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						
						Theory Assessment			Practical Assessment			Grand Total
	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
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 efficts 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:

Sl	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	