Girls Polytechnic, Lucknow
3. Ar. Ruchi Singh, Lecturer, Architecture, Government Girls Polytechnic, Lucknow
4. Lt. Ar. Syed Yawar Husain Naqvi, Lecturer Architecture, Govt. Polytechnic, Deoria.
5. Ar. Sunil Kumar Gautam, Lecturer Architecture, Government Polytechnic, Deoria
6. Ar. Saurabh Bhatnagar, Lecturer Architecture, Government Polytechnic, Hardoi.
7. Ar. Avanish Kumar Katiyar, Lecturer Architecture, Government Polytechnic, Hardoi.
8. Ar. Amit Kumar Singh, Lecturer, Architecture, Government Polytechnic, Lucknow
9. Ar. Kapil Rao Brabhuddh, Lecturer Architecture, Government Polytechnic, Soron.
10. Ar. Vikas Kulshreshtha, Asstt. Prof., I.R.D.T., Kanpur.

(ANNEXURE-I)

PROCEDURES / FORMATS FOR ORGANIZING INTERNSHIPS.

STUDENT INTERNSHIP PROGRAM APPLICATION

Complete and submit to the TPO/ Internship Program Coordinator.

1. Student Name:		Enroll. No.:	
2. Campus Address:		Phone:	
3. Home Address:		Phone:	
4. Student email address:			
5. Branch:		6. Internship Semester: _____	
7. Internship Preferences			
	Company/Industry	Core Area	Location
Preference-1			
Preference-2			
Preference-3			
Faculty mentor Signature: _____ Date _____.			
Student Signature: _____ Date _____.			
Signature confirms that the student agrees to the terms, conditions, and requirements of the Internship Program			

Signature with seal
HOD/Principal

(ANNEXURE-I)

REQUEST LETTER FROM INSTITUTE TO INTERNSHIP/INDUSTRIAL TRAINING PROVIDER

Ref. No.: _____

Date: _____

To,
The HR Manager/Training Coordinator
.....
.....

Subject: Request for Internship/Industrial Training for Diploma Students

Sir/Madam,

We are pleased to introduce....., a premier institution affiliated with Board of Technical Education, Uttar Pradesh, offering diploma programs in various diploma disciplines.

As a part of the curriculum, our students are required to undergo Internship/Industrial Training to gain practical exposure and enhance their technical competencies. Therefore, we kindly request your esteemed organization to provide Internship/Training opportunities to our students during the period from to

S. No.	Name	Enroll. No.	Semester/Year	Discipline

Yours sincerely,

(Head of Department/Principal)

(ANNEXURE-II)

PROFORMA FOR EVALUATION OF INTERNSHIP BY INDUSTRY

Student Name:Evaluation Date:

Industry Supervisor Name:

Company/Organization:

Title of the Project:

Please evaluate your intern by indicating the frequency with which you observed the following behaviors:

Parameters	Max. Marks	Marks Given
Attendance and Punctuality	20	
Discipline and Professional Behavior	20	
Technical Knowledge and Understanding of Processes	30	
Practical Skills and Quality of Work	20	
Ability to Apply Theoretical Knowledge	20	
Problem Solving and Analytical Ability	10	
Communication and Interpersonal Skills	20	
Teamwork and Collaboration	10	
Internship Report/Documentation	20	
Presentation and Viva-Voce	30	
Total Marks	200	

Additional comments, if any:

Signature with seal of Industry supervisor

HR Manager

INTERNSHIP REPORT

STUDENT'S DIARY/ DAILY LOG

The main purpose of writing daily diary is to cultivate the habit of documenting and to encourage the students to search for details. It develops the students' thought process and reasoning abilities. The students should record in the daily training diary the day to day account of the observations, impressions, information gathered and suggestions given, if any. It should contain the sketches & drawings related to the observations made by the students.

The daily training diary should be signed after every day by the supervisor/ in charge of the section where the student has been working. The diary should also be shown to the Faculty Mentor visiting the industry from time to time and got ratified on the day of his visit.

Student's Diary and Internship Report should be submitted by the students along with attendance record and an evaluation sheet duly signed and stamped by the industry to the Institute immediately after the completion of the training. It will be evaluated on the basis of the following criteria:

- Regularity in maintenance of the diary.
- Adequacy & quality of information recorded.
- Drawings, sketches and data recorded.
- Thought process and recording techniques used.
- Organization of the information.

INTERNSHIP REPORT

After completion of Internship, the student should prepare a comprehensive report to indicate what he has observed and learnt in the training period. The student may contact Industrial Supervisor/ Faculty Mentor/TPO for assigning special topics and problems and should prepare the final report on the assigned topics. Daily diary will also help to a great extent in writing the industrial report since much of the information has already been incorporated by the student into the daily diary. The training report should be signed by the Internship Supervisor, TPO and Faculty Mentor. The Internship report will be evaluated on the basis of following criteria:

- i. Originality.
- ii. Adequacy and purposeful write-up.
- iii. Organization, format, drawings, sketches, style, language etc.
- iv. Variety and relevance of learning experience.
- v. Practical applications, relationships with basic theory and concepts taught in the course.

MONITORING & EVALUATION OF INTERNSHIP

The industrial training of the students will be evaluated in three stages:

1. Evaluation by Industry.
2. Evaluation by faculty supervisor of Industry.
3. Evaluation through seminar presentation/viva-voce at the Institute.

1. EVALUATION BY INDUSTRY

The industry will evaluate the students based on the Punctuality, eagerness to learn, Maintenance of Daily Diary and skill test in addition to any remarks.

2. MONITORING/ SURPRISE VISIT BY TPO/ STAFF/ FACULTY MENTOR

TPO/Staff/ Faculty Mentor of the institutes will make a surprise visit to the internship site, to check the student's presence physically, if the student is found absent without prior intimation to the T & P Cell, entire training will be cancelled. Students should inform the TPO, faculty mentor as well as the industry supervisor at least one day prior to availing leave by email. Students are eligible to avail 1-day leave in 4 weeks and 2 days leave in 6 weeks of the internship period apart from holidays and weekly offs.

3. EVALUATION THROUGH SEMINAR PRESENTATION/VIVA-VOCE AT THE INSTITUTE

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department as per norms of the institute. The evaluation will be based on the following criteria:

- Quality of content presented.
- Proper planning for presentation.
- Effectiveness of presentation.
- Depth of knowledge and skills.
- Attendance record, daily diary, departmental reports shall also be analyzed along with the Internship Report.

Seminar presentation will enable sharing knowledge & experience amongst students & teachers and build communication skills and confidence in students.