BANGLADESH TECHNICAL EDUCATION BOARD

Agargaon, Sher-E-Bangla Nagar
Dhaka-1207.

04-YEAR DIPLOMA IN ENGINEERING CURRICULUM
COURSE STRUCTURE & SYLLABUS
(PROBIDHAN-2022)

ARCHITECTURE TECHNOLOGY
TECHNOLOGY CODE: 61

3rd SEMESTER
(Effective from 2022-2023 Academic Sessions)

DIPLOMA IN ENGINEERING CURRICULUM
COURSE STRUCTURE

(PROBIDHAN-2022)

TECHNOLOGY NAME: ARCHITECTURE TECHNOLOGY (61)

(3RD SEMESTER)

Sl. No.	Subject		Period per Week		Credit	Marks Distribution						Grand Total
						Theory Assessment			Practical Assessment			
	Code	Name	Theory	Practical		Continuous	Final	Total	Continuous	Final	Total	
1	25922	Physics-II	3	3	4	60	90	150	25	25	50	200
2	25931	Mathematics-III	3	3	4	60	90	150	25	25	50	200
3	26131	Architectural Design-II	3	3	4	60	90	150	25	25	50	200
4	26132	Architectural Graphics	2	3	3	40	60	100	25	25	50	150
5	26133	Working Drawing-I	1	3	2	20	30	50	25	25	50	100
6	26134	Climatology	2	-	2	40	60	100	-	-	-	100
7	26135	Computer Aided Drawing -I	-	6	2	-	-	-	50	50	100	100
Total			**14**	**21**	**21**	**280**	**420**	**700**	**175**	**175**	**350**	**1,050**

Subject Code	Subject Name	Period per Week		Credit
25922	PHYSICS-II	T	P	C
		3	3	4

Rationale	Physics is the basic science for all engineering students as well as diploma engineering students. To develop a foundation in scientific principles and processes for the understanding and application of various technology. It will help the students to study in technical subject of diploma engineering students.
Learning Outcome (Theoretical)	After undergoing the subject students will be able: 1. Identify and classify various types of source of heat and temperature. Describe determination procedure temperature of materials and heat capacity of solid and liquid. 2. Describe second law of thermodynamics, heat engine. 3. Describe static electricity current electricity, magnetism, reflection of light. Refraction of light, photoelectric effect, structure of atom, Theory of relativity, semiconductor and electronics.
Learning Outcome (Practical)	After undergoing the subject (Practical) the students will be able to: 1. Compare the operation of common thermometers. 2. Determine the co-efficient of liner expansion of solid. 3. Measure the specific heat capacity of Bruss, steel etc. 4. Determine the latent heat of fusion of ice. 5. Verify the Ohm's Law. 6. Determine the Mechanical Equivalent of Heat by using Joule's Calorimeter. 7. Verify the laws of reflection. 8. Find out the focal length of a concave minor. 9. Determine the refractive index of a glass slab 10. Determine the angle of minimum deviation & refractive index of prism.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1.	**THERMOMETRY** 1.1 Define Heat & Temperature 1.2 Mention the unit of Heat & Temperature 1.3 Relate between different scale of Temperature 1.4 State the construction and graduation of mercury Thermometer 1.5 Define specific heat, thermal capacity and water equivalent 1.6 Mention units of specific heat, thermal capacity and water equivalent 1.7 Explain the principle of Calorimetry, 1.8 Discuss various kinds of specific latent heat	3	5
2	**EFFECT OF HEAT ON MATERIALS** 2.1 Define linear, superficial and cubical expansion of solid. 2.2 Define Coefficient of linear, superficial and cubical expansion of solid. 2.3 Relate between coefficient of linear, superficial and cubical	4	7

	expansion of solid.
	2.4 Explain the methods of heat transfer by conduction, convection and
	    Radiation with example.
	2.5 Define Thermal conductivity and Coefficient of the thermal conductivity
	2.6 List the factors which determine the quantity of heat (Q) flowing through a material
	    and Show that the quantity of heat flowing through a material can be found
	    from $Q = \dfrac{KA\,(\theta_H - \theta_C)t}{d}$
	2.7 State Stefan-Boltzman Law.
	2.8 State Newton's law of cooling.
	2.9 State wine's law.
	310 Explain Greenhouse effect.		

3	**NATURE OF HEAT AND MECHANICAL EQUIVALENT** 3.1 Describe the caloric theory and kinetic theory of heat 3.2 State the limitation of the caloric theory of heat 3.3 Explain the mechanical equivalent of heat 3.4 Explain the first law of thermodynamics 3.5 Explain Isothermal and adiabatic change. 3.6 Describe Specific heat of a gas, Molar specific heat or molar heat capacity. 3.7 Relate between pressure and volume of a gas in adiabatic change i, e; PV $^\gamma$=const. 3.8 Relate between C_P and C_V for and ideal gas (C_P-C_V=R)	4	6
4	**SECOND LAW OF THERMODYNAMICS** 4.1 Explain Reversible process and irreversible process. 4.2 Explain 2nd law of thermodynamics 4.3 Define heat engine 4.4 Explain the principle of Carnot's cycle 4.5 Mention the formula thermal efficiency of a heat engine 4.6 Distinguish between internal combustion engine and external combustion engine. 4.7 Describe Entropy 4.8 Mention the significant of entropy 4.9 Describe Change of entropy in a reversible and irreversible process.	4	6
5	**ELECTROSTATIC** 5.1 Define Charge and Nature of charge. 5.2 State the Law of attraction and repulsion of charge. 5.3 Explain the Coulomb's Law 5.4 Define Electric field and electric intensity. 5.5 Define Electric Potential and Potential difference 5.6 Relate between electric intensity and electric Potential. 5.7 Define Capacitor and capacitance. 5.8 Explain Energy of Capacitor. 5.9 Mention the Uses of capacitor.	3	5
6	**MAGNETISM** 6.1 Describe Earth's Magnetism. 6.2 Define Magnet, Magnetic Substance, Non-magnetic Substance, Magnetic Pole 6.3 Define Magnetic field, Magnetic Intensity. 6.4 Explain Magnetic Permeability, Magnetic Susceptibility 6.5 Explain Declination & inclination, Horizontal Component of	4	7

	Earth's Magnetic field B_H or H of Magnetic Elements of Earth 6.6 Classify Magnetic Materials 6.7 Compare among Diamagnetic, Paramagnetic and Ferromagnetic substance. 6.8 Describe Magnetic Domain.		
7	**REFLECTION OF LIGHT** 7.1 Define mirror (plane and spherical), image (real and virtual) and magnification. 7.2 Classify mirror and image 7.3 Describe the reflection of light 7.4 State the laws of reflection of right 7.5 Describe the verification of laws of reflection 7.6 Define pole, principal axis, center of curvature, radius of curvature, Principal focus in case of concave and convex mirrors 7.7 Express the general equation of concave and Convex mirror 7.8 Mention the uses of mirror and identify of Mirror.	3	6
8	**REFRACTION OF LIGHT** 8.1 Describe refraction of light 8.2 State the laws of refraction 8.3 Express the verification of laws of refraction 8.4 Describe critical angle and total internal refract reflection. 8.5 Relate between refractive index, minimum deviation of angle of the prism. 8.6 Define lens 8.7 Mention the kinds of lens. 8.8 Define center of curvature, radius of Curvature, Principal axis, first and second Principal focus, Optical center. 8.9 Derive general equation of the lens (Concave and convex) 8.10 Explain power of lens and equivalent of lens.	3	8
9	**PHYSICAL OPTICS** 9.1 Describe Electromagnetic Wave 9.2 Define Poynting Vector 9.3 Describe Electromagnetic Spectrum 9.4 Mention the wavelength of visible light spectrum 9.5 Define Light Year 9.6 Define Wave and Wave front 9.7 State the Huygens' Principle 9.8 Define Coherent Source 9.9 Define Interference of Light, Diffraction of Light and Polarization of Light. 9.10 Classify Interference of Light, Diffraction of Light and Polarization of Light.	4	8
10	**PHOTO ELECTRIC EFFECT** 10.1 Describe Electrical conductivity of gases. 10.2 Describe Discharge tube. 10.3 Define Cathode ray and X- Ray 10.4 Mention the properties of Cathode ray and X- Ray 10.5 Mention the use of X- Ray 10.6 Discuss photo electric effect 10.7 Derive Einstein's photo electric equation.	4	6

11	**STRUCTURE OF ATOM** 11.1 Describe the concept of structure of Atom 11.2 Discuss Thomson of Atomic models 11.3 Discuss Rutherford model of Atomic models 11.4 Discuss Bohr model of Atomic models 11.5 Derive the equation of Radius and Energy by using Bohr model 11.6 Explain Energy level of Electron 11.7 Derive the frequency of Photon by using Hydrogen atom Spectrum	3	6	
12	**NUCLEAR PHYSICS** 12.1 Explain radioactivity 12.2 Describe radioactive rays 12.3 Deduce Radioactive decay law 12.4 Define half- life and mean-life of radioactive atom 12.5. Relate between half-life and radioactive decay constant 12.6 Describe Nuclear Reactor 12.7 Explain nuclear fission & fusion.	3	7	
13	**MODERN PHYSICS** 13.1 Describe the concept of Modern Physics 13.2 Discuss about Reference frame 13.3 Explain Inertial and Non-Inertial Reference 13.4 Describe reference frame and Motion 13.5 Postulates of special Theory of Relativity 13.6 Explain the Galilean Transformation 13.7 Describe Lorentz Transformation 13.8 Define Black Holes and black body radiation.	3	7	
14	**THEORY OF RELATIVITY AND ASTRO PHYSICS** 14.1 Describe Relativity 14.2 Discuss the types of Relativity 14.3 Explain Einstein's theory of Relativity 14.4 Describe the Relativity of time: Time Dilation 14.5 Discuss Relativity of Length : Length Contraction 14.6 Discuss Relativity of mass 14.6 Relate between mass and Energy $(E=mc^2)$	3	6	
	Total	**48**	**90**	

Detailed Syllabus (Practical)

Unit	Topics with Contents	Class (3 Period)	Continuous Marks
1	COMPARE THE OPERATION OF COMMON THERMOMETERS 1.1 Observe the different types of thermometer 1.2 Apply relation formula 1.3 Measure the temperature of liquid such normal water, hot water & ice 1.4 Calculate and compare the operation of thermometer 1.5 Maintain the record of the performance of experiment.	1	1

2	DETERMINE THE CO-EFFICIENT OF LINEAR EXPANSION OF A SOLID BY PULLINGER'S APPARATUS 2.1 Collect Pullinger's Apparatus , Thermometer and screw gauge 2.2 Apply heat to boil producer 2.3 Calculate the Linear expansion of solid 2.4 Maintain the record of the performance of experiment.	1	1
3	MEASURE THE SPECIFIC HEAT CAPACITY OF VARIOUS SUBSTANCES. (BRASS, STEEL) 3.1 Collect Calorimeter, Thermometer, Brass, Balance 3.2 Apply the formula for specific heat 3.3 Measure various terms according to formula 3.4 Calculate Specific heat capacity 3.5 Maintain the record of the performance of experiment.	1	2
4	DETERMINE THE LATENT HEAT OF FUSION OF ICE 4.1 Collect Calorimeter, Thermometer, Brass, Balance and ice 4.2 Apply the formula for latent heat of fusion 4.3 Measure various terms according to formula 4.4 Calculate latent heat of fusion 4.5 Maintain the record of the performance of experiment.	1	2
5	DETERMINE THE LATENT HEAT OF FUSION OF ICE 5.1 Collect Calorimeter, Thermometer, Brass, Balance and Vapor producer 5.2 Apply the formula for latent heat of Vapor 5.3 Measure various terms according to formula 5.4 Calculate latent heat of fusion 5.5 Maintain the record of the performance of experiment.	1	2
6	DETERMINE THE MECHANICAL EQUIVALENT OF HEAT BY USING JOULE'S CALORIMETER 6.1 Collect Joule's Calorimeter, Thermometer, Voltmeter 6.2 Apply Joule's formula for heat equivalent 6.3 Measure various terms according to formula 6.4 Determine the Mechanical Equivalent of Heat 6.5 Maintain the record of the performance of experiment.	2	2
7	VERIFY THE LAWS OF REFLECTION 7.1 Collect Plane mirror, pin and drawing board 7.2 Apply the laws of reflection 7.3 Measure the incident angle and reflection angle 7.4 Verify the laws of reflection 7.5 Maintain the record of the performance of experiment.	2	4
8	FIND OUT THE FOCAL LENGTH OF A CONCAVE MIRROR 8.1 Collect Optical bench & concave mirror 8.2 Apply focal length formula.	2	4

	8.3 Measure the object length & Image length		
	8.4 calculate the focal length by using formula		
	8.5 Maintain the record of the performance of experiment.		
9	DETERMINE THE REFRACTIVE INDEX OF A GLASS SLAB 9.1 Collect glass slab, pin, drawing paper and drawing board 9.2 Apply the Snell's law 9.3 Measure incident and refractive angle 9.4 calculate the refractive index 9.5 Maintain the record of the performance of experiment.	3	4
10	DETERMINE THE ANGLE OF MINIMUM DEVIATION AND REFRACTIVE INDEX OF A GLASS PRISM BY USING 1-D GRAPH 10.1 Collect prism, pin, drawing paper and drawing board 10.2 Apply the laws of minimum deviation 10.3 Measure incident angle and minimum deviation 10.4 Calculate the refractive index of prism 10.5 Maintain the record of the performance of experiment.	2	3
	Total	16	25

Recommended Books:

Sl	Book Name	Writer Name
	REFERENCE BOOKS: 1. Higher Secondary Physics - Second Part 2. A Text Book of Heat and Thermodynamics 3. A Text Book of Optics 4. Higher Secondary Physics - Second Part 5. Higher Secondary Physics -Second Part 6. Thermodynamics	- by Dr. Shahjahan Tapan - by N Subrahmanyam and Brij Lal - by N Subrahmanyam and Brij Lal - by Prof. Golam Hossain Pramanik - by Ishak Nurun Nabi - by K K Ramalingam

Website References:

Sl	Web Link	Remarks
1	www.nctb.gov.bd	

Subject Code	Subject Name	Period per Week		Credit
25931	**Mathematics-III**	**T**	**P**	**C**
		3	**3**	**4**

Rationale	To be able to understand the binomial expansion. To enable to calculate the areas of regular polygons, hexagons, octagon, hydraulic mean a depth (HMD) of a Channel, area occupied by water of circular Culvert. Excavation work. To provide the ability to calculate volume of regular solids like pyramid, frustum of pyramid, Prismoid, wedge and area of curved surfaces. To understand the Laplace transformation
Learning Outcome (Theoretical)	Express Binomial expansion. To able to find the area triangle, quadrilateral, parallelogram, regular polygon & circle volume of solid Shaped. Able to solve problems related to area & volume of various type of shaped.
Learning Outcome (Practical)	**Able to solve problems related to area and volume of various type of shaped.**

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (1 Period)	Final Marks
1	**MENSURATION(Area of Triangle):** 1.1 Find the area of triangle in the form, $A = \dfrac{\sqrt{3}}{4} a^2$, a = length of a side of equilateral triangle. $A = \dfrac{c}{4} \sqrt{4a^2 - c^2}$, where a = length of equal sides, c = third side. $A = \sqrt{s\,(s-a)(s-b)(s-c)}$, where a, b, c = length of the sides of a Triangle and 2s is the perimeter of the triangle. 1.2 Use formula in 1.1 to solve problems.	**4**	**8**
2	**MENSURATION (Areas of quadrilateral, Parallelogram, rhombus & trapezium)** 2.1 Define quadrilateral & Parallelogram. 2.2 Find the areas of quadrilateral when off sets are given. 2.3 Find the areas of a parallelogram. 2.4 Solve problems using above formulae. 2.5 Define rhombus & trapezium. 2.6 Find the areas of rhombus when the diagonals are given. 2.7 Find the areas of trapezium in terms of its parallel sides and the perpendicular distance between them. 2.8 Solve problems related to rhombus & trapezium.	**3**	**6**
3	**MENSURATION(Finding areas of regular polygon):** 3.1 Define a regular polygon. 3.2 Find the area of a regular polygon of n sides, when (i) The length of one side and the radius of inscribed circle are given. (ii) The length of one side and the radius if circumscribed circle are given. 3.3 Find the area of a regular. a) Hexagon, Octagon when length of side is given.	**3**	**6**

Unit	Topics with Contents	Class (1 Period)	Final Marks
	3.4 Solve problems of the following's types: A hexagonal polygon 6 m length of each side has a 20 cm width road surrounded the polygon. Find the area of the road.		
4	**MENSURATION(Areas of circle, sector and segment):** 4.1 Define circle, circumference, sector and segment. 4.2 Find the circumference and area of a circle when its radius is given. 4.3 Find the area of sector and segment of a circle. 4.4 Solve problems related to the above formulae.	3	6
5	**MENSURATION(Area & Volume of a rectangular solid):** 5.1 Define rectangular solid and a cube. 5.2 Find geometrically the volume of a rectangular solid when its length, breadth and height are given. 5.3 Find the volume and diagonal of a cube when side is given. 5.4 Solve problems with the help of 5.2 & 5.3.	3	5
6	**MENSURATION(Surface area & volume of a prism):** 6.1 Define a prism. 6.2 Explain the formulae for areas of curved surfaces of prism. 6.3 Explain the formulae for volume of prism when base and height are given. 6.4 Solve problems related to 6.2, 6.3	3	5
7	**MENSURATION (Area & volume of Parallelepiped and cylinder):** 7.1 Define a parallelepiped and a cylinder. 7.2 Explain the formulae for areas of curved surfaces of parallelepiped and cylinder. 7.3 Explain the formulae for volume of parallelepiped and cylinder when base and height are given. 7.4 Solve problems related to 7.1, 7.2, 7.3	3	5
8	**MENSURATION (Surface area & volume of pyramid):** 8.1 Define pyramid. 8.2 Explain the formula for areas of curved surfaces of pyramid. Explain the formula for volumes of pyramid. 8.3 Solve problems related to 8.2, 8.3	2	4
9	**MENSURATION (Surface area & volume of cone and sphere):** 9.1 Define cone and sphere. 9.2 Explain the formula for areas of curved surfaces of cone and sphere. 9.3 Explain the formula for volumes of cone and sphere. 9.4 Solve problems related to 9.2, 9.3	3	5
10	**GEOMETRY:** **Conic or conic sections:** 1.1 Define Conic, Focus, Directorix and Eccentricity. 1.2 Find the equations of Parabola, Ellipse and Hyperbola. 1.3 Solve problems related to Parabola, Ellipse and Hyperbola.	3	5
11	**CALCULAS (Differential Equations of first order and first degree):** 11.1 Define differential equation, ordinary & partial differential equation.	4	7

Unit	Topics with Contents	Class (1 Period)	Final Marks
	11.2 Define order and degree of differential equation. 11.3 Solve the differential equations of the form: Variable separable.		
12	**CALCULAS (Differential Equations of first order and first degree of homogeneous equations):** 12.1 Define Homogeneous equation & Homogeneous differential equation. 12.2 Define order and degree of differential equation. 12.3 Solve the differential equations of the form: Homogeneous equation.	3	5
13	**CALCULAS (First order and first degree of Exact differential equations):** 13.1 Define Exact differential equation. 13.2 Define integrating factor. 13.3 Solve problems related to Exact differential equations.	3	5
14	**CALCULAS (First order and first degree of Linear differential equations):** 14.1 Define Linear differential equation. 14.2 Define integrating factor, Bernoulli's equation. 14.3 Solve problems related to Linear differential equations.	4	8
15	**CALCULAS (Laplace Transformation):** 15.1 Define Laplace transformation in the form $F(S) = \int_0^\infty f(t)e^{-st}dt$ 15.2 Express the deduction of Laplace transformation of the following functions. (i) Constant (ii) t (iii) t^n (iv) e^{at} (v) sinat (vi) Cosat (vii) $e^{at} t^n$ (viii) e^{at} sinbt (ix) e^{at} cosbt 15.3 Define inverse Laplace transformation 15.4 Solve problem related to 15.1, 15.2, 15.3	4	8
	Total	48	90

N.B. Marks allotted per chapter above may be rearranged if necessary.

Detailed Syllabus (Practical)

SL	Experiment name with procedure	Class (3 Period)	Continuous Marks
01	Find out the area of triangle	1	2
02	Find out the areas of quadrilateral, parallelogram, rhombus & trapezium	2	3
03	Calculate the areas of regular polygon	1	2
04	Calculate the areas of circle, sector and segment	2	3
05	Find out the area & volume of a rectangular solid	1	2
06	Calculate the surface area & volume of a prism	2	3
07	Find out the area & volume of cylinder	1	2
08	Calculate the surface area & volume of pyramid	2	2
09	Find out the surface area & volume of cone and sphere	1	2
10	Solve the problems related to conic sections & differential equation	3	4

SL	Experiment name with procedure	Class (3 Period)	Continuous Marks
01	Find out the area of triangle	1	2
02	Find out the areas of quadrilateral, parallelogram, rhombus & trapezium	2	3
03	Calculate the areas of regular polygon	1	2
04	Calculate the areas of circle, sector and segment	2	3
05	Find out the area & volume of a rectangular solid	1	2
06	Calculate the surface area & volume of a prism	2	3
07	Find out the area & volume of cylinder	1	2
08	Calculate the surface area & volume of pyramid	2	2
09	Find out the surface area & volume of cone and sphere	1	2
10	Solve the problems related to conic sections & differential equation	3	4
	Total	**16**	**25**

N.B. Marks allotted per chapter above may be rearranged if necessary.

Necessary Resources (Tools, equipment's and Machinery):

SL	Item Name	Quantity
01	Scale	1 no
02	Geometric Box	1 no

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1.	Companion to basic Maths	G. V. Kumbhojkar	Phadke Prakashan
2.	Co-ordinate Geometry & Vector Analysis	Rahman & Bhattacharjee	H.L. Bhattacharjee
3.	Higher Mathematics	Md. Nurul Islam	Akkhar Patra Prakashani
4.	Mathematics for Polytechnic Students	S. P Deshpande	Pune Vidyarthi Graha Prakashan
5.	Mathematics for Polytechnic Students (Volume I)	H. K. Das	S.Chand Prakashan
6.	Engg.Maths Vol I & II	Shri Shantinarayan	S.Chand & Comp
7.	Higher Mathematics	Dr. B M Ekramul Haque	Akshar Patra Prakashani
8.	Differential & Integral Calculus	Md. Abu Yousuf	Mamun Brothers

Website References:

SL	Web Link: www.youtube.com	Remarks

Subject Code	Subject Name	Period/Week		Credit
		T	**P**	**C**
26131	**Architectural Design-II**	**3**	**3**	**4**

Rationale	The subject will enable the diploma Architecture students to improve architectural design and drawing skill by enhancing his imagination and accumulation of knowledge. Concept and mind maps that are some of these methods guide students to think and explore. The student to establish an analysis–synthesis–evaluation relationship and improve his intellectual and visual perception abilities. Learners can be expressed of the relationships between a design product (in this case, an architecture), its purpose, the designer's (architect's) conceptualization and the contextual constraints on realizing the purpose. Skilled students can apply their knowledge and experience in Architectural different sector.
Learning Outcome (Theoretical)	**After undergoing the subject, students will be able to** ▪ Describe the approach of architectural design. ▪ Discuss the area planning for building design. ▪ Discuss different type of house. ▪ Explain planning procedure of a residential building. ▪ List the basic area of residential building. ▪ State different floor plan of residential building. ▪ Explain furniture layout of a residential building. ▪ Describe the planning of a kitchen. ▪ Describe the Planning of a toilet/bathroom. ▪ Define laundry & utility room. ▪ Explain elevation of a residential building. ▪ Discuss the section of a residential building. ▪ List the set of presentation drawing.
Learning Outcome (Practical)	**After undergoing the subject, students will be able to** ▪ Perform area planning. ▪ Perform different floor plan of residential building. ▪ Develop furniture layout. ▪ Prepare kitchen fixture layout. ▪ Prepare toilet/bathroom fixture layout. ▪ Prepare the elevation of residential building. ▪ Prepare the section of residential building. ▪ Prepare the presentation drawing set.

Detailed Syllabus (Theory)

Unit	Topics with Contents	Class (3 Period)	Final Marks
1	**APPROACH OF ARCHITECTURAL DESIGN** 1.1. Define Design and planning. 1.2. Mention design principles applied to architectural design concept. 1.3. Explain design in nature. 1.4. Explain general observation of architectural design & planning sequence. 1.5. Discuss planning consideration for residential building. 1.6. Describe the styles of house. 1.7. Explain the design process of a residential building.	2	5
2	**AREA PLANNING FOR BUILDING DESIGN** 2.1. Define building planning. 2.2. Discuss site selection of a building. 2.3. State the planning factors for site selection. 2.4. List the information of site surroundings. 2.5. Explain setback. 2.6. Explain RAJUK setback rules. 2.7. Discuss the measurement method of a site. 2.8. Explain FAR calculation. 2.9. List the requirements & desires of a client for building planning.	4	8
3	**DIFFERENT TYPE OF HOUSES** 3.1. Define house and housing 3.2. List the different type of house. 3.3. Discuss the characteristics of different type of house. 3.4. Discuss structural types of Single Storied houses, Double storied, multi storied, simplex, duplex, triplex, multiplex, Apartment/Flat detached, semi-detached, row house. 3.5. Define split-level house. 3.6. Discuss the characteristics of split-level house. 3.7. Discuss the planning consideration of split-level house. 3.8. Discuss Studio Apartment and its characteristics. 3.9. Discuss the planning consideration of Studio Apartment.	4	10
4	**BASIC AREAS OF RESIDENTIAL BUILDING** 4.1. Identify the basic area of residential building. 4.2. Identify different types of room and space. 4.3. Discuss Master Bed, Child Bed, Guest Bed and Servants/maid bed of sleeping area. 4.4. Discuss living, dining, TV, music, game, gymnasium, library, family living, prayer, sewing of living area. 4.5. Discuss kitchen, kitchen store, pantry, kitchenette, utility, laundry, sun room, box room, powder room, dressing, study, store, terrace, open terrace, veranda, balcony, stair case, elevator, garage, parking, toilet/bathroom, mud room, swimming pool of service area. 4.6. Discuss the standard sizes of different rooms. 4.7. Identify the location of entrance.	4	10
5	**PLANNING PROCEDURE OF A RESIDENTIAL BUILDING**	4	5

	5.1. Define open plan and closed plan.		
	5.2. Discuss quite zone and noise zone of a house.		
	5.3. Explain the bubble diagram of a house.		
	5.4. Describe the traffic pattern.		
	5.5. Describe the preliminary and final sketching.		
	5.6. Explain ventilation and cross ventilation.		
	5.7. Discuss environmental factors affecting different rooms based on sun path, Wind flow.		
	5.8. Discuss building orientation.		
	5.9. Discuss single line drawing and double line drawing procedure from bubble diagram.		
6	**DIFFERENT FLOOR PLAN OF RESIDENTIAL BUILDING** 6.1. Identify different types of floor plan. 6.2. Differentiate between ground floor plan and typical floor plan. 6.3. Describe the design procedures of floor plan of a residential building. 6.4. List the requirements/annotations (room name, north sign, roads) to be used in floor plan. 6.5. Discuss scale used in floor plan.	3	5
7	**FURNITURE LAYOUT OF A RESIDENTIAL BUILDING** 7.1. List the typical furniture group units of residential building. 7.2. List the furniture of a living room. 7.3. Discuss the measurement, space allowance and clearance of furniture for living room. 7.4. List the furniture for a bed room. 7.5. Discuss the measurement, space allowance and clearance of furniture for bed room. 7.6. List the furniture of a dining room. 7.7. Discuss the measurement, space allowance and clearance of furniture of a dining room.	4	7
8	**PLANNING OF A KITCHEN** 8.1. State the planning factors of a kitchen. 8.2. Mention different areas of a Kitchen. 8.3. Define nook. 8.4. Explain the use of different fixtures in Kitchen. 8.5. Explain the use of different appliance in kitchen. 8.6. Discuss working triangle. 8.7. List the different types of kitchen. 8.8. Explain the different cabinet and platform in kitchen. 8.9. Discuss modular kitchen.	4	10
9	**PLANNING OF A TOILET/BATHROOM** 9.1. State toilet/bathroom, toilet/bathroom, latrine and public toilet/bathroom. 9.2. Discuss location of bath room. 9.3. Discuss the standard size of toilet/bathroom. 9.4. Discuss the function of different fixture and fittings used in toilet/bathroom.	4	10

Sl.		Class	Continuous Marks
10	**LAUNDRY & UTILITY ROOMS** 10.1. State planning factors of laundry and utility room. 10.2. Describe the function of laundry and utility room. 10.3. Explain the size of laundry and utility room. 10.4. State the planning factors of laundry and utility room. 10.5. Describe the function of store room. 10.6. Explain the location and size of store room.	2	5
11	**ELEVATION OF A RESIDENTIAL BUILDING** 11.1. State elevation. 11.2. Discuss the measurement of building components used in elevation. 11.3. Discuss the line grades used in elevation drawing (near and far). 11.4. Define the function of emphasis used in elevation. 11.5. Explain necessity of freehand sketches of trees, cars & human figure used in elevation. 11.6. Discuss necessity of rendering used in elevation. 11.7. List the materials used in elevation drawing.	4	5
12	**SECTION OF A RESIDENTIAL BUILDING.** 12.1. State section line in different floor plan. 12.2. State the requirements and information used in section. 12.3. Discuss the different dimensions of different building components used in section. 12.4. Discuss different symbols & textures used in section. 12.5. Describe necessity of working drawing, detail drawing and shop drawing. 12.6. Describe dimensioning and annotation used in section.	6	5
13	**SET OF PRESENTATION DRAWING** 13.1. Discuss the necessity of presentation drawing. 13.2. List the drawing to prepare a set of presentation drawing. 13.3. Discuss the sequence of drawing of presentation drawing. 13.4. Discuss the scale used for different presentation drawing. 13.5. Discuss printing process of a presentation drawing. 13.6. Discuss necessity of legends and cover page of a presentation drawing.	3	5
	Total	48	90

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks
1	**PREPARE PLANNING OF RESIDENTIAL AREA.** 1.1. Draw a bubble diagram showing different areas of a house. 1.2. Show the relationship of three basic area.	1	2

	1.3. Draw a traffic pattern.		
	1.4. Draw single line diagram of a residential building.		
	1.5. Draw Double line diagram of a residential building.		
	1.6. Draw the winter and summer sun angle diagram and showing air movement of the room.		
2	**PREPARE DIFFERENT FLOOR PLAN OF RESIDENTIAL BUILDING** 2.1. Draw setback for selected site with FAR & MGC calculation and information. 2.2. Draw Ground Floor Plan of a two-bedroom house with all information (Scale 1:100 or 1/8"=1'-0"). 2.3. Draw Typical Floor Plan of the two-bedroom house with all information (Scale 1:100 or 1/8"=1'-0"). 2.4. Draw Roof Plan of the two-bedroom house with all information (Scale 1:100 or 1/8"=1'-0").	**2**	**4**
3	**DEVELOP FURNITURE LAYOUT** 3.1. Draw living room furniture. 3.2. Prepare a living room furniture arrangement with space allowance and clearance. 3.3. Prepare a bedroom furniture arrangement with space allowance and clearance. 3.4. Prepare a dining room furniture arrangement with space allowance and clearance.	**3**	**4**
4	**PREPARE KITCHEN FIXTURE LAYOUT** 4.1. Draw different types of kitchen fixture, fittings and appliances. 4.2. Draw working triangle of different type of kitchen. 4.3. Draw different type of kitchen showing space allowance and clearance of fixture. 4.4. Draw an isometric view of a kitchen cabinet showing different dimension.	**2**	**3**
5	**PREPARE TOILET/BATHROOM FIXTURE LAYOUT** 5.1. Draw different types of toilet/bathroom fixture with dimension (Scale 1:25 or 1/2"=1'-0"). 5.2. Draw the plan of a toilet/bathroom showing two fixtures and fittings (Scale 1:25 or 1/2"=1'-0") 5.3. Draw the sectional elevation of a toilet/bathroom showing fixture and fittings with dimension (Scale 1:25 or 1/2"=1'-0")	**2**	**3**
6	**PREPARE THE ELEVATION OF RESIDENTIAL BUILDING** 6.1. Draw a front elevation of 4-stoired residential building (Scale 1:100 or 1/8"=1'-0") 6.2. Draw a back elevation of 4-stoired residential building (Scale 1:100 or 1/8"=1'-0"). 6.3. Draw a right elevation of 4-stoired residential building	**2**	**3**

	(Scale 1:100 or 1/8"=1'-0").		
	6.4. Draw a left elevation of 4-stoired residential building. (Scale 1:100 or 1/8"=1'-0").		
	6.5. Apply graphic symbol (human, tree, car) in the elevation.		
	6.6. Apply rendering in elevation.		
7	**PREPARE THE SECTION OF RESIDENTIAL BUILDING**	**2**	**4**
	7.1. Draw a longitudinal section of 4-stoired residential building. (Scale 1:100 or 1/8"=1'-0")		
	7.2. Draw a cross- section of 4-stoired residential building. (Scale 1:100 or 1/8"=1'-0")		
	7.3. Apply symbols and textures in section.		
8	**PREPARE THE PRESENTATION DRAWING SET.**	**2**	**2**
	8.1. Sketch a line plan of a multistoried two bed room residential building in a given area.		
	8.2. Draw the plan of the building in 1:100 or 1/8"=1'-0" scale.		
	8.3. Draw the 4-side elevations with rendering of the building in 1:100 or 1/8"=1'-0" scale.		
	8.4. Draw section of the building in 1:100 or 1/8"=1'-0" scale.		
	8.5. Draw roof plan of the building in 1:100 or 1/8"=1'-0" scale.		
	8.6. Draw the lay-out plan of the building in 1:200 or 1/16"=1'-0" scale.		
	Total	**16**	**25**

Necessary Resources (Tools, equipment's and Machinery):

Sl	Item Name	Quantity
01	Drawing sheet (Size A2, A3)	10 reams (500 Sheets per Reams)
02	Tracing paper (Size 60/65 gsm, 20meter long roll)	12 Nos
03	Wooden Pencil (HB, B, 2B, 4B, 6B, 8B)	16 Dozens
04	Color pencil	12 packets
05	Charcoal	16 Dozens
06	Eraser (soft)	4 Dozens
07	Paper Tape (3/4")	4 Dozens
08	Drafting pen (0.1, 0.2, 0.3, 0.4, 0.5, 1.0, 1.2)	20 set
09	Triangular scale	48 Nos.
10	Set square	48 Nos.
11	Template (circle, ellipse, furniture)	48 Nos.
12	Drafting table/board with parallel bar	48 Nos
13	Drawing sheet (Size A2, A3)	10 reams (500 Sheets per Reams)
14	Mechanical lid pencil (0.5mm)	48 nos

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
1.	Architecture Drafting and Design	Donald E. Hepler Paul I. Wallach	
2.	আর্কিটেকচারাল ড্রাফটিং-১	মোঃ রফিকুল ইসলাম	BTEB
3.	Time saver standards for building types	Joseph de Chiara, John Han Cock Callender	
4.	Time saver standards for interior design and space planning	joseph de Chiara Julius, Panero Martin Zelnik	
5.	Architectural drafting 2	Md Manjurul Alam	BTEB
6.	ARCHITECTURE Form, Space and Order	Francis D.K.Ching	
7.	Basics Architectural Design	Bert Bielefeld	
8.	The Language of Architecture	Andrea Simitch, Val Warke	
9.	Rethinking Basic Design in Architectural Education	Mine Ozkar	
10.	Basic Design Principals of Architecture	Parker, Leonard	
11.	Design Drawing	Francis D.K. Ching	
12.	Drafting & Design for Architecture & Construction	HEPLER, Dana j Wallach, Paul Ross, Donald	
13.	রাজউক ইমারত নির্মাণ বিধিমালা-২০০৮		

Website References:

Sl	Web Link	Remarks
01	https://www.roomsketcher.com/blog/furniture-layout/	
02	https://www.pdfdrive.com/time-saver-standards-for-interior-design-planning-e158776948.html	
03	https://www.pdfdrive.com/design-drawing-d189362125.html	
04	https://pdfcoffee.com/how-to-develop-architectural-concepts-1pdf-pdf-free.html	

Subject Code	Subject Name	Period Per Week		Credit
26132	**Architectural Graphics**	T	P	C
		2	3	3

Rationale	The subject will enable the diploma Architecture students to develop their creativity as they investigate and solve design challenges. Studying Architectural graphics can help the student develop strong problem-solving and critical-thinking skills, as well as give them the opportunity to explore their creativity. It's a creative field that allows express students' ideas and vision through a medium. During the problem-solving process, students will work with their peers to refine their ideas from an abstract concept to a final, detailed, drafted design. Abstraction, and spatial reasoning are fundamental to this process; graphics provides multiple and varied opportunities for students to develop these high level cognitive and creative skills in architectural contexts, to express ideas and communicate visually. The ever-evolving landscape of technology, there's always something new to learn in Architectural graphics. Student can tell stories, evoke emotions, and create experiences through their designs.This requires thinking outside the box, being resourceful, and finding innovative solutions – all valuable skills that will serve them well in any career.
Learning Outcome (Theoretical)	After Completing the subject, students will be able to: ▪ Explain principle & techniques of Free Hand Sketching. ▪ Explain view. ▪ Describe necessity of color in Architectural Design. ▪ Explain rendering and presentation. ▪ Explain the Principal of Surface Development. ▪ Describe general feature of perspective drawing. ▪ Explain the principle of one point perspective. ▪ Explain the principle of Two-point perspective. ▪ Describe the Shade & Shadow (Sciography) on Views.
Learning Outcome (Practical)	After undergoing the subject, students will be able to: ▪ Perform Free Hand Sketching. ▪ Perform card, cover, poster report design. ▪ Prepare Different view of object. ▪ Perform Render. ▪ Prepare presentation drawing. ▪ Perform colour. ▪ Prepare Surface Development. ▪ Prepare Perspective view. ▪ Perform Shade and shadow (Sciography)

Detailed Syllabus (Theory)

Unit	Topics with contents	Class (1 Period)	Final Marks
1	**Free Hand Sketching** 1.1 Define Free Hand Sketch. 1.2 Describe the necessity of free Hand Sketching. 1.3 Mention the materials of free hand Sketch. 1.4 Describe the Principle & Techniques of Free Hand Sketch. 1.5 Explain scaling techniques of Free Hand Sketching. 1.6 Describe the uses of different types of pencil in sketching.	4	5
2	**View** 2.1. Define view. 2.2. Explain the necessity of view. 2.3. List the different types of view. 2.4. Describe the technique of isometric and oblique drawing. 2.5. Distinguish between 1st and 3rd angle method of orthographic view.	4	5
3	**Colour in Architectural Design** 3.1. Define color. 3.2. Discuss the necessity of color use in Architectural Design. 3.3. List the different types of color. 3.4. Describe value, weight and warmth of color. 3.5. State pigment, tone and shapes in color. 3.6. Describe the language of color.	4	7
4	**Rendering and Presentation** 4.1. Define rendering. 4.2. Describe necessity of rendering. 4.3. Describe the importance of rendering. 4.4. State the technique of rendering. 4.5. State the general approach for rendering. 4.6. State the materials required for rendering.	4	8
5	**Surface Development** 5.1. Define surface development. 5.2. Discuss necessity and importance of surface development. 5.3. Explain the uses of surface development in Architecture. 5.4. State the techniques of surface development.	4	10
6	**Perspective drawing** 6.1. Define perspective drawing. 6.2. Discuss necessity and importance of perspective drawing. 6.3. List the types of perspective drawing. 6.4. Mention the principle of perspective drawing. 6.5. Describe the methods of perspective drawing.	1	8
7	**One point perspective** 7.1 State one point or parallel perspective view. 7.2 Discuss the necessity and importance of one point or parallel perspective. 7.3 Describe the methods of one point or parallel perspective. 7.4 Mention the principle of one point or parallel perspective drawing.	3	5

8	**Two-point perspective** 8.1 Discuss the necessity and importance of Two-point perspective or angular perspective. 8.2 Describe the methods of Two-point perspective. 8.3 Define distortion in perspective. 8.4 Describe the distortion from station point.	4	5
9	**Shade & Shadow (Sciography) on Views** 9.1 Define Shade & Shadow. 9.2 Describe the conventional direction of light. 9.3 State the principal of shadow casting. 9.4 Describe the Shadow with the light rays parallel to picture plane. 9.5 Describe the shadow of circles parallel to the picture planes. 9.6 Describe the shadow of slanting and oblique lines.	4	7
	Total	**32**	**60**

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks 25
1	**Perform Free Hand Sketches.** 1.1 Draw horizontal, vertical line, inclined and curve line. 1.2 Draw contour, expressive, regulating and drawing lines. 1.3 Draw free hand circular figure. 1.4 Draw human figure in different working position. 1.5 Draw human figure with anthropometric Data. 1.6 Sketch three dimensional objects like still life and Abstract forms. 1.7 Draw different types of Trees and Bushes with height.	2	3
2	**Perform card, cover, poster and report design.** 2.1 Design invitation card for different occasion. 2.2 Design Book cover. 2.3 Design poster for different occasion. 2.4 Make a report for presentation.	1	2
3	**Prepare different view of object.** 3.1 Draw the isometric and oblique view of simple object. 3.2 Draw the orthographic view of simple objects in 1st angle method. 3.3 Draw the orthographic view of simple objects in 3rd angle method. 3.4 Draw the Object from given views in 3rd angle method.	2	2
4	**Perform Render** 4.1 Draw two-dimensional object and make rendering with pencil. 4.2 Draw three-dimensional object and make rendering with pencil. 4.3 Prepare render of human figure indifferent positions. 4.4 Render a given View with pencil, pen and colour.	1	2
5	**Prepare presentation drawing.** 5.1 Make a presentation of a given ground floor plan by using rendering media. 5.2 Make a presentation of a given typical floor plan by using rendering media.	1	2

	5.3 Make a presentation of a landscape plan by using rendering media. 5.4 Make a presentation of a given elevation by using rendering media.		
6	**Perform colour.** 6.1 Prepare primary, colours of different grades. 6.2 Prepare secondary colours of different grades. 6.3 Prepare tertiary colours of different grades. 6.4 Prepare a colour wheel and colour charts. 6.5 Prepare a colour scheme of a building.	**1**	3
7	**Perform Surface Development.** 7.1 Make surface development of cube and rectangular object. 7.2 Make surface development of a cylinder & a cone. 7.3 Make surface development of a pyramid having base & height. 7.4 Make surface development of prism/ pyramid cutting on 30" angle. 7.5 Make surface development of different complex object.	**2**	**3**
8	**Prepare One Point/ parallel Perspective view.** 8.1 Draw the different step of One point perspective. 8.2 Draw one point perspectiveview of an object by changing vanishing point. 8.3 Draw one point perspective view of an object by changing Station point. 8.4 Draw one point perspective view of a kitchen.	**2**	3
9	**Prepare Two Point Perspective view.** 9.1 Draw the different step of Two-point perspective. 9.2 Draw two-point perspective view of an object by changing vanishing point. 9.3 Draw two-point perspective view of an object by changing Station point. 9.4 Draw two-point perspective view of a living/bed room.	**2**	3
10	**Perform Shade and shadow (Sciography)** 10.1 Draw Shade shadow of a given orthographic view. 10.2 Draw Shade shadow of a given perspective view. 10.3 Draw shade and shadow of a step's isometric view 10.4 Draw shade and shadow of a step's perspective view.	**2**	2
	Total	**16**	**25**

Necessary Resources (Tools, equipment's and Machinery):

Sl	Item Name	Quantity
01	Drawing sheet (Size A2)	6 Reams
02	Drafting Table/Board with Parallel bar	48 Nos
03	Set-Square	48 Set
04	Triangular Scale	48 Nos
05	Color Pencil	12 Dozens
06	Wooden Pencil (HB, B, 2B)	15 Dozens (5 dozens per grade)
07	Mechanical Sharpener	6 Nos
08	Eraser (soft)	4 Dozens
09	Paper Tape (3/4")	4 Dozens
10	Water color	12 Dozens

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	Prathomic Engineering Drawing	Hemonta Kumar Bhattacharia.	
02	Rendering with pen and ink	Robert W. Gill.	
03	Architectural Rendering	Albert. O. Halse.	
04	Order in space	Keth Critchlow.	
05	Professional Architectural Graphics	C.LeslieMartin.	

Website References:

Sl	Web Link	Remarks
01	https://www.joshuanava.biz/freehand/	
02	http://www.artgraphica.net/free-art-lessons/freehand-drawing/freehand-drawing.html	
03	https://stoplearn.com/definition-or-meaning-of-freehand-sketching/	
04	https://civilseek.com/free-hand-sketching/	
05	https://www.artistsnetwork.com/art-mediums/learn-to-draw-perspective/	
06	http://www.drawingcoach.com/2-point-perspective-drawing.html	
07	https://www.dreamstime.com/blog/tip-week-perspective-drawing-53194	
08	https://www.youtube.com/hashtag/surface_development	
09	https://www.researchgate.net/figure/The-illustration-of-an-example-of-the-Surface-Development-test_fig4_259512945	
10	https://slideplayer.com/slide/12320663/	
11	https://www.assignmenthelp.net/sciography-of-geometrical	
12	https://happho.com/sciography-play-shadows-2/	

Subject Code	Subject Name	Period Per Week		Credit
26133	**WORKING DRAWING - I**	T	P	C
		1	3	2

Rationale	Students of Diploma in Architecture must acquire basic knowledge about Architectural design and drawing. They also required basic knowledge of other related fields for self-development to updated the latest technology. After successfully completing these course students will be able to identify the function of working drawing is convert to design data into construction information. They clearly communicate the information's to building industry, product manufacturers, suppliers and fabricators. The subject provides and transmits a complete, faithful and accurate graphic depiction of the project design concept, to scale. They will be able to verify Fundamental of this entire process is a working knowledge of construction materials (production, fabrication, testing, availability, cost, etc.). Also, the subject covers only such topics which will enable the diploma Architects to identify and classify the different types of architectural and construction materials and their uses. This course has been given more emphasis on practical aspect rather than theory in teaching learning approach.
Learning Outcome (Theoretical)	After Completing the subject, students will be able to - Describe Architectural Working Drawing. - State Working Drawing Set. - Explain Detail Drawing. - Describe Water Reservoir. - Explain Septic Tank.
Learning Outcome (Practical)	After undergoing the subject, students will be able to - Prepare the Ground floor plan of two bed room house with a given plan. - Prepare the Typical floor plan of two bed room house with a given plan - Prepare the elevation of two bed room house with a given plan - Prepare the section of two bed room house with a given plan - Develop the working drawings (plan) of a Kitchen. - Prepare the detail drawings of a Kitchen. - Construct the detail drawings of a toilet. - Prepare the detail drawings of water reservoir. - Prepare the detail drawings of septic tank. - Prepare the detail drawings of drainage system.

Detailed Syllabus (Theory)

Unit	Topics with contents	Class (1 Period)	Final Marks
1	**CONCEPT OF ARCHITECTURAL WORKING DRAWING** 1.1 Define working drawing. 1.2 Mention the purpose of architectural working drawing. 1.3 Describe the procedure of architectural working drawing. 1.4 Outline the importance of dimensioning in architectural drawing. 1.5 Describe different lines, ticks and annotation of dimensioning. 1.6 Explain the types of dimensioning. 1.7 Describe the dimensioning procedure.	4	10
2	**WORKING DRAWING SET OF RESIDENTIAL BUILDING** 2.1 List the different drawings of a working drawing set. 2.2 Mention the scale for floor plan of working drawing. 2.3 Mention the scale & rules for elevation of working drawing. 2.4 Mention the scale & rules for section of working drawing.	3	5
3	**DETAIL DRAWING** 3.1 Define detail drawing. 3.2 Mention the scale of detail drawing. 3.3 Explain the importance of detail drawing. 3.4 State the necessity of kitchen detail. 3.5 Explain the necessity of toilet detail.	3	5
4	**WATER RESERVOIR** 4.1 Define water reservoir. 4.2 Explain the importance of underground and overhead water reservoir. 4.3 Calculate the capacity of underground and overhead water reservoir in relation to the number of users. 4.4 List the materials used the water reservoir construction. 4.5 Describe the advantage & disadvantage of brick and RCC reservoir.	3	5
5	**SEPTIC TANK** 5.1 State septic tank. 5.2 Mention the function of septic tank. 5.3 Describe the design consideration of septic tank. 5.4 Identify the manhole and inspection pit. 5.5 Mention the size of soak well. 5.6 Explain the function of soak well.	3	5
	Total	16	30

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks
1	**PREPARE THE GROUND FLOOR PLAN OF TWO BED ROOM HOUSE WITH A GIVEN PLAN** 1.1 Draw the ground floor plan in 1:50 (1/4" = 1'-0") scale of two bed room house. 1.2 Show the inside detail dimensions in the drawn plan based on 1.1. 1.3 Show the outside detail dimensions in the drawn plan of 1.1. 1.4 Show the symbols and texture (door, column and details, north sign, annotation) in the drawn plan of 1.1. 1.5 Draw the title box for the drawing sheet. 1.6 Maintain the record of performed task.	1	3
2	**PREPARE THE TYPICAL FLOOR PLAN OF TWO BED ROOM HOUSE WITH A GIVEN PLAN** 2.1 Draw the typical floor plan in 1:50 (1/4" = 1'-0") scale of two bed room house. 2.2 Show the inside detail dimensions in the drawn plan 1.1. 2.3 Show the outside detail dimensions in the drawn plan 1.1. 2.4 Show the symbols and texture (door, column and details, north sign, annotation) in the drawn plan 1.1. 2.5 Draw the title box for the drawing sheet.	1	3
3	**PREPARE THE ELEVATION OF TWO BED ROOM HOUSE WITH A GIVEN PLAN** 3.1 Draw front elevation in 1:50 (1/4" = 1' -0") scale of the drawn plan 1.1 showing materials/symbol and texture. 3.2 Draw back elevation in 1:50 (1/4" = 1' -0") scale of the drawn plan 1.1 showing materials/symbol and texture. 3.3 Draw side elevation (minimum one) in 1:50 (1/4" = 1' -0") scale of the drawn plan 1.1 showing materials/symbol and texture. 3.4 Draw the title box for the drawing sheet.	1	3
4	**PREPARE THE SECTION OF TWO BED ROOM HOUSE WITH A GIVEN PLAN** 4.1 Draw long section in 1:50 (1/4" = 1'-0") scale of the drawn plan of 1.1 showing dimensions and materials symbol. 4.2 Draw cross section in 1:50 (1/4v = 1'-0") scale of the drawn plan of 1.1 showing dimensions and materials symbol. 4.3 Draw part section in 1:50 (1/4" = 1'-0") scale through verandah, drop wall showing dimensions and materials symbol. 4.4 Draw part section through sunshade in 1:50 (1/4" = 1'-0") scale, sunshade showing dimensions and materials symbol. 4.5 Draw the title box for the drawing sheet.	1	3
5	**DEVELOP THE WORKING DRAWINGS (PLAN) OF A KITCHEN** 5.1 Draw the kitchen plan from given two bed room house of 1.1 in 1:25 (1/2" = 1' -0") scale. 5.2 Show the fixture and appliance layout in 1:25 (1/2" = 1' -0") scale of the drawn kitchen (2.1).	1	2

	5.3 Show the detail dimensions in 1:25 (1/2" = 1' -0") scale of the drawn kitchen 2.1.		
	5.4 Show the working triangle of the drawn kitchen.		
6	**PREPARE THE DETAIL DRAWINGS OF A KITCHEN** 6.1 Draw a detail section of the kitchen (2.1) through sink in 1:25 (1/2" = 1' -0") scale. 6.2 Draw a detail section of the kitchen (2.1) through burner/range in 1:25 (1/2" = 1' -0") scale. 6.3 Draw the sections of floor /wall cabinet in 1:25 (1/2" = 1' -0") scale. 6.4 Show all the dimensions & symbols in the sections.	1	2
7	**CONSTRUCT THE DETAIL DRAWINGS OF A TOILET** 7.1 Draw a master bath/toilet plan showing cabinet basin, bathtub, W.C etc. in 1:10 (1" = 1' -0") scale with all dimensions. 7.2 Draw two detail sections of the drawn master bath in 1:10 (1" = 1' -0") scale showing maximum fixtures with all dimensions. 7.3 Draw a toilet/bath section in 1:10 (1"= 1' -0") scale showing fixtures (Basin, Shower tray, Long Pan /Indian Pan etc.) with all dimensions. 7.4 Draw two detail sections of the drawn toilet in 1:10 (1"= 1' -0") scale showing maximum fixtures with all dimensions.	**1**	3
8	**PREPARE THE DETAIL DRAWINGS OF WATER RESERVOIR** 8.1 Draw the plan of a 10000 liters capacity underground water reservoir in 1:25 (1/2" = 1' -0") scale. 8.2 Draw the long section of the drawn underground water reservoir in 1:25 (1/2" = 1' -0") scale. 8.3 Draw the plan of overhead water reservoir in 1:25 (1/2" = 1' -0") scale. 8.4 Draw the section of the drawn overhead water reservoir in 1:25 (1/2" = 1' -0") scale. 8.5 Provide all dimension & annotation.	**1**	2
9	**PREPARE THE DETAIL DRAWINGS OF SEPTIC TANK (BRICK/RCC)** 9.1 Draw the plan of a 50 users septic tank in 1:25 (1/2" = 1' -0") scale. 9.2 Draw the section of drawn septic tank in 1:25 (1/2" = 1' -0") scale. 9.3 Draw the reinforcement detail septic tank slab in 1:25 (1/2" = 1' -0") scale. 9.4 Draw the detail of an inspection pit in 1:25 (1/2" = 1' -0") scale. 9.5 Provide all dimension & annotation.	**1**	2
10	**PREPARE THE DETAIL DRAWINGS OF DRAINAGE SYSTEM** 10.1 Draw the roof plan of the building of 1.1 with site. 10.2 Draw the roof slope in the roof plan. 10.3 Draw the drainage system of the plot for the building. 10.4 Identify the position of septic tank & soak well in layout plan. 10.5 Determine all dimension & annotation.	**1**	2
	Total	**16**	**25**

Necessary Resources (Tools, Equipment's and Machinery):

Sl	Item Name	Quantity
01	Drawing sheet (size A2, A3)	10 reams
02	Tracing paper (size 60/65gms, 20m long roll)	10 nos
03	Wooden Pencil (HB, B, 2B, 4B)	12 Dozens
04	Eraser (Soft)	4 Dozens
05	Paper Tape	4 Dozens
06	Triangular Scale (inch/meter)	48 nos
07	Set Square	48 set
08	Template (circle, ellipse, furniture)	48 nos
09	Drafting Table/Board with parallel bar	48 nos
10	Mechanical lead pencil	48 nos
11	Drafting pen (0.1, 0.2, 0.3, 0.4, 0.5, 1.0, 1.2)	48 nos
12	Colour pencil	12 Dozens

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	Timesaver standard for interior design and planning	Joseph De Chiara	
02	The Working Drawing: The Architect's Tool	Mario Carpo	
03	Working Drawing Manual	Fred Stitt	
04	Architectural Working Drawings	Ralph W. Liebing	
05	Working Drawings Handbook	Keith Styles, Andrew Bichard	

Website References:

Sl	Web Link	Remarks
01	https://researchguides.library.syr.edu/c.php?g=978052&p=7074502	
02	https://www.youtube.com/watch?v=Jn8Zz4ANGhM	
03	https://www.youtube.com/watch?v=-GUWmJWO41Y	
04	https://www.youtube.com/watch?v=BYUa0NgJzEc	
05	https://www.designingbuildings.co.uk › wiki › Working drawing	

Subject Code	Subject Name	Period Per Week		Credit
26134	**Climatology**	T	P	C
		2	**0**	**2**

Rationale	Climatology in architecture is a study related to the climate and the built environment. Buildings do not exist in isolation; they exist in a specific geographic environment. As a specific discipline, architecture strives to ensure the harmony and unity of architecture and the surrounding geographic environment. A climate rationale provides the specific underpinning for evidence-based climate descision making. It ensures that the linkages between climate impacts, climate action and societal benefits is fully grounded in the best available climate data and science.Climate plays a very important role in architecture and building forms. The composition of climatic data and the requirements for thermal comfort provides the basis for the selection of building form and building elements appropriate for the climate so as to create necessary internal comfort. One of the main factors contributing to climate change is architecture. The sector is accountable for about 50% of the greenhouse emissions in the country due to construction as well as the energy needed to keep buildings operational.
Learning Outcome (Theoretical)	After Completing the subject, students will be able to: - Describe Weather and Climate. - Describe the climate effects on human shelter. - Describe the biological approach in building design. - Memorize the aspects of solar energy and wind direction in building design. - Describe the aspect of topography and contour. - Describe the effects of prevailing winds on building. - Describe the basic concept of house planning. - Describe the effect of climate on building design. - Describe the relation between environment and building forms. - Describe the thermal effect of materials. - Describe the treatment for climate effect on building.

Detailed Syllabus (Theory)

Unit	Topics with contents	Class (1 Period)	Final Marks
1	**WEATHER AND CLIMATE** 1.1 Define Weather. 1.2 Define Climate. 1.3 State the elements of Weather and Climate. 1.4 Discuss Macro and Micro Climate. 1.5 Explain the necessity of climatology in architecture.	2	3
2	**CLIMATE EFFECTS ON HUMAN SHELTER** 2.1 Discuss the regional character of climate. 2.2 Explain climate data of Bangladesh. 2.3 Mention the general effects of climate on the choice of human shelter. 2.4 Mention the adjustment of life in different climate condition on earth.	2	3
3	**BIOLOGICAL APPROACH IN BUILDING DESIGN** 3.1 Describe the effics of climate on man . 3.2 State comfort level in reluctant climate. 3.3 Explain region-wise climatic evaluation. 3.4 Mention the climate condition in warm,winter and rainy seasons. 3.5 Explain thermal comfort, solar, wind and humidity analysis.	3	5
4	**SOLAR ENERGY AND WIND DIRECTION IN BUILDING DESIGN** 4.1 List the principle of solar control in building. 4.2 Discuss the sitting in relation to general design. 4.3 Mention the function of roof, walls and opening, grooved treatments, Louver ,ventilators,skylight, rain and sunshading devices. 4.4 Explain the shading effect of trees and vegetations. 4.5 Discuss the effect of green Building. 4.6 Explain the effect of water body near building.	4	10
5	**TOPOGRAPHY AND CONTOUR** 5.1 Explain the effect of topography. 5.2 Select the essential points of plot plan. 5.3 Mention the method of deciding a plot plan from given data. 5.4 Define contour. 5.5 State the necessity of contour of a site.	3	5
6	**PREVAILING WINDS ON BUILDING** 6.1 Define prevailing winds and wind rose. 6.2 Mention the time and direction of prevailing winds. 6.3 Mention the essential points of cross ventilation. 6.4 Discuss the cross ventilation in different room. 6.5 Describe the flow diagram of air inside rooms. 6.6 Describe the stack effect on building.	4	5
7	**HOUSE PLANNING** 7.1 Explain the effect of sunlight in building. 7.2 Define altitude and azimuth. 7.3 Discuss the positioning of house in relation with sun, altitude and azimuth 7.4 Mention sun-path shadow angle. 7.5 State building orientation according to sun path diagram. 7.6 Describe active and passive solar system. 7.7 Discuss Daylight factor.	3	8
8	**CLIMATE ON BUILDING DESIGN** 8.1 Differentiate between ancient & modern building.	4	6

	8.2 Explain the orientation of windows. 8.3 Explain the orientation courtyards. 8.4 Discuss the artificial control of climate. 8.5 Define external force. 8.6 Discuss wind load, cyclone, tornado, flood and snow effect on building.			
9	**ENVIRONMENT AND BUILDING FORMS** 9.1 Mention the morphology in nature. 9.2 State the impact of external thermal effect on building. 9.3 Mention the criteria of optimum shape of building. 9.4 Mention the basic forms of building in different regions. 9.5 Explain the moisture effect on building.	3	5
10	**THERMAL EFFECT** AND **TREATMENT OF MATERIALS** 10.1 Define Cavity wall 10.2 Describe the uses of cavity wall in different condition. 10.3 Describe the application of opaque materials and environmentally friend for indoor temperature balance. 10.4 Explain the uses of color for thermal and moisture effect on building 10.5 Describe the position of core for thermal effect. 10.6 Discuss the building maintenance process for thermal & moisture Effect on building.	4	10
	Total	**32**	**60**

Necessary Resources (Tools, equipment's and Machinery):

Sl	Item Name	Quantity
01	Drawing sheet (size A3, A4)	4 reams (500 sheets per reams)
02	Tracing paper (size 60/65gms, 20m long roll)	4 nos
03	Wooden Pencil (HB, B, 2B, 4B)	12 Dozens
04	Eraser (Soft)	4 Dozens
05	Colour pencil	20 Dozens
06	Highlight marker (different color)	20 Dozens
07	Sketch book	Per person
08	Camera (DSLR)	10 nos
09	Laptop (as per requirements)	48 nos
10	Pen drive (16GB, 32GB)	48 nos
11	Drafting Table/Board with parallel bar	48 nos
12	Mechanical lead pencil	48 nos
13	Digital humidity testing device	20 nos.
14	Digital thermometer	20 nos.
15	Digital barometer	20 nos.

Recommended Books:

Sl	Book Name	Writer Name	Publisher Name & Edition
01	The Planting Design Handbook	Nick Robinson	
02	The Architectural Drawing course	Mo Zell	
03	Form & Fabric in Landscape Architecture	Catherine Dee	
04	Manual of Tropical Housing and Building	OHo Konigs berger	

05	Time saver standards for building types	joseph de Chiara, john han cock callender	
06	Time saver standards for interior design and space planning	joseph de Chiara julius, panero martin zelnik	
07	Climate and Architecture	Jeffrey Ellis Aronin	
08	Man, climate annd architecture	Baruch Givoni	
09	Acoustics and Noise Control	B.J. Smith R.J. Peters S.Owen	
10	Environmental Design	Md. Rafiqul Islam Mir	
11	Environmental science in Buildings Second Edition	R. McMullan	
12	An Architectural Record Book	Bobert E. Fischer	
13	Landscape Planning for Energy Conservation	Robinette	

Website References:

SI	Web Link	Remarks
01	https://www.slideshare.net/kumarsadananda/climatology-presentation-1	
02	https://www.academia.edu/40806010/Climatology_and_Architecture	
03	https://www.youtube.com/watch?v=AU2wTudKmX8	
04	https://www.youtube.com/watch?v=JOcSEly9mH8	
05	https://www.google.com/search?q=climatology+in+architecture+video+lecture&sxsrf=ALiCzsY6fqn0LgtIuW3oUHqAZvwzkexmHQ%3A1669716002103&ei=ItiFY7_pBb_-z7sPzqWl0As&oq=climatology+in+	
06	https://www.google.com/search?q=climatology+in+architecture+video+lecture&sxsrf=ALiCzsY6fqn0LgtIuW3oUHqAZvwzkexmHQ%3A1669716002103&ei=ItiFY7_pBb_-z7sPzqWl0As&oq=climatology+in+	
07	https://www.google.com/search?q=climatology+in+architecture+video+&sxsrf=ALiCzsZ5pKm8bflyFo6xGnvUTRyrolmPeA%3A1669716115289&ei=k9iFY8CZEaOgmgfdjpCoDw&ved=0ahUKEwiAr7WfkdP7A	
08	https://www.google.com/search?q=climatology+in+architecture+video+&sxsrf=ALiCzsZ5pKm8bflyFo6xGnvUTRyrolmPeA%3A1669716115289&ei=k9iFY8CZEaOgmgfdjpCoDw&ved=0ahUKEwiAr7WfkdP7	

Subject Code	Subject Name	Period Per Week			Credit
26135	**COMPUTER AIDED DRAWING-1**	**T**	**P**		**C**
		0	**6**		**2**

Rationale	Diploma in Architecture students achieve basic knowledge about building design and drafting. Also required basic knowledge of Computer Aided Drawing-1. Auto CAD has replaced manual drafting. It helps students creating designs in either 2D or 3D so that they can visualize the construction. Auto CAD enables the development, modification and optimization of the design process. For self-development must be updated about the CAD software and latest technology. After successfully completing this course, students will be able to identify the importance of Auto CAD software. Auto CAD is an important industrial art extensively used in many applications, including automotive, shipbuilding, textile and aerospace industries, industrial and architectural design (building information modeling), prosthetics and many modes. Also, the subject covers only such topics which will enable the diploma architects to identify the purpose of AutoCAD is to optimize and streamline the designer's workflow, increase productivity, improve the quality and level of detail in the design, improve documentation, communications and often contribute toward a manufacturing design database. Have been given more emphasis on practical aspect rather than theory in teaching learning approach.
Learning Outcome (Practical)	After undergoing the subject, students will be able to: - Install Auto CAD software. - Setup Auto CAD windows. - Identify various types of menu bar, command windows and toolbar. - Construct geometrical shape and object. - Edit and modify objects. - Setup dimension and text in drawing. - Prepare set of drawing using various command. - Perform to set-up the layer. - Perform to prepare a presentation sheet using layout. - Perform design plotting using plotter.

Detailed Syllabus (Practical)

Sl.	Experiment name with procedure	Class (3 Period)	Continuous Marks
1	**SETUP THE DRAWING ENVIRONMENTS** 1.1 Perform Installation of CAD Software. 1.2 Start CAD software and identify the different areas of CAD graphic screen. 1.3 Use menu bar, command window and toolbar. 1.4 Setup the units using units command. 1.5 Setup the drawing limits using limits command. 1.6 Save the drawing & exit from the file. 1.7 Maintain the record of Performed Task.	1	2
2	**CONSTRUCT THE GEOMETRICAL SHAPE AND OBJECT** 2.1 Perform the Cartesian and polar co-ordinate system. 2.2 Use the command to draw straight line. 2.3 Draw single and multiple points using point commands. 2.4 Draw angular line using line commands. 2.5 Perform snap command. 2.6. Erase the object using erase command. 2.7 Maintain the record of Performed Task.	1	2
3	**CONSTRUCT THE RECTANGLE, CIRCLE, POLYGON, POLY LINE AND EXPLORE** 3.1 Draw rectangle using rectangle commands. 3.2 Draw circles using different method of circle commands. 3.3 Draw polygon using different method of polygon commands. 3.4 Draw poly line using poly line commands. 3.5 Draw different thickness of poly line using poly line commands. 3.6 Perform explore command to explore polyline. 3.7 Maintain the record of Performed Task.	1	2
4	**CONSTRUCT THE ELLIPSE, ARC AND DONUT** 4.1 Draw ellipse using center and axis method commands. 4.2 Draw arc using different commands of arc. 4.3 Draw poly line and arc together using arc command. 4.4 Draw donut using donut commands. 4.7 Maintain the record of Performed Task.	1	2
5	**CONSTRUCT THE OFFSET AND ARRAY** 5.1 Perform offset command. 5.2 Draw multiple line by using offset column. 5.3 Perform array command. 5.4 Perform rectangular array command. 5.5 Perform polar array command. 5.7 Maintain the record of Performed Task.	2	2
6	**CONSTRUCT RAY, CHAMFER, FILLET, LENGTHEN, STRETCH AND SCALE**	1	2

	6.1 Draw ray in a certain angular distance using ray command.		
	6.2 Perform chamfer & fillet in a given rectangle.		
	6.3 Perform different lengthen command in a given line.		
	6.4 Perform stretch command to extend line and rectangle.		
	6.5 Perform scale command to enlarge or reduce an object in a ratio.		
	6.6 Perform join command.		
	6.7 Maintain the record of Performed Task.		
7	**EDIT AND MODIFY THE OBJECT** 7.1 Select and delete the object in various methods. 7.2 Duplicate the object using copy. 7.3 Perform trim command in a given drawing. 7.4 Perform the extend command in a given drawing. 7.5 Break the line using break command. 7.6 Maintain the record of Performed Task.	**1**	**2**
8	**CONSTRUCT THE MIRROR AND ROTATE** 8.1 Perform mirror command to create duplicate reverse copy. 8.2 Move the object in different direction using move command. 8.3 Rotate the object in different angle using rotate command. 8.4 Rotate the object in different direction using rotate command. 8.5 Maintain the record of Performed Task.	**1**	**2**
9	**SETUP THE LAYER** 9.1 Select the layer control option. 9.2 Create the name of a layer and make it current. 9.3 Perform freeze option of the layer. 9.4 Perform lock option of the layer. 9.5 Set the color, line type & line weight for different layer. 9.6 Maintain the record of Performed Task.	**2**	**2**
10	**SETUP THE DIMENSION STYLE AND DIMENSIONING** 10.1 Setup the dimension style using dimension style manager. 10.2 Setup the dimension style using modify dimension style. 10.3 Setup the units, dimension lines and arrows, text, leader & annotations etc. 10.4 Put dimension in the object using linear, angular, radius, diameter, co-ordinate, align, center mark, continuous, base line dimension commands. 10.5 Edit dimension. 10.6 Maintain the record of Performed Task.	**2**	**2**
11	**SETUP THE TEXT STYLE** 11.1 Setup the text style using text style commands. 11.2 Setup the text height & font using text style commands. 11.3 Select the text justification using text style command. 11.4 Type text by using D text and M text commands. 11.5 Edit the text in a given drawing. 11.6 Maintain the record of Performed Task.	**2**	**2**

12	**SETUP THE HATCH, GRADIENT AND REGION** 12.1 Perform hatch command. 12.2 Fill the drawing areas of an object using different pattern, scale, angle of hatch command. 12.3 Import and draw the tree using various commands. 12.4 Perform the gradient command. 12.5 Setup the gradient command for single and multiple color. 12.6 Maintain the record of Performed Task.	**1**	**2**
13	**SETUP THE DRAFTING SETTING OPTIONS** 13.1 Perform drafting setting command. 13.2 Setup the object snap and dynamic input using function key. 13.3 Setup the display using tools. 13.4 Setup the drafting using tools. 13.5 Setup the selection using tools. 13.6 Maintain the record of Performed Task.	**1**	**2**
14	**PREPARE DIFFERENT FIXTURE PLAN USING CAD** 14.1 Draw bathroom plan using various command. 14.2 Draw bathroom fixtures using various commands. 14.3 Draw kitchen plan using various command. 14.4 Draw kitchen fixtures and appliances using various commands. 14.5 Perform block command. 14.6 Maintain the record of Performed Task.	**2**	**4**
15	**PREPARE DIFFERENT FURNITURE AND SYMBOL PLAN USING CAD** 15.1 Draw one room plan using various commands. 15.2 Draw door using various command. 15.3 Draw window using various command. 15.4 Draw furniture symbol using various command. 15.5 Maintain the record of Performed Task.	**2**	**4**
16	**PREPARE FLOOR PLAN DRAWING IN DIFFERENT LAYER USING CAD** 16.1 Draw a given ground floor plan of a building using various command. 16.2 Draw a given typical floor plan of a building using various commands and lock option of the layer. 16.3 Draw a given roof plan of a building using various commands and lock option of the layer. 16.4 Put dimension & write the text or annotation on the floor. 16.5 Create a folder & Save the drawing. 16.6 Maintain the record of Performed Task.	**2**	**4**
17	**PREPARE ELEVATION DRAWING IN DIFFERENT LAYER USING CAD** 17.1 Draw front elevation of the building using various commands. 17.2 Draw right elevation of the building using various commands. 17.3 Draw left elevation of the building using various commands. 17.4 Draw back elevation of the building using various commands. 17.5 Put dimension & write the text or annotation on the elevation. 17.6 Maintain the record of Performed Task.	**2**	**4**

18	**PREPARE SECTIONAL DRAWING USING DIFFERENT LAYER IN CAD** 18.1 Draw the longitudinal section of the building using various commands. 18.2 Draw the transverse section (cross section) of the building using various commands. 18.3 Draw the furniture layout given typical floor plan using various command. 18.4 Put dimension annotation on the section. 18.5 Type the text or annotation on the section. 18.6 Maintain the record of Performed Task.	2	4
19	**PREPARE A DRAWING SHEET USING LAYOUT** 19.1 Create layout using paper space and model space. 19.2 Setup a page using various command. 19.3 Set various drawing in different scale in a paper through layout. 19.4 Draw title box using various command. 19.5 Draw layout box using viewport command. 19.6 Save the drawing and print. 19.7 Maintain the record of Performed Task.	3	2
20	**PREPARE A DRAWING SHEET USING PLOTTER OR PRINTER** 20.1 Perform Print command. 20.2 Setup the scale & assign pen for plot or print. 20.3 Select the paper & plotter for plotting or printing. 20.4 Plot or print the drawing. 20.5 Set various drawing in different scale in a paper through layout. 20.6 Save the drawing in PDF format. 20.7 Maintain the record of Performed Task.	2	2
	TOTAL	32	50

Necessary Resources (Tools, Equipment's and Machinery):

Sl.	Item Name	Quantity
01	Auto CAD Software (Upgrade version)	Each item 1 No
02	Desktop with Hi-speed ram, monitor, CPU, keyboard, mouse, mouse pad	Each item per person
03	Laptop with Hi-speed ram, mouse, mouse pad	Each item per person
04	Printer (Black & Color)	Each item 1 No
05	Printer (A3)	Each item 1 No
06	Plotter (42 inch width paper)	Each item 1 No
07	Hi-speed internet connection with Wi-Fi Router	Each item 1 No
08	Multimedia screen(Projector & Smart board)	Each item 1 No
09	Multiplug	Each item 1 No
10	Pen drive (16GB,32GB)	Each item per person
11	Drawing paper (A4, A3,)	Each item 2 ream

Recommended Books:

Sl.	Book Name	Writer Name
01	Mastering Auto CAD	Eng. Samuel A Mallick
02	Time Saver Standard-Building Type	Joseph D Chiara
03	Auto CAD 2007 for Engineers & Designers	Prof. Sham Tickoo, Deepak Maini
04	Auto CAD 2D & 3D	Engr. Md. Shah Alarm
05	Architectural Drafting with Auto CAD	Rudaba Naz
06	Civil Drafting with Auto CAD	Sultana Farzana Yeasumi

Website References:

Sl.	Web Link	Remarks
01	https://www.youtube.com/watch?v=cmR9cfWJRUU	
02	https://www.youtube.com/watch?v=47_zypTqZe0	
03	https://www.youtube.com/watch?v=hO865EIE0p0	
04	https://www.youtube.com/watch?v=hO865EIE0p0	
05	https://www.youtube.com/watch?v=NjZjG0VulsU	
06	https://www.youtube.com/watch?v=6BASEeZ83wE	
07	https://www.youtube.com/watch?v=wArvg6zBEL8	
08	https://www.youtube.com/watch?v=NKfwi-MT4eQ	
09	https://www.youtube.com/watch?v=p55B4k-Rn6A	
10	https://www.youtube.com/watch?v=wArvg6zBEL8&t=52s	
11	https://www.youtube.com/watch?v=bizN6SB2idY	
12	https://www.youtube.com/watch?v=2EC0t-Qiya0	
13	https://www.youtube.com/watch?v=2EC0t-Qiya0	
14	https://www.youtube.com/watch?v=dsfWSGC2unw	
15	https://www.youtube.com/watch?v=c_e_Z1SG6Og	