BANGLADESH TECHNICAL EDUCATION BOARD

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY

SYLLABUS

THIRD & FORTH SEMESTER

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				Total
						Theory		Practical		
						Cont. assess	Final exam.	Cont. assess	Final exam.	
1	8731	Architectural Design & Drawing	3	6	5	30	120	50	50	250
2	8732	Building and Finish Materials	2	0	2	20	80	-	-	100
3	6632	Computer Application-2	0	6	2	-	-	50	50	100
4	6811	Basic Electronics	2	3	3	20	80	25	25	150
5	5931	Mathmatics-III	3	3	4	30	120	50	-	200
6	5922	Physics -2	3	3	4	30	120	25	25	200
7	5811	Social Science-1	2	0	2	20	80	-	-	100
		Total	15	21	22	150	600	175	175	1100

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
FORTH SEMESTER

Sl. No	Subject code	Name of the subject	T	P	C	MARKS				Total
						Theory		Practical		
						Cont. assess	Final exam.	Cont. assess	Final exam.	
1	8741	Interior Design-1	3	6	5	30	120	50	50	250
2	8742	Computer Aided Drafting (CAD)	2	3	3	20	80	25	25	150
3	6442	Estimating & Costing -1	3	3	4	30	120	25	25	200
4	6432	Surveying -1	2	6	4	20	80	50	50	200
5	6444	Construction Process-1	3	3	4	30	120	25	25	200
6	5821	Social Science-2	2	0	2	20	80	-	-	100
7	5841	Business organization & communication	2	0	2	20	80	-	-	100
		Total	17	21	24	170	680	175	175	1200

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

AIDT: 8731   Architectural Design & Drawing   T   P   C

3   6   5

AIMS

To be able to develop knowledge skill and attitude in the field of design they with special emphasis on.

- Principle of design.
- Sources of design.
- Proportion and texture.
- Components of building and architectural terminology.
- Concept of planning of individual rooms.
- Technique of working drawing of residential building
- Bathroom and kitchen detail.

SHORT DESCRIPTION

Principle of Design; Source of Design; Proportion; Texture, Concept of planning, Working drawing & Detail.

DETAIL DESCRIPTION

Theory :

1. Understand the Principle of design.
   1.1 Describe the historical background of design principle.
   1.2 Mention the classification of design in brought senses.
   1.3 Mention the basic formula of design i. e. Emphasis, Balance,
        Continuity
   1.4 Describe three steps of process by which an artist can do his/her work
        easily and aesthetically.

2. Understand the sources of design.
   2.1 Define the sources of nature from which design is developed.
   2.2 Explain the principles of natural design that are observed easily
        (Rhythm, Appearance, Varity, Unity, Balance)
   2.3 State the design element
   2.4 Define line.
   2.5 Describe form and mention its classification.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.6 Mention the house of different tribes & ages.

2.7 Define the history of civilization.

3. Understand the concept of proportion & Texture.

3.1 Define proportion

3.2 Mention the significant differences in proportion.

3.3 State the proportional relationships.

3.4 Define the golden section of proportion.

3.5 Explain the contrast in proportion.

3.6 Define texture.

3.7 Describe "Texture is intertwined with our senses of Touch and Sight"

3.8 State "Scale Viewing Distance and Light are importance factor for perception of texture.

3.9 Describe texture and pattern.

4. Understand architectural terminology

4.1 Define the term art and architecture

4.2 Mention different building components such as Alcove, Arch, Balcony, Bay window, Basement, Canopy, Coping, Corbel, Corridor, Facade, Lobby, Gallery etc.

4.3 Describe the terms technical design, creative design, aesthetic design, informal design and formal design.

4.4 Mention the scope of house building and its importance in Bangladesh.

5. Understand the design process.

5.1 Define creativity

5.2 State the functional design.

5.3 Define transition

5.4 Describe the design process.

5.5 State the changing patterns and tastes. (Transformation of house from)

6. Understand the planning of a home in urban areas.

6.1 Define house.

6.2 Describe different types of house.

6.3 Define the house plan

6.4 Describe why a plan is necessary.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6.5 Mention different types of building from planning point of view

6.6 Describe the architect`s approach to planning.

6.7 Define the function consists of a residential building

6.8 Describe how to build a nice home.

7. Understand the basic concepts of planning of individual rooms.

7.1 Lists different types of rooms of a residence.

7.2 Describe standardization of building materials

7.3 Explain the Prevailing winds

7.4 Describe orientation

7.5 Define living area

7.6 Distinguish between close and open plan of a living area/room.

7.7 Describe the function, location and decor of living room.

7.8 State the ceiling, lighting and furniture groups of a living room.

7.9 Mention the size and shape of the room

7.10 Define the minimum requirements of a living room

8. Understand the dining area.

8.1 Define dining area.

8.2 Distinguish between close and open plan of a dining area/ room

8.3 State the function location and decor of dining room.

8.4 Define the ceiling, lighting and dividers of a dining room.

8.5 Mention the recommended size and shape of the room.

8.6 Explain the principle factor that is considered in planning the dining room.

8.7 Explain the minimum width and depth needed for per person sitting

8.8 Explain the passage behind chairs and furniture clearance of a dining room.

9. Understand the sleeping space.

9.1 Define bedroom

9.2 Describe the function location, number and decor of bedroom

9.3 Mention the standard size and shape of the room

9.4 Explain the principle factors, which are considered in planning the bedroom

9.5 Explain how to control noise of bedroom

9.6 Explain the architectural terms alcove, insulation, acoustical tile,

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

   cross ventilation, delay switch, room offset, sound buffer and
   humidity control.

   9.7 Explain the architectural terms: alcove insulation, acoustical tile cross
   ventilation, delay, switch, room offset, sound buffer and humidity
   control.

   9.8 State dressing area and bathroom facility.

10. Understand kitchen.

   10.1 Define kitchen.

   10.2 Describe the function and location of kitchen.

   10.3 State the following some general planning guides for food
   preparation: arrangement, traffic lanes, storage, counters and
   working surface, servicing and replacement of appliances, materials,
   lighting, ventilation, safety, accessibility and decoration.

   10.4 Explain the basic shapes of kitchen room.

   10.5 Describe the basic work area of kitchen

   10.6 Explain the architectural terms: Working triangle, family kitchen,
   base cabinet, Wall cabinet, counter top, services area etc.

11. Understand the bathroom/ toilet.

   11.1 Define bath/ toilet.

   11.2 Explain the function and location bath/toilet.

   11.3 Measure the basic texture of general bathroom.

   11.4 Describe the following some general planning guides: arrangement,
   illumination, ventilation, sound control, auxiliary heat, materials,
   storage, increased counter top space, children's convenience,
   mirrors, safety features, drying facilities and accessories
   accessibility etc.

Practical

1. Draw the basic concept of the design i.e. emphasis, balance, continuity,
   Rhythm, Appearance, Varity and Unity.
2. Draw line, form and composition (symmetrical & asymmetrical)
3. Draw significant differences in proportion.
4. Draw a golden section of a picture.
5. Draw the different types of texture and pattern.
6. Draw the different types of trees and bushes for landscape design.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

7. Draw the detail of different building components with measurements (i.e. footing, lintel, sunshade, doors & windows, parapet.)
8. Draw the basic/common furniture of living room.
9. Draw the basic/common furniture of dining room.
10. Draw the basic/common furniture of bedroom.
11. Draw the fixture clearance of toilet/bathroom.
12. Draw the working triangle and measurement of kitchen.

REFERENCE BOOKS.

1. Time Saver Standards for Building Types- 2nd Edition.
2. Interior Design illustrated. FRANCIS D K CHING
3. Manual of rendering with pen and ink. THE THAMES AND HUDSON
4. Sthapattyo rity o dhara – Abu H Imamuddin

Building and Finish Materials	**T**	**P**	**C**
Code : 8732	**2**	**0**	**2**

1. **Understand the clay products.**
    1.1 Define clay products.
    1.2 Describe tiles.
    1.3 Types of tiles.
    1.4 Explain terra cotta.
    1.5 List varieties of terra cotta.
    1.6 Described the uses of ornamental bricks.

2. **Understand the application of wood paneling**
    2.1 Mention different wood terminologies.
    2.2 Describe different methods of wood veneering.
    2.3 Mention various patterns wood veneer.
    2.4 Mention the uses of plywood.
    2.5 Describe the configuration of wood paneling.
    2.6 Describe the mounting method of paneling.

3. **Understand the application of gypsum board**
    3.1 Mention different types of gypsum board.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

3.2 Describe the use of gypsum board.

3.3 State the installation system of gypsum board.

3.4 Mansion the main features of ceiling system.

3.5 Describe the configuration of basic gypsum board.

4. Understand the wall covering
4.1 Identify different types of wall covering.

4.2 Describe the elements of vinyl wall covering.

4.3 State the composition of vinyl materials.

4.4 Mention the characteristics of commercial wall covering.

4.5 Explain the installation process of wall covering.

5. Understand the purpose of paint and varnish
5.1 Define paints and varnish.

5.2 Describe different types of paint with their uses.

5.3 Mention the characteristics of ideal paints.

5.4 Describe the ingredients of varnish.

5.5 Describe the different types of varnishes and their uses.

5.6 Mention the characteristics of varnish.

6.Understand the purpose of Distemper, white wash and color wash
6.1 Define the white wash and color wash.

6.2 Describe the properties of Distemper.

6.3 Describe the ingredients of Distemper, white wash and color wash.

6.4 Explain the process of applying Distemper, white washing and color.

7. Understanding the application of sound absorbent Materials.
7.1 Define the sound absorbent Materials.

7.2 Describe the classification of sound absorbent materials.

7.3 List various types of absorbent materials with their uses.

8. Understand the basic concept of glass
8.1 Define glass.

8.2 Explain verities of glass.

8.3 Explain treatment of glass.

8.4 Describe the various uses of glass.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

9. Understand the application of steel.
>   9.1Define uses of steel.
>   9.2 Describe different form of steel.
>   9.3 List properties of mild and hard steel.
>   9.4 Explain the preventive measures of corrosion.

10.Understand the non ferrous and alloy steel
>   10.1 Define nonferrous metal.
>   10.2 List different types of non ferrous metals.
>   10.3 Describe the use of non ferrous metal.
>   10.4 Define alloys.
>   10.5 List different types of alloy.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6632	**Computer Application -II**	**T**	**P**	**C**
		0	**6**	**2**

OBJECTIVES

To develop skill on **S**preadsheet applications.
To develop skill on creating graphs.
To assist in the efficient use of database packages.
To develop skill on computerized database management.
To develop skill on programming with database management.

SHORT DESCRIPTION

Spreadsheet Analysis Package: Applications of spreadsheet; Using worksheet; Apply formula and functions in worksheet; Creating & printing graphs; Create simple macros.

Database management package: Creating the database; Editing the database; Searching the records; Customizing the data entry form; Creating the query; Arranging the records; Generating reports.

Database management language: Creating a command file; Writing simple database program using decision-making commands.

DETAIL DESCRIPTION

SPREAD SHEET ANALYSIS PACKAGE:

1   **Apply the basic skills of a spreadsheet software package**
       1.1   Run a spreadsheet software package.
       1.2   Identify and use different areas (working area, border area, control panel, mode indicator, and status indicator) of the worksheet screen.
       1.3   Identify the function of different keys (typing key, calculator key, text key, cursor key, etc.)of the keyboard.
       1.4   Move around the worksheet using keys and combination of key.
       1.5   Identify and use the on-screen help facility.
       1.6   Identify and use the types of data, numbers, labels and formula.
       1.7   Demonstrate menus, submenus, pop-up menu, etc.

2   **Manage workbooks and windows.**
       2.1   Make and use workbooks.
       2.2   Access different types of files.
       2.3   Open files as read only.
       2.4   Demonstrate the options for saving files.
       2.5   Display a workbook in more than one window.
       2.6   Work with more one workbook.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.7   Close a workbook.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

3   **Create a worksheet and use simple commands.**
- 3.1   Activate entries in a worksheet.
- 3.2   Use edit key (F2) to correct or to modify entries.
- 3.3   Activate the command menus and select commands.
- 3.4   Save the worksheet.
- 3.5   Exit from spreadsheet .
- 3.6   Retrieve a previously saved worksheet.
- 3.7   Modify the worksheet.
- 3.8   Save a modified worksheet.

4   **Apply formula, function and using templates.**
- 4.1   Use simple formulae to solve arithmetical computation.
- 4.2   Use arithmetical operators in formula.
- 4.3   Edit formula.
- 4.4   Use mathematical function to solve simple equations.
- 4.5   Make and use workbook templates.
- 4.6   Make changes in existing workbook templates
- 4.7   Validate numbers, dates, times & text.
- 4.8   Show custom validation.

5   **Solve engineering problems using formula and functions**
- 5.1   Use mathematical functions to compute trigonometric values, absolute values, random number, square root, logarithmic values, etc for solving engineering problems.
- 5.2   Use logical functions to perform an operation depending on a condition in engineering problem.
- 5.3   Use statistical function to compute summation, average, minimum value, maximum value, etc in engineering problem.

6   **Work with cell pointer to a particular cell.**
- 6.1   Use GOTO key to move the cell pointer to particular cell.
- 6.2   Use the ABSOLUTE KEY to change cell address from one from to another in formula or in functions.
- 6.3   Enter range in formulae or in functions by typing directly or by using cell pointer.
- 6.4   Create a range name.
- 6.5   Use range name in formula & functions.
- 6.6   Copy, Move & Erase cell range.

7   **Format a worksheet.**
- 7.1   Change the width of a column, a range of column, and change the columns width globally.
- 7.2   Insert blank columns and blank rows in a worksheet.
- 7.3   Delete columns and blank rows in a worksheet.
- 7.4   Format the display of data of a worksheet globally or by referring a range of cells (e.g. currency format, exponential format, comma format, etc.).
- 7.5   Format the display of data and of a worksheet globally or referring of cells.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

7.6   Protect worksheet, function, formula, important text and unprotect a range for entering entries.

7.7   Work with window for viewing worksheet in different ways and freeze rows or columns.

7.8   Create, change and delete a style.

8   Exercise on Sorting, Searching and Worksheet Printing.

8.1   Create a database program

8.2   Sort a database in different ways.

8.3   Search a record from the database using search criteria.

8.4   Extract records from the database that match a given criteria.

8.5   Delete records that a given criteria from the database using available database commands.

8.6   Show the Print Preview and adjust Page setup option.

8.7   Create and use page headers of footers.

8.8   Set print area, print titles and different print option

8.9   Print portion of worksheet and multiple worksheets

8.10   Print ranges from different worksheets on the same pages.

9   Create and Print graphs.

9.1   Create bar, line, X-Y and pie graphs.

9.2   Add color, titles, legend, gird and levels to the graph.

9.3   Add visual impact with colors.

9.4   Create linked pictures.

9.5   Save the graph and assign names to different graphs of a single worksheet.

9.6   Print graphs (low or high quality graphs.)

9.7   Plot graphs using a plotter using different colors.

9.8   Change graphs size, print & plot them.

10   Create Macros and using macro commands.

10.1   Create simple macros (e.g. to change the width of a cell, to format a cell display, to erase a range of cells etc.) using keystroke commands.

10.2   Create a macro to convert values into labels vice versa.

10.3   Create a macro for inserting blank rows between two rows of data in a worksheet.

10.4   Create a macro for deleting the inserted blank rows in a worksheet.

DATABASE MANAGEMENT PACKAGE:

11   Create the new database.

11.1   Identify the practical database in real world.

11.2   Identify the fields and records of a database.

11.3   Identify the different phases of database design.

11.4   Collect the data form a typical field.

11.5   Determine the category of a typical field.

11.6   Design a typical Paper- pencil database form raw data.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

11.7   Run a generalized database management package and identify its display Screen

11.8   Identify the different options of the selected packages.

11.9   Use the on-screen help facilities of DBMS package

11.10   Create and save the table structure.

12   Change the table structure and edit database.

12.1   Modify and Edit the table structure.

12.2   Verify the structure (i.e. data of update, number of records. etc)

12.3   Enter or append the new records in the database.

12.4   Use the key combinations for editing.

12.5   Use the available options to edit fields.

12.6   Delete unwanted records and files.

12.7   Save & close database file.

12.8   Use different modes to append and edit records of database.

13   Search, display and arrange the records of database.

13.1   View a database using list and display command

13.2   Retrieve the database records with different conditions.

13.3   Search within a field.

13.4   Keep the track of specific records.

13.5   Keep the database up-to-date.

13.6   Sort a database on single or multiple fields.

13.7   Sort with qualifier (i.e. sort with specific subset of records).

13.8   Index the database on single or multiple fields.

13.9   Use the function to index on different field types.

13.10   Use the commands for selective indexing and to control the order of records.

14   Create the customized data entry form.

14.1   Draw a typical data entry screen with paper-pencil work.

14.2   Design the screen with all fields.

14.3   Move the field to make the entry form logical and easy to use.

14.4   Change the field width.

14.5   Add or delete field (if necessary).

14.6   Change the display characteristics of fields.

14.7   Use picture functions template and range to format the displayed data.

14.8   Use different options and commands in design menu.

14.9   Draw lines and boxes on the form.

15   Create the query.

15.1   Display and identify query design screen.

15.2   Build a simple query

15.3   Save & apply the query.

15.4   Use the query design menu options.

15.5   Use the symbols and operators to build query.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

15.6   Search the records with matching on two or more fields.
15.7   Select the records within range using range operators.
15.8   Find the records with inexact and complex matching.
15.9   Sort the records within queries.

16   **Generate the custom reports.**
16.1   Send the reports to the screen or to a file.
16.2   Use the print menu options and dos-prompt options.
16.3   Produce a quick and selective report.
16.4   Plan the design of the report.
16.5   Design a custom columnar report.
16.6   Find the parts of a report specification.
16.7   Make the changes to the report specification.
16.8   Save & run the report.

17   **Work with multiple database and relationship.**
17.1   Merge the data form one file to another.
17.2   View   the files to relate two or more database files.
17.3   Set up the relationship.
17.4   Modify the relationship.
17.5   Create the report from relational database.

DATABASE MANAGEMENT LANGUAGE:

18   **Create a simple command file using expression and function.**
18.1   Identify the database editor.
18.2   Use the commands to assign different types of data values to variables.
18.3   Save the memory variable.
18.4   Display the memory variable.
18.5   Release & restore the memory variable.
18.6   Use the mathematical expression.
18.7   Use the mathematical, relational, logical and string operators.
18.8   Use the common function such as EOF, BOF DATE, UPPER & LOWER< CTOD, DTOS, SPACE, TRIM, STR, etc. in command file.
18.9   Use the commonly use commands such as SET TALK, SKIP, RETURN in command file.
18.10   Use the commands to display a string of characters and wait for user response.
18.11   Use commands to display or print text.

19   **Design & write simple programs.**
19.1   Identify the basic steps to design a program.
19.2   Write the pseudocode for simple program.
19.3   Convert the pseudocode into actual program code.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

19.4   Verify & documents the simple program.
19.5   Save the command file and then exit.
19.6   Run the program.

20   Use the decision making commands in Programs.

20.1   Use DO WHILE ---- ENDDO, IF ---- ENDIF and DO CASE ---- ENDCASE to control program flow.
20.2   Use SCAN ---- ENDSCAN command instead of DO WHILE ---- ENDDO.
20.3   Use IF, ELSE and ENDIF commands to branch to the part the program.
20.4   Use nested IF ---- ENDIF statements.
20.5   Write simple program using decision making commands.
20.6   Use immediate IF function.
20.7   Write simple program using immediate IF function.
20.8   Use CASE ---- ENDCASE statement instead more than three IF ---- ENDIF statements.
20.9   Use the EXIT, CANCEL, WAIT and ZAP command in database program.
20.10   Use macro function within programs.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6811   BASIC ELECTRONICS   T   P   C

**   2   3   3**

OBJECTIVES
- To provide understanding soldering technique and color code.
- To provide understanding and skill on the basic concept of semiconductor and to identify physically a range of semiconductor diodes.
- To develop comprehensive knowledge and skill on special diodes and devices.
- To develop the abilities to construct different rectifier circuits.
- To provide understanding of the basic concept and principle of transistor and to identify physically a range of transistor.
- To provide understanding and skill on the basic concept of logic gates.
- To provide the understanding skill on using Electronic measuring and testing equipment.

SHORT DESCRIPTION

Color code and soldering; Semiconductor; P-N junction diode; Special diodes and devices; Power supply; Transistor; Transistor amplifier; Logic gates Electronic measuring and test equipment.

DETAIL DESCRIPTION

Theory:

1   Understand the Concept of soldering and Color Code.

1.1   Define soldering.
1.2   Describe the different types of solder.
1.3   List the things needed in soldering.
1.4   Mention the properties of a good soldered joint.
1.5   Describe the functions and construction of (i) Single sided, (ii). Double sided & (III) Multi layered Printed circuit board.
1.6   Mention the function of resistor, capacitor and inductor in electronic circuits.
1.7   Describe the procedure of determining the value of Capacitor, & Resistor using numeric and color code.

2   Understand the Concept of Semiconductor.

2.1   Define Conductor, Semiconductor and Insulator.
2.2   Describe Semiconductor with atomic structure.
2.3   Describe the effect of temperature on conductivity of Semiconductor.
2.4   Explain the energy band diagram of Conductor, Semiconductor and Insulator.
2.5   Classify Semiconductor.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.6   Describe the generation & recombination of hole and electron in Intrinsic Semiconductor.

2.7   Define doping, P-type & N-Type material, covalent bond, majority & minority charge carrier.

2.8   Explain the characteristics of Carbon, Gallium Arsenide/Phosphide.

3   Understand the Concept of P-N Junction Diode

3.1   Define PN junction diode

3.2   Describe the formation of depletion layer in PN junction.

3.3   Discuss potential barrier, drift & diffusion current and their physical significance.

3.4   Mention the behavior of PN junction under forward and reverse bias.

3.5   Explain the forward & reverse current voltage (IV) characteristics of PN junction diode.

3.6   Explain the effect of temperature Si & Ge diode characteristics

3.7   Define (i) static resistance (II) Dynamic resistance, (III forward breakdown voltage and (II) Reverse break down voltage.

3.8   Draw the equivalent circuit of PN junction diode.

3.9   Describe the specification of diode.

4   Understand the DC power supplies.

4.1   Define dc power supply.

4.2   Mention the importance of dc power supply.

4.3   Define rectification and rectifier.

4.4   Explain the operation of Half wave, Full wave and Bridge rectifier.

4.5   Discuss ripple factor & efficiency and TUF of Half wave, Full wave and Bridge rectifier.

4.6   Explain the operation of different types filter circuits with wave shape.

4.7   Define regulated and unregulated power supply.

4.8   Describe the block diagram of a typical regulated dc power supply.

5   Understand the Concepts of Special diode.

5.1   Define Zener break down.

5.2   Describe the operation of Zener diode.

5.3   Explain IV characteristics of Zener diode.

5.4   Describe the application of Zener diode in (i) voltage stabilization, (ii) meter protection and (II) peck clipper circuits.

5.5   Describe the construction operation and application of (I) Tunnel diode (II) varactor diode (III) Schottky diode (iv) Step-Recovery diode (v) PIN diode, (vi) LED (vii) LCD (viii) photo diode (ix) Solar cell.

5.6   Describe the construction operation and application of (i) DIAC (ii) TRIAC and (iii) SCR.

6   Understand the construction and operation of Bipolar Junction Transistor (BJT)

6.1   Define Transistor.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

      6.2   Describe the construction PNP and NPN Transistor.
      6.3   State the biasing rules of BJT.
      6.4   Explain the mechanism of current flow of PNP and NPN Transistor.
      6.5   Establish the relation among Base, Emitter and Collector current ($I_E = I_C + I_B$)
      6.6   Draw the three basic transistor configuration circuits (CB, CC, CE).
      6.7   Describe current amplification factor α , β and γ.
      6.8   Establish the relation among α , β and γ.
      6.9   Solve problem related to I_E, I_C, I_B, α , β and γ.

7   **Understand the concept of BJT Amplifier**
      7.1   Define (i) Amplifier (ii) Amplification and (III) Gain
      7.2   Mention the classification of Amplifier.
      7.3   Describe the principle of operation of a common emitter (CE) Amplifier.
      7.4   Draw DC & AC equivalent circuits of the CE amplifier circuit.
      7.5   Mention the formula of (i) input resistance (ii) Output Resistance (iii) Current gain (iv) Voltage gain and (v) power gain.
      7.6   Solve problem related to different gain resistance.

8   **Understand the main feature of digital electronics**
      8.1   Describe the difference between analog and digital signal.
      8.2   State the advantage of digital system.
      8.3   Define logic gate.
      8.4   Describe the basic operation of logic gates AND, OR, NOT NAND, NOR, XOR & XNOR.
      8.5   Prepare truth table of logic gates AND, OR, NOT NAND, NOR, XOR & XNOR.

9   **Understand the Electronic measuring and testing equipment**
      9.1   Define AVO meter.
      9.2   Describe the procedure of measuring current, voltage and resistance using AVO meter.
      9.3   List the control knobs of Oscilloscope.
      9.4   Explain the procedure of measuring frequency and voltage using Oscilloscope.
      9.5   Mention the function of (i) Function Generator (ii) Logic Probe (iii) Semiconductor Tester.

Practical :
1   **Show skill in identifying the electronic components.**
      1.1   Observe the electronic components board and read the manuals.
      1.2   Identify the different types of resistors with their values, tolerance and wattage.
      1.3   Identify the different types of potentiometers with their values, & wattage.
      1.4   Identify the different types of capacitors with their values, dc working voltages and types.
      1.5   Identify the different types of diodes & rectifiers with the numbers and specifications.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

1.6 Identify the different types of transistors and thyristors with their number and specifications.

1.7 Identify the different types of LED's, IC's and miniature relays with their number & specification.

1.8 Identify different types of transformer with their specification.

1.9 Identify different inductors with their values & current ratings.

1.10 Study the printed circuit boards.

1.11 Sketch the symbols of components used in electronic circuits.

1.12 Describe the basic function of each component.

1.13 Write a report on above activities.

2 Show skill in electrical measurement.

2.1 Perform simple voltage and current measurements on basic series and parallel resistor circuits using the following instruments.
   a) Voltmeters and ammeters
   b) AVO meters
   c) Digital multimeter
   d) Basic CRO

3 Show skill for determining the values of different resistors and capacitors with the help of color code.

3.1 Select color code resistors & capacitors of different values.

3.2 Identify the colors and their numerical numbers.

3.3 Determine the value of resistors with tolerance.

3.4 Determine the value of capacitors and dc working voltage.

3.5 Write a report on above activities.

4 Show skill in performing soldering.

4.1 Select wires (single strand and multi strand) and cut wires to required length.

4.2 Select soldering iron, soldering tag and soldering lead.

4.3 Remove wire insulation to required length.

4.4 Clean and tin both iron and work piece.

4.5 Use a tinned iron in order to transfer adequate heat to the joint.

4.6 Joint two singles stranded wires mechanically and solder.

4.7 Joint two multi-strand wires mechanically and solder.

4.8 Perform soldering exercise for making three dimensional wire frame.

4.9 Sketch and write a report on the job.

5 Show skill in soldering & desoldering of electronic components and wires to the other components and circuit boards.

5.1 Select electronic components, wires and PCB.

5.2 Determine the rating of the soldering iron suitable for the work piece.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

5.3	Clean and tin both iron & work piece.
5.4	Feed new soldering materials to the tinned and heated joint, in order to produce a correctly soldering.
5.5	Check the quality of soldering.
5.6	Clean and tin iron and de-solder the joint and components.
5.7	Use solder suckers and solder braid for de-soldering.
5.8	Write a report on the Job.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6   Show skill in checking the semi-conductor diode.
  6.1   Collect a range of semi-conductor diodes and manufactures literature.
  6.2   Select the digital multimeter and set the selector switch to ohm range.
  6.3   Determine the specification of semi-conductor diode.
  6.4   Compare the determined specification with that of manufactures literature.
  6.5   Measure forward & reverse resistances of the diode.
  6.6   Identify p and p side of the diode.
  6.7   Determine the condition of the diode.

7   Show skill in sketching forward and reverse characteristics curves of a semiconductor diode.
  7.1   Select meter, power supply, components and materials.
  7.2   Complete circuit according to circuit diagram for forward bias.
  7.3   Check all connections.
  7.4   Measure forward bias and corresponding forward current.
  7.5   Record results in tabular form.
  7.6   Connect circuit according to circuit diagram of reverse bias.
  7.7   Measure reverse bias and corresponding reverse current.
  7.8   Record results in tabular form.
  7.9   Sketch the curves form data.

8   Show skill in sketching waves of half wave rectifier circuit.
  8.1   Select meter, component, oscilloscope and materials.
  8.2   Complete circuit of a half wave rectifier according to circuit diagram.
  8.3   Check the circuit before operation.
  8.4   Measure the input and output voltage and observe wave shapes in the oscilloscope.
  8.5   Sketch the output voltage wave shape.

9   Show skill in sketching waves of full wave center tapped rectifier circuit.
  9.1   Select meter, component, oscilloscope and materials.
  9.2   Complete a full wave rectifier circuit according to circuit diagram.
  9.3   Check the circuit supply & polarity of supply.
  9.4   Measure the input & output voltages and observe wave shapes in the oscilloscope.
  9.5   Sketch the output voltage wave shape.
  9.6   Compare the result with half-wave rectifier circuit.

10   Show skill in constructing full wave bridge rectifier.
  10.1   Select meter, component, oscilloscope and materials.
  10.2   Build the circuit according to the circuit diagram.
  10.3   Check the circuit.
  10.4   Measure the input and output voltage.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

    10.5   Observe wave shape.
    10.6   Compare the result with other rectifiers.

11   **Show skill in identifying the bipolar junction transistor.**
    11.1   Select pnp & npn bipolar junction transistors.
    11.2   Take DMM and manufacture's literature of transistor.
    11.3   Identify transistor legs.
    11.4   Measure base-emitter, base-collector, forward and reverse resistance.
    11.5   Determine the specifications with help of manufacturer's literatures.
    11.6   Identify pnp & npn transistor.

12   **Show skill in determining input and output characteristics of a transistor in common emitter connection.**
    12.1   Select component, AVO meters, circuit board and required materials.
    12.2   Construct the circuit.
    12.3   Adjust the biasing voltage to appropriate point.
    12.4   Record input and output voltage and current.
    12.5   Plot the curve with recorded data.

13   **Show skill in testing special diodes.**
    13.1   Select different types of special diodes.
    13.2   Set the AVO meter in the ohm scale.
    13.3   Measure resistances for each of two terminals.
    13.4   Determine the condition (good and bad).
    13.5   Determine the different terminals.

14   **Verify the truth tables of different types of logic gates.**
    14.1   Select the specific gate.
    14.2   Prepare the experimental circuit.
    14.3   Adjust the power supply.
    14.4   Verify the truth table.

REFERENCE BOOKS :
1. A Text Book of Applied Electronics   - R.S. SEDHA
2. Principles of Electronics   - V. K. Mehta
3. Basic Electronics (Solid Stater)   - B. L. Theraja
4. Electronic Devices and Circuit Theory   - ROBERT BOYLESTAD
                                                - LOUIS NASHELSKY

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

5931   **MATHEMATICS – III**   **T   P   C**

                                                           3   3   4

AIMS

- To make understand the basic concept and techniques of composition and resolution of vectors and computing the resultant of vectors.

- To enable to use the knowledge of gradient of a straight line in finding speed, acceleration etc.

- To enable to use the knowledge of conic in finding the girder of a railway bridge, cable of a suspension bridge and maximum height of an arch.

- To provide ability to apply the knowledge of differential calculus in solving problem like slope, gradient of a curve, velocity, acceleration, rate of flow of liquid etc.

- To enable to apply the process of integration in solving practical problems like calculation of area of a regular figure in two dimensions and volume of regular solids of different shapes.

SHORT DESCRIPTION

Vector   *:* Addition and subtraction, dot and cross product.

Co-ordinate Geometry   **:** Co-ordinates of a point, locus and its equation, straight lines, circles and conic.

Differential Calculus   **:** Function and limit of a function, differentiation with the help of limit, differentiation of functions, geometrical interpretation of $\frac{dy}{dx}$, successive differentiation and Leibnitz theorem, partial differentiation.

Integral Calculus   **:** Fundamental integrals, integration by substitutions, integration by parts, integration by partial fraction, definite integrals.

DETAIL DESCRIPTION

Vector

1   **Apply the theorems of vector algebra.**

       1.1   Define scalar and vector.

       1.2   Explain null vector, free vector, like vector, equal vector, collinear vector, unit vector, position vector, addition and subtraction of vectors, linear combination, direction cosines and direction ratios, dependent and independent vectors, scalar fields and vector field.

       1.3   Prove the laws of vector algebra.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

    1.4   Resolve a vector in space along three mutually perpendicular directions

    1.5   solve problems involving addition and subtraction of vectors.

2   Apply the concept of dot product and cross product of vectors.

    2.1   Define dot product and cross product of vectors.

    2.2   Interpret dot product and cross product of vector geometrically.

    2.3   Deduce the condition of parallelism and perpendicularity of two vectors.

    2.4   Prove the distributive law of dot product and cross product of vector.

    2.5   Explain the scalar triple product and vector triple product.

    2.6   Solve problems involving dot product and cross product.

<u>CO-ORDINATE GEOMETRY</u>

3   Apply the concept of co-ordinates to find lengths and areas.

    3.1   Explain the co-ordinates of a point.

    3.2   State different types of co-ordinates of a point.

    3.3   Find the distance between two points (x_1, y_1) and (x_2, y_2).

    3.4   Find the co-ordinates of a point which divides the straight line joining two points in certain ratio.

    3.5   Find the area of a triangle whose vertices are given.

    3.6   Solve problems related to co-ordinates of points and distance formula.

4   Apply the concept of locus.

    4.1   Define locus of a point.

    4.2   Find the locus of a point.

    4.3   Solve problems for finding locus of a point under certain conditions.

5   Apply the equation of straight lines in calculating various parameter.

    5.1   Describe the equation x=a and y=b and slope of a straight line.

    5.2   Find the slope of a straight line passing through two point $(x_1, y_1,)$ and (x_2, y_2).

    5.3   Find the equation of straight lines:

         i)   Point slope form.

         ii)   Slope intercept form.

         iii)   Two points form.

         iv)   Intercept form.

         v)   Perpendicular form.

    5.4   Find the point of intersection of two given straight lines.

    5.5   Find the angle between two given straight lines.

    5.6   Find the condition of parallelism and perpendicularity of two given straight lines.

    5.7   Find the distances of a point from a line.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6   **Apply the equations of circle, tangent and normal in solving problems.**

      6.1   Define circle, center and radius .

      6.2   Find the equation of a circle in the form:

            i) $x^2 + y^2 = a^2$

            ii) $(x - h)^2 + (y - k)^2 = a^2$

            iii) $x^2 + y^2 + 2gx + 2fy + c = 0$

      6.3   Find the equation of a circle described on the line joining (x_1, y_1) and (x_2, y_2).

      6.4   Define tangent and normal.

      6.5   Find the condition that a straight line may touch a circle.

      6.6   Find the equations of tangent and normal to a circle at any point.

      6.7   Solve the problems related to equations of circle, tangent and normal.

7.   **Understand conic or conic sections.**

      7.1   Define conic, focus, directrix and eccentricity.

      7.2   Find the equations of parabola, ellipse and hyperbola.

      7.3   Solve problems related to parabola, ellipse and hyperbola.

DIFFERENTIAL CALCULUS

FUNCTION AND LIMIT

8.   **Understand the concept of functions and limits.**

      8.1   Define constant, variable, function, domain, range and continuity of a function.

      8.2   Define limit of a function

      8.3   Distinguish between $f(x)$ and $f(a)$.

      8.4   Establish   i) $\lim_{x \to 0} \dfrac{\sin x}{x} = 1$

               ii) $\lim_{x \to 0} \dfrac{\tan x}{x} = 1.$

9.   **Understand differential co-efficient and differentiation.**

      9.1   Define differential co-efficient in the form of

$$\frac{dy}{dx} = \lim_{h \to 0} \frac{f(x+h)-f(x)}{h}$$

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

9.2　Find the differential co-efficient of algebraic and trigonometrical functions from first principle.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

10.   Apply the concept of differentiation.

10.1   State the formulae for differentiation:
i)   sum or difference
ii)   product
iii)   quotient
iv)   function of function
v)   logarithmic function
          Find the differential co-efficient using the sum or difference formula, product formula and quotient formula.

10.2   Find the differential co-efficient function of function and logarithmic function.

11.   Apply the concept of geometrical meaning of $\dfrac{dy}{dx}$

11.1   Interpret $\dfrac{dy}{dx}$ geometrically.

11.2   Explain $\dfrac{dy}{dx}$ under different conditions

11.3   Solve the problems of the type:
          A circular plate of metal expands by heat so that its radius increases at the rate

of 0.01 cm per second. At what rate is the area increasing when the radius is 700 cm ?

12   Use Leibnitz's theorem to solve the problems of successive differentiation.

12.1   Find 2nd, 3rd and 4th derivatives of a function and hence find   n-th derivatives.

12.2   Express Leibnitz's theorem

12.3   Solve the problems of successive differentiation and Leibnitz's theorem.

13   Understand partial differentiation.

13.1   Define partial derivatives.

13.2   State formula for total differential.

13.3   State formulae for partial differentiation of implicit function and homogenous function.

13.4   State Euler's theorem on homogeneous function.

13.5   Solve the problems of partial derivatives.

INTEGRAL CALCULUS

14   Apply fundamental indefinite integrals in solving problems.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

14.1	Explain the concept of integration and constant of integration.
14.2	State fundamental and standard integrals.
14.3	Write down formulae for:
	i) Integration of algebraic sum.
	ii) Integration of the product of a constant and a function.
14.4	Integrate by method of substitution, integrate by parts and by partial fractions.
14.5	Solve problems of indefinite integration.

15   Apply the concept of definite integrals.

15.1   Explain definite integration.

15.2   Interpret geometrically the meaning of $\int_a^b f(x)dx$

15.3   Solve problems of the following types:

i) $\int_0^{\frac{\pi}{2}} \cos^2 x\,dx$ ii) $\int_0^1 \frac{\left(\sin^{-1} x\right)^2}{\sqrt{1-x^2}}\,dx$

P* =Practical continuous assessment

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

5922	PHYSICS–II	T	P	C
		3	3	4

AIMS

- To provide a foundation in scientific principles and processes for the understanding and application of technology.
- To develop an understanding of fundamental scientific concepts through investigation and experimentation.
- To provide a common base for further studies in technology and science.
- To develop the basic knowledge of modern physics.

Short description

Thermometry; Calorimetry, Expansion of materials (effect of heat); Heat transfer;
Nature of heat and its mechanical equivalent; Engine.
Principles of light and Photometry; Reflection of light; Refraction of light ; lens.
Concept of Electron and photon; structure of atom, Theory of Relativity.

Detail description

<u>Theory</u> :

1. **Thermometry**
   - 1.1 Define heat and temperature.
   - 1.2 Mention the units of measurement of heat and temperature.
   - 1.3 Distinguish between heat and temperature.
   - 1.4 Identify the sources of heat.
   - 1.5 Identify the range of the Celsius scale determined by the boiling point and melting point of water
   - 1.6 Compare the Celsius scale, Roamer scale, Fahrenheit scale, Kelvin scale and Rankin scale of temperature measurement.
   - 1.7 State the construction and graduation of a mercury thermometer.
   - 1.8 Describe the operation of different types of thermometers (e.g., maximum and minimum thermometer, clinical thermometer).

2. **Heat capacity of materials (calorimetric)**
   - 2.1 State the heat as a form of energy.
   - 2.2 Define specific heat capacity.
   - 2.3 State SI units of measurement of specific heat capacity as J/Kgc^0 or J/Kgk^0.
   - 2.4 Define thermal capacity and water equivalent.
   - 2.5 Differentiate between thermal capacity and water equivalent.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.6   Mention the specific heat capacity of different materials.

2.7   Prove the total heat gained by an object is equal to the sum of the heat lost by all the surrounding objects.

2.8.1   Identify specific latent heat as the energy consumed or liberated when water vaporizes or condenses and when ice melts or freezes.

2.8.2   Explain the effects of a change in pressure on the melting point and boiling point of water.

2.9   Define various kinds of specific latent heat.

2.9.1   Determine the latent heat of fusion of ice and latent heat of vaporization of water.

3.   Effects of heat on dimension of materials

3.1   Show that different materials change in size at different amounts with the same heat source.

3.2   Explain the meaning of differential expansion in bimetallic strip, thermostats, compensated pendulum etc.

3.3   Explain the methods of overcoming problems caused by the expansion of materials in buildings, machinery, railway lines and bridges.

3.4   Define the co-efficient of linear, superficial and cubical expansion of solids.

3.5   Mention the units co-efficient of linear, superficial and cubical expansion of solids.

3.6   Mention the linear, Superficial and cubical expansion of a range of common engineering materials.

3.7   Define real and apparent expansion of liquid.

3.8   Define and explain the co-efficient of real and apparent expansion of liquid.

3.9   Distinguish between the co-efficient of real and apparent expansion of liquid.

3.10   Determine the co-efficient of real and apparent expansion of liquid.

4.   Heat transfer

4.1   Identify the phenomenon of heat transferring from hot bodies to cold bodies.

4.2   Explain the methods of heat transfer by conduction, convection and radiation with examples of each type of transfer.

4.3   Define thermal conductivity (K) & rate of heat transfer.

State the SI units of thermal conductivity as $\dfrac{w}{mk}$ or $\dfrac{w}{mc}$

4.4   List the factors which determine the quantity of heat (Q) flowing through a material.

4.5   Show that the quantity of heat flowing through a material can be found from Q

$$= \frac{KA\,(\theta_H - \theta_C)t}{d}$$

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

4.6　　Outline the properties of materials which give thermal insulation.

4.7　　 Explain Characteristics of radiant heat energy.

4.8　　Describe Emissive power and absorptive power of radiant heat.

4.9　　State Stefan-Boltzman Law,

4.10　　State Newton's law of cooling.

4.11　　State wiens law.

4.12　　Explain Green house effect.

5.　　Nature of heat and its mechanical equivalent

5.1　　Describe the caloric theory and kinetic theory of heat.

5.2　　State the drawbacks of the caloric theory of heat.

5.3　　Explain the mechanical equivalent of heat.

5.4　　Explain the first law of thermodynamics .

5.5　　Explain Isothermal and adiabatic change.

5.6　　Explain Specific heat of a gas, Molar specific heat or molar heat capacity.

5.7　　Relate between pressure and volume of a gas in adiabatic Change i, e;$PV\gamma$=const.

5.8　　Difference between C_P and C_v for an ideal gas ($C_P-C_v=R$)

6.　　2nd　law of thermodynamics

6.1　　State and Explain Reversible process and irreversible process.

6.2　　State & explain 2nd law of thermodynamics

6.3　　Explain heat engine.

6.4　　Explain the principle of work of a heat engine.

6.5　　Identify thermal efficiency of a heat engine.

6.6　　Explain the working principles of internal combustion and external combustion engines (with fair sketches)

6.7　　Distinguish between internal combustion engine and external combustion engine. Entropy : Definition, unit and significant.

6.8　　Explain Change of entropy in a reversible and irreversible process.

6.9　　Give an example of increase of entropy in irreversible process.

7.　　Preliminaries of light and photometry

7.1　　Define light, medium (transparent, translucent, opaque), luminous & non-luminous bodies, parallel, convergent & divergent rays, beam.

7.2　　Show the travel of light in straight line.

7.3　　Define photometry, luminous intensity, luminous flux, brightness and illuminating power.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

7.4   Mention the units of luminous intensity, luminous flux, brightness and illuminating power.

7.5   Mention relation between luminous intensity & illuminating power.

7.6   Explain inverse square law of light.

7.7   Describe the practical uses of light waves in engineering.

8. Reflection of light

8.1   Define mirror (plane & spherical), image (real & virtual) and magnification of images.

8.2   Describe the reflection of light.

8.3   State the laws of reflection of light.

8.4   Express the verification of laws of reflection.

8.5   Define pole, principal axis, center of curvature, radius of curvature, principal focus in case of concave & convex mirrors.

8.6   Find the relation between focal length & radius of curvature of a concave & convex mirror.

8.7   Express the general equation of concave and convex mirror.

9.   refraction of light

9.1   Define refraction of light Give examples of refraction of light

9.2   State the laws of refraction and Express the verification of laws of refraction

9.3   Define absolute and relative refractive index and Relate absolute and relative refractive index

9.4   Explain the meaning of total internal reflection and critical angle and Relate total internal reflection and critical angle.

9.5   Give examples of total internal reflection.

9.6   Describe refraction of light through a prism.

9.7   Express the deduction of the relation between refractive index, minimum deviation and angle of the prism.

9.8   Explain Dispersion of light.

9.9   Define lens and mention the kinds of lens.

9.10   Define center of curvature, radius of curvature, principal axis, 1_{st} and 2_{nd} Principal focus, optical center and power of lens.

9.11   Express the deduction of the general equation of lens (eoncave & convex).

9.12   Define Combination of two thin lenses and equivalent lens.

9.13   Identify and List uses of lens.

10.   Electron and photon :

10.1   Describe Electrical conductivity of gases.

10.2   Describe Discharge tube.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

10.3   Cathode ray : Definition and its properties

10.4   X-ray : Definition, properties & uses

10.5   Discuss Photo electric effect .

10.6   Derive Einstein's photo electric equation

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

11.   Structure of atom :

11.1   Atomic models : Thomson, Rutherford and Bohr model.
11.2   Bohr Hydrogen atom & the theory of hydrogen spectra .
11.3   Define and explain Radio activity.
11.4   Describe Radio active rays.
11.5   Deduce radioactive decay law.
11.6   Define half-life & mean life of radioactive atoms.
11.7   Define nuclear fission & fusion.

12.   Theory of relativity :

12.1   Express the theory of relativity.
12.2   Mention different Kinds of theory of relativity.
12.3   Explain special theory of relativity and its fundamental postulate.
12.4   Deduce Einstein's mass -energy relation

Practical:

1.   Compare the operation of common thermometers.
2.   Determine the co-efficient of linear expansion of a solid by Pullinger's apparatus.
3.   Measure the specific heat capacity of various substances.(Brass, steel).
4.   Determine the latent heat of fusion of ice.
5.   Determine the water equivalent by calorimeter.
6.   Compare the luminous intensity of two different light sources.
7.   Verify the laws of reflection.
8.   Find out the focal length of a concave mirror.
9.   Determine the refractive index of a glass Slab.
10.   Determine the angle of Minimum deviation and refractive index of a glass prism by using I-D graph.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

5811	Social science- I	T	P	C
		2	0	2

OBJECTIVES

To provide opportunity to acquire knowledge and understanding on :
- importance of civics and its relationship with other social sciences
- the relationship of an individual with other individuals in a society
- social organizations, state and government
- rule of law, public opinion and political parties
- UNO and its roles
- the basic concepts and principles of economics and human endeavor in the economic system.
- the realities of Bangladesh economy and the current problems confronting the country.
- the role of Diploma Engineers in industries.
- occupations and career planning for Diploma Enginers.

SHORT DESCRIPTION

Civics and Social Sciences; Individual and Society; Nation and Nationality; Citizenship; state and government; Law; Constitution; Government and its organs; public Opinion; Political Party; UNO and its organs;
Scope and importance of Economics; Basic concepts of Economics- Utility, Wealth, consunmption, income wages and salary and savings; Production – meaning, nature, factors and laws; Demand and Supply; Current economic problems of Bangladesh; Role of Diploma Engineers in the economic development of Bangladesh; Occupations and career planning; Engineering teem.

Part-1 (Civics)

1. **Understand the meaning and scope of civics and inter relations of social sciences.**
   1.1. Define social science.
   1.2. State the meaning and scope of civics.
   1.3. Explain the importance of civics in the personal and social life of an individual.
   1.4. Describe the relationship of all social science (civics, Economics, political science, sociology, ethics)

2. **Understand the relationship of the individual with the society, Nationality and nation, Rights and duties of a citizen.**
   2.1 Define the concept (individual, society, Nation, Nationality, citizen and citizenship).

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

2.2 State the relationship among the individuals in the society.
2.3 Differentiate between nation and nationality.
2.4 Describe the elements of nationality
2.5 Describe the criteria of Bangladesh nationalism.
2.6 Diferentiate between a citizen and an alien.
2.7 Discuss the methods of acquiring citizenship and state the causes of losing citizenship
2.8 Describe the rights of a citizen and state the need for developing good citizenship.

3. Appreciate the relationship between the state and government, law and organs of government.
3.1 Meaning the state, government and law
3.2 Discuss the elements of state.
3.3 Discuss the classification of the forms of government
3.4 Distinguish between cabinet form of Government and presidential form of government.
3.5 Describe the main organs of Government (legislature, Executive and judiciary)
3.6 Discuss the sources of law

4. Understand and the classification of constitution
4.1 Explain the deferent form of Constitution
4.2 Explain the merits and demerits of different forms of constitution and state the salient feature of Bangladesh constitution

5. Understand the importance of the formation of public opinion and the role of political parties in the affairs of state and government.
5.1 Define the public Opinion and political party.
5.2 Explain the importance of public opinion in the modern democratic society.
5.3 Discuss the role of different media in forming public opinion.
5.4 Discuss the importance of political parties in democracy.

6. Understand the role of UNO in maintaining world peace.
6.1 Explain the major functions of UNO.
6.2 State the composition and functions of General Assembly.
6.3 Describe the Composition and functions of security council.
6.4 Discuss the role of Bangladesh in the UNO.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER
Part-2 (Economics)

1. **Understand the importance of the study fundamental concepts of economics.**
   1.1 Discuss the definition of Economics as given by eminent economists.
   1.2 Describe the scope and importance of economics of Technical Student.
   1.3 Define commodity, utility, value, wealth, consumption, income, savings wages and salary.
   1.4 Differentiate between value in use and value in exchange.
   1.5 Explain wealth with its characteristics.

2. **Understand the production process and the concept of the law of diminishing returns in the production process.**
   2.1 Discuss production mode and process
   2.2 Explain the nature of different factors of production.
   2.3 Discuss the law of diminishing returns.
   2.4 State the application and limitations of the law of diminishing returns.
   2.5 Describe the law of production (increasing constant and diminishing).

3. **Appreciate the importance of the concept of elasticity of demand.**
   3.1 Illustrate the law of diminishing utility.
   3.2 Define the marginal utility explain the law of dimishing marginal utility.
   3.3 define the term, "demand"
   3.4 Describe elasticity of demand and factors which determine the elasticity of demand
   3.5 Describe elasticity of supply with the help a supply curve.

4. **Understand national income and population control.**
   4.1 Explain national income.
   4.2 Discuss GDP and GNP.
   4.3 Discuss growth rates.
   4.4 Explain features of Bangladesh population.
   4.5 State measures to be undertaken to arrest high growth rate of population.

5. **Understand the current issues and the avilability and use of natural resource in the economic development of Bangladesh**
   5.1 Identify major problems of rural and urban economy.
   5.2 Explain income distribution in alleviating poverty in equality and discrimination.
   5.3 Explain the migration of rural population to urban areas.
   5.4 List of the Natural resource of Bangladesh and classify them according to sources of availability.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

    5.5   Explain the importance of the mine, forest and water resources and protential uses for sustainable development.

6.   Understand the role of a Diploma Engineer in the Development of Bangladesh Economy.

    6.1   Explain the concept of the term, "Engineering team"

    6.2   Identify the functions of Engineers, Diploma Engineers, craftsmen forming the engineering team.

    6.3   Discuss the role of a Diploma Engineer in the overall economic development of Bangladesh.

7.   Appreciate the career prospects for Diploma Engineers in different production/service engineering organizations.

    7.1   Explain the employment opportunities for diploma engineers in different sectors and sub Sectors of economy

    7.2   Explain socio-economic status of a diploma Engineer.

    7.3   Explain prospects of diploma Engineers in self-employment.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

BANGLADESH TECHNICAL EDUCATION BOARD

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY

SYLLABUS

FORTH SEMESTER

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

RIOR DESIGN-1

	T	P	C
CODE-8741	**3**	**6**	**5**

AIMS:

    1. SKILL ON INTERIOR DESIGN.
    2. INTERIOR DESIGN METHOD
    3. SPACE ORGANIZATION
    4. ARCHITECTURAL SIGNAGE
    5. RESIDENCE ROOM PLANNING

THEORY

1.UNDERSTAND INTERIOR DESIGN ELEMENTS

1.1 Define interior design elements.

1.2 Describe physical settings of shelter & protection.

1.3 How to develop photo theses.

1.4 State parts of design criteria.

1.5 List the user requirements.

1.6 Desired relationship of design elements.

1.7 Mention evaluation & summary overview.

2.   UNDERSTAND ARGONOMICS

2.1 Define human factors

2.2 List human dimension

2.3 Specify distance zone

2.4 Explain activity relationship

3. UNDERSTAND DESIGN VOCABULARY

3.1Define form
3.2State shape
3.3Define color
3.4 State textures
3.5 Define Light
3.6 State Proportions

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

3.7 Identify scale

3.8 Identify balance

3.9 Define harmonies

3.10 State unity & verity

3.11 Define rhythms

3.12 Define emphases

4. UNDERSTANDING INTERIOR SPACE SOLUTION

4.1Define space

4.2Discuss how the geometric elements of point, plan& volume are organized to give a building form

4.3 Discuss how the elements different from inside to outside

4.4 discuss how the geometric elements define the boundaries of interior space.

5. UNDERSTAND THE ARCHITECTURAL SIGNAGE AND GRAPHIC SYSTEM IN PLANNING DESIGN AND IMPLEMENTATION.

5.1 State the usage consideration of signage and graphics.

5.2 Discuss the letter style, letter and line spacing, copy position and color of signage and graphics.

5.3 Mention the names of sign type categorized by function

5.4Mention the materials choices, finishes, graphics, standard mounting detail, standard sizes, section of the following sing type. Directional (ceiling hung), directional (wall mounted), room identifier (wall mounted), counter top-flag mounts desk top.

6. UNDERSTAND THE RESIDENTIAL PLAN BY INDIVIDUAL ROOM SPACE

 6.1 Define living room

 6.2 Discuss living room furniture, distance, color, light

 6.3 Define bed room

 6.4 Discuss bed room furniture, distance, color, light

 6.5 Define dining room

 6.6 Discuss dining room furniture, distance, color, light

 6.7 Define the fixture used in kitchen room

 6.8 Explain the finish materials, color, lighting in kitchen room

 6.9 Discuss the bathroom use fixture, materials, color & light.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

PRACTICAL

1. DRAW THE INTERIOR ACTIVITY
1.1 Draw the interior elements physical & aesthetic in a single portrait.
1. 2 Prepare the overview activity & user requirements, space analysis.

2. DRAW THE HUMAN DIMENSION .
2.1 Draw personal space
2.2 Draw human structure
2.3 Draw functional dimension
2.4 Draw significance of individual variation
2.5 Draw Basic human dimension
2.6 Draw Distance zone
2.7 Draw Group setting

3. MAKE COMPOSITION WITH THE FOLLOWING TERMS.
3.1 Draw form, shape, proportion, balance, harmony, rhythm, emphasis in several composition.
3.2 Draw the relation between color, light & scale.

4. PREPARE THE ARCHITECTURAL SIGNAGE & GRAPHICS SYSTEM
4.1 Draw the medical signage & graphics of hospital, Pharmacy, Dental case, Wheel chair, X-ray, female general medicine, Male, Eye laboratory, Ambulatory & patients.
4.2 Draw the commercial signage and graphic of cocktail lounge, coffee shop furniture, gift shop, dress shop, shoe store, restaurant, tobacco shop, fuel, beauty salon, barber shop etc.
4.3 Draw the signage & graphics travel symbols as follows airport, car rentals, train, taxi, lost & found immigration, money exchange, moving side walk, departure, arrivals, ferry etc.
4.4 Draw the signage & graphics of recreation and sports symbols as follows picnic area, water, swimming, canoeing, sailing, marina camping, women's\ men toilet, fishing, football\shooting, golf, badminton etc.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

4.5 Draw the signage and graphics of universal symbols as follows- entry, exit, emergency, women's\ men toilet, handicapped, no smoking, telephone, no parking, mailbox, shower, waiting room, information etc.

5. PREPARE A SET OF PRESENTATION DRAWING OF SIMPLE MULTI-STORIED RESIDENTIAL BUILDING.

5.1 Draw the ground floor plan showing parking area with rendering (use shade & shadow color charcoal etc) in 1:100 scale.

5.2 Draw the typical floor plan with rendering (use shade & shadow color charcoal etc) for the approval of client in 1:100 scale.

5.3 Draw the furniture layout plan of an apartment in 1:50 scale.

5.4 Draw the elevations of the building showing shade & shadow.

5.5 Draw the long & cross section of the building.

6. PREPARE THE FURNITURE ARRANGEMENT OF SERVICE AREA (KITCHEN & TOILET)

6.1 Sketch 3D view of furniture layout of kitchen room-
- a) Arrange the fixture in "**L**" shape.
- b) Arrange the fixture in "**U**" shape.
- c) Arrange the fixture in corridor shape.
- d) Arrange the fixture in island & family kitchen.

6.2 Sketch 3D view of furniture layout of bath room –
- a) With W.C. shower tray and lavatory.
- b) With W.C. bathtub and lavatory.

REFERENCE BOOKS
1. **INTERIOR DESIGN ILLUSTRATED**-   Francis d. k. ching
2. **INTERIOR DESIGN PRINCIPLE & PRACTICE**- M. pratap rao.
3. **TIME SAVER STANDARDS FOR INTERIOR DESIGN**

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

		T	P	C
6142	Computer Aided Drafting	0	6	2

AIMS:
Able to develop knowledge, skill and attitude in the field of Computer Aided Drafting (Auto CAD) with special emphasis on:
- Drawing environments and drawing aids.
- Different setup of drawing in Auto CAD.
- Drawing commands.
- Modification & edits of drawing.
- Develop skills in 3D using Auto CAD.
- Printing the drawing elements.

SHORT DESCRIPTION:
Drawing environments and drawing aids; Different setup of drawing in Auto CAD; Drawing commands; Modification & edits of drawing; & Printing the drawing elements.

PRACTICAL

1. Set up the drawing environments and drawing aids.
    1.1. Start a CAD package and identify the different areas of CAD graphic screen.
    1.2. Use menu bar, command prompt area, toolbar and drawing aids.
    1.3. Use the drawing aids, different menus and dialog boxes of CAD package.
    1.4. Save the drawing & exit from the file.

2. Construct the geometrical shape or object.
    2.1. Use the command to draw Line using Cartesian and Polar co-ordinate system.
    2.2. Draw single and multiple points using point commands.
    2.3. Draw straight and angular line using line commands.
    2.4. Connect lines, arcs etc. using snap command.
    2.5. Erase the object using different erase commands.

3. Construct the rectangle, circle, polygon, poly line etc.
    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 poly line and arc together using poly line commands.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

    3.6.   Draw different thickness of poly line using poly line commands

4.   Construct the ellipse, arc, donut, offset, array etc.
    4.1.   Draw ellipse using center and axis method commands.
    4.2.   Draw arc using different commands of arc.
    4.3.   Draw donut using donut commands.
    4.4.   Draw lines in certain distance using offset commands.
    4.5.   Duplicate an object in a fixed number & fixed distance using the rectangle array commands.
    4.6.   Duplicate an object in a fixed number & rotating distance using the polar array commands.

5.   Construct ray, chamfer, fillet, lengthen, hatch, stretch and scale etc.
    5.1.   Draw ray in a certain angular distance using ray command.
    5.2.   Use chamfer & fillet in a given figure.
    5.3.   Use different lengthen command in a given line.
    5.4.   Fill the drawing areas of an object using different pattern of hatch command.
    5.5.   Use stretch command to extend an area.
    5.6.   Use scale command to enlarge or reduce an object in a ratio.

6.   Edit and modify the object.
    6.1.   Select and delete the object in various methods.
    6.2.   Duplicate the object using copy.
    6.3.   Use trim command in a given drawing.
    6.4.   Use the extend command in a given drawing.
    6.5.   Use mirror command to create duplicate reverse copy.
    6.6.   Break the line using break command.
    6.7.   Rotate the object in different angle /direction using rotate command.

7.   Set-up the units, limits, layer.
    7.1.   Fix-up the units using units command.
    7.2.   Fix-up the drawing limits using limits command.
    7.3.   Select the layer control option.
    7.4.   Create the name of a layer and make it current.
    7.5.   Use freeze, lock option of the layer.
    7.6.   Set the color, line type & line weight for different layer.

8.   Set-up the dimension style and dimensioning.
    8.1.   Set-up the dimension style using dimension style manager.
    8.2.   Fix-up the dimension style using modify dimension style.
    8.3.   Fix-up the units, dimension lines and arrows, text, leader & annotations etc.
    8.4.   Put dimension in the object using linear, angular, radius, diameter, ordinate, align, center mark, continuous, base line commands.
    8.5.   Edit dimension.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

9.   Set-up the Text style.
   9.1.   Set the text style using text style commands.
   9.2.   Fix-up the text height & font using text style commands.
   9.3.   Select the text justification using text style command.
   9.4.   Write text by using dtext and multiple text commands.
   9.5.   Edit the text in a given drawing.
   9.6.   Insert text in CAD from other software (i.e. MS Word, Excel etc).

10.   Prepare a drawing in different layer using Auto CAD.
   10.1.   Draw a given floor plan of a building using various commands.
   10.2.   Draw an elevation of the building using various commands.
   10.3.   Draw the section of the building using various commands.
   10.4.   Put dimension & write the text or annotation on the floor plan & section.
   10.5.   Create a folder & Save the drawing.

11.   Prepare the 3D objects in Auto CAD.
   11.1.   Create simple 3D object in auto CAD.
   11.2.   Draw isometric view using snap & is plan command.
   11.3.   Create 3D surface by using 3D poly Edge surf, Rule surf, Tab surf & Mesh.
   11.4.   Edit / draw 3D object using polar co-ordinate system.
   11.5.   Edit 3D object using different editing command i. e. align, rotate 3D, array 3D, mirror 3D, move, chamfer, fillet, trim etc.

12.   Modify/Edit the 3D objects in Auto CAD.
   12.1.   Create 3D surface/object by using extrude.
   12.2.   Edit 3d object using union command
   12.3.   Draw 3d object using revolve command.
   12.4.   Edit / draw 3D object using intersect command.
             Edit 3D object using subtract command.
13.   Set the Layout and plot the drawing.
   13.1.   Create layout for plot.
   13.2.   Set up the scale & assign pen (if necessary) for plot.
   13.3.   Select the paper & plotter for plotting.
   13.4.   Plot the drawing.
   13.5.   Set various drawing in different scale in a paper through layout.
   13.6.   Set the environment for plotting.
   13.7.   Set the drawing at PDF format.

REFERENCE BOOKS :
1.   Mastering Auto CAD   -   Engr. Symuel Mallik

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.　　Auto CAD 2D & 3D　　-　　Engr. Md. Shah Alam

SUBJECT CODE	ESTIMATING & COSTING -I	T	P	C
6442		3	**3**	**4**

AIMS

To provide the ability of quantity analysis of civil engineering works

To enable to estimate volume quantites of materials used in construction works

To provide understanding cost abstruct of civil engineering works

To be able to improve knowledge and skill of estimating two storied building consisting of spread footing .

To develop skill in estimating RCC and bituminous road .

To develop skill in rate analysis process for different items of work in the building trades.

SHORT DESCRIPTION

Introduction to estimating ,Quantity estimation of excavating tank, road embankment canal digging , steps, boundary wall, bituminous & Rcc road, Complete estimate of a single storied two- roomed building with verandah and Two storied building with verandah,. Rate analysis.

DETAIL DESCRIPTION

Theory

INTRODUCTION TO ESTIMATING

1　　Understand the basic concept of estimating .

1.1 Define the term estimating .

1.2 State the methods of estimating .

1.3 Mention the rules and methods of measurements of works.

1.4 Mention the rules of deduction for opening,bearing etc. in masonry .

1.5 List unit weight of different materials used in construction works

1.6 Write unit of different items of works as per standard practice.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

QUANTITY ESTIMATION
2 Estimate the volume of earth work for excavating a tank

2.1 Mention the rules of finding out the volume of earth work by mid area method.

2.2 Mention the rules of finding out the volume of earth work by mean area method.

2.3 Mention the rules of finding out the volume of earth work by prismoidal method.

3 Estimate the volume of earth work for road embankment.

3.1 Identify the side slopes for different heights of road embankment.

3.2 Identify the cross section of road embankment.

3.3 State the method of finding out the volume of earth work in embankment by mid area   method..

3.4 State the method of finding out the volume of earth work in embankment by mean area method..

3.5 State the method of finding out the volume of earth work in embankment by prismoidal   method.

4 Estimate the volume of earth work for canal digging.

4.1 Identify the cross section of partly banking and partly cutting.

4.2 .Explain the method of finding out volume of earth work for partly banking and partly cutting.

4.3 .Explain the terms lead and lift.

5 Estimate the different quantities of item of work in steps , boundary wall and roads.

5.1 Identify different parts of a steps .

5.2 List different items of works in a boundary wall .

5.3 List different items of works in a bituminous road .

5.4 List different items of works in a RCC road.

COMPLETE ESTIMATE OF A SINGLE STORIED TWO ROOMED BUILDING WITH VERANDAH AND TWO STORIED BUILDING WITH VERANDAH.
6 Understand the procedure of estimating a simple building.

6.1 State centre line and separate wall method.

6.2 Mention the advantage and disadvantage of centre line and separate wall methods.

6.3 Explain the methods of deduction for opening or over lapping.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

6.4 Define the terms sub-structure and super- structure.

6.5 .Explain the dimensions length, breadth and height or depth of any section.

6.6 Identify main wall, partition wall, outer wall, inner wall, parapet wall etc.

6.7 Identify RCC work in lintel, beam, stair, floor/roof slab, sunshade, shelve, railing, drop wall etc.

6.8 .List different sizes of doors and windows.

6.9 List the number of ventilators required.

6.10 Identify the items of work for civil construction.

RATE ANALYSIS

7   Understand the basic concept of rate analysis.

7.1 State meaning of rate analysis. .

7.2 Explain the purposes of rate analysis.

7.3 Explain the terms, contractors profit, overhead charges, contingency sundries and lumsum.

7.4 Mention the advantage of rate analysis to prepare cost estimate .

PRACTICAL

1. Calculate the volume of earth work in excavating tank of a given cross-section by mid area method.

2. Calculate the volume of earth work in excavating tank of a given cross-section by mean area method.

3. Calculate the volume of earth work in excavating tank of a given cross-section by prismoidal method.

4. Calculate the volume of earth work of 100m long embankment by mid area method.

5. Calculate the volume of earth work of 100m long embankment by mean area method..

6. Calculate the volume of earth work of 100m long embankment by prismoidal method.

7. Determine the rate of different categories of labour cosidering the work site including lead and lift.

8. Calculate the cost of abstruct considering labour categories and lead & lifts.

9. Calculate the volume of earth work for partly banking and partly cutting.

10. Calculate the amount of cement ,sand and brick required for 10 cum masonry work using 1:4 proportion of mortar.

11. Calculate the amount of cement ,sand and brick required for 10 cum masonry work using 1:6 proportion of mortar.

12. Calculate the amount of cement ,sand and brick required for 10 sqm brick masonry (125mm thick wall) using 1:4 proportion mortar.

13. Prepare an estimate for construction of underground water reservior.

14. Prepare an estimate for construction of 100m long boundary wall.

15. Prepare an estimate for making wooden chair, table and almirah.

16. Prepare an estimate for construction of 100m long bituminous road.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

17.Prepare an estimate for construction of 100m long RCC road.

18 **Calculate the quantity of following items of work of a single storied two-roomed building with verandah and two storied building with verandah.**

18.1 Earth work in excavation of foundation trenches.

18.2 One layer brick flat soling in foundation and floor.

18.3 Cement concrete work (1:3:6) in foundation and floor.

18.4 Brick work(1:6) in foundation (Sub-structure) up to plinth level.

18.5 Earth work in filling the sides of foundation trenches and plinth.

18.6 Damp proof course (DPC) below super structure wall.

18.7 Brick work (1:6) in super structure .

18.8 125 mm thick Brick work (1:4) in partition wall .

18.9 RCC work (1:2:4) in lintel, beams, roof slab, stair, sunshade and drop wall.

18.10 Mild steel bar reinforcement fabrication in different RCC works when percentage given .

18.11 Wood work in door and window frames.

18.12 Wood work in door and window shutters.

18.13 Grill work for windows .

18.14 Pre-cast RCC ventilator .

18.15 Cement plaster to both sides of brick wall .

18.16 Cement plaster to all RCC surface .

18.17 Cement plaster to plinth wall and skirting with neat cement finishing (NCF) .

18.18 Patent stone flooring (PSF)

18.19 Lime terracing over RCC roof slab.

18.20 White washing/distempering.

18.21 Plastic emulsion paint to walls and ceiling.

18.22 .Color washing/ snowcem washing/weather coat.

18.23 Synthetic enamel painting to doors and windows.

19 **Calculate the analysis of rates for different items of building works.**

REFERENCE BOOKS

1. Estimating and costing - B N Datta
2. Estimating and costing - Gurucharan Singh

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

Surveying- 1

Code: 6432

T	P	C
2	6	4

Objectives

To provide the students with an opportunity to acquire knowledge and skills about:
1. Conduct the survey work with chain, compass and plane table.
2. Conduct cadastral survey.
3. Record surveyed data and plot the surveyed area.
4. Enlarge or reduce the map and calculate the area by using small instrument.

Short Description

Introduction to surveying; chain surveying; Compass surveying; Plane table surveying; Cadastral surveying.

DETAIL DESCRIPTION

Theory:

INTRODUCTION TO SURVEYING

1.0   Understand concepts of surveying
      1.1   Explain the meaning of surveying
      1.2   Discuss the purpose of surveying.
      1.3   Classify Primary divisions of survey.
      1.4   Explain field work.
      1.5   Explain office work.
      1.6   Acquaint with survey instruments and their care and adjustment.
      1.7   Discuss the classification of surveying based of shape of earth nature of field object of surveying and instrument employed.
      1.8   Differentiate plane survey and geodetic survey.

CHAIN SURVEYING

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

2.0   Understand the basic principle of chain surveying.
      2.1   Describe the purpose and scope of chain surveying.
      2.2   Describe basic principle of chain surveying.
      2.3   Explain chain line, base line, tie line, check line, station points.
      2.4   Explain ill-conditioned and well conditioned triangle.
      2.5   Rules to be observed while chaining.

3.0   Understand the main instrument used in chain surveying.
      3.1   List the equipment and accessories used in chain surveying.
      3.2   Describe Gunter's chain, Engineer's chain, meter chain, ranging rod, cross-staff, offset rod, plumb-bob, arrows, tapes, whites.
      3.3   Explain the method of folding and unfolding a chain.
      3.4   Describe the use of steel band chain.
      3.5   Describe the use of linen, steel and invar tape.
      3.6   Explain the use of arrows, ranging rod, offset rod, cross-staff, prism square, box-sextant, clinometer.

4.0   Understand the use optical square.
      4.1   Describe the principle of optical square.
      4.2   Explain the construction and use of optical square.
      4.3   Explain the procedure of checking and adjustment of optical square.

5.0   Understand the procedure of chain surveying.
      5.1   Explain reconnaissance surveying.
      5.2   Describe the procedure of chain surveying.
      5.3   State the considerations of selecting station points.
      5.4   Describe the procedure of ranging of survey line.
      5.5   Distinguish between direct and indirect ranging.
      5.6   Describe the procedure of indirect ranging (reciprocal ranging) on sloping ground.
      5.7   Describe the procedure of measuring linear distances with the help of chain and tape.

6.0   Understand in measuring offset.
      6.1   Define offset perpendicular offset and oblique offset.
      6.2   Describe the procedure of measuring offset by offset rod and tape.
      6.3   Describe the procedure of measuring offset by optical square.
      6.4   Describe the different methods of locating unknown points with reference to two known points.

7.0   Understand booking procedure of field book.
      7.1   State single line and double line field book.
      7.2   Describe the procedure of booking in a single line field book.
      7.3   Describe the procedure of booking in a double line field book.
      7.4   Describe precautions in booking field notes.

8.0   Understand chaining across obstacles.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

8.1 Describe the procedure of setting out perpendicular by chain and tape when the point is accessible.

8.2 Describe the procedure of setting out perpendicular by chain and tape when the point is inaccessible.

8.3 Describe the procedure of chaining across obstacles when the chaining obstructed.

8.4 Describe the procedure of chaining across obstacles when the vision obstructed

8.5 Describe the procedure of chaining across obstacles when both chaining and vision obstructed.

9.0 Understand errors in chaining.

9.1 List the errors in chaining.

9.2 Identify the causes for which a chain may be too-long or too-short.

9.3 Calculate the correct distance and correct area from measured distance and measured area when the chain was too-long or too-short.

9.4 Explain cumulative and compensating errors with causes of those errors.

9.5 List the mistakes in chain surveying.

9.6 List the name of necessary correction to be applied to the measured length of a line in order to obtain its true length.

9.7 Explain the formula for correction of tapes for absolute length, variation of temperature, variation of pull, sag and slope.

9.8 Computer correct length of line after necessary correction due to variation of pull, sag and slope.

9.9 Explain normal tension.

9.10 Explain degree of accuracy in chaining.

9.11 Discuss about precise of linear measurements.

10.0 Prepare a chain survey map.

10.1 List the instrument and materials required for plotting a survey map.

10.2 Discuss different types of scale.

10.3 State suitable scale for plotting a map.

10.4 Describe the procedure of plotting a survey map from field book.

10.5 Draw conventional symbols used in plotting maps.

11.0 Apply different methods of computing areas.

11.1 Describe the units of measurements in plane surveying.

11.2 Describe different methods of computing areas within regular and irregular perimeters.

11.3 Carry out the field work for calculation of areas within regular and irregular perimeters.

11.4 Compute the area along boundary by mid-ordinate rule, average ordinates rule, trapezoidal rule, and Simpson's rule.

12.0 Understand the methods of calculation of area from a given map.

12.1 Describe the procedure of computation of area from a map with the help of planimeter.

12.2 Calculate an area with the help of planimeter.

12.3 Describe the procedure of computation of area from a map analytically by dividing the map into triangles, squares, trapezoids (Parallel lines).

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

12.4   Calculate an area from a map analytically.

12.5   Describe the procedure of computation of area from a given map with the help of acre comb.

12.6   Calculate an area from a map with the help of acre comb.

13.0   Understand about small instruments.

13.1   State the use of planimeter.

13.2   State the use of pantograph.

13.3   State the use of acre comb.

13.4   Describe the procedure of reducing and enlarging a map with the help of pantograph.

13.5   Describe the procedure of measuring angle of elevation and depression with the help of abney level.

COMPASS SURVEYING

14.0   Understand basic terms used in compass surveying.

14.1   Describe the purpose and scope of compass surveying.

14.2   List the instrument and accessories required for compass survey.

14.3   Define terms- meridian, true meridian, magnetic meridian, arbitrary meridian, bearing, true bearing, magnetic bearing, arbitrary bearing, magnetic declination, dip of the needle, deflected angle, exterior angle, interior angle.

14.4   State the method to determine the direction of meridian by sun's shadow.

14.5   State the method to determine the direction of magnetic meridian by compass needle.

15.0   Understand conversion of bearing.

15.1   Explain fore bearing and back bearing.

15.2   Compute back bearing from fore bearing and fore bearing from back bearing.

15.3   Explain whole circle bearing and reduced bearing and necessity of converting   them.

15.4   Convert whole circle bearing to reduced bearing and reduced bearing to whole circle bearing.

16.0   Understand the procedure of compass surveying.

16.1   Describe prismatic, surveyors and trough compass.

16.2   Differentiate prismatic and surveyors compass.

16.3   State the use of different compass.

16.4   Describe the procedure of compass survey.

16.5   Define local attraction.

16.6   Detect local attraction and correct the observed bearings.

PLANE TABLE SURVEYING

17.0   Understand basic concept of plane table surveying.

17.1   State the purpose and scope of plane table surveying.

17.2   List the instruments and accessories required for plane-table survey.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

17.3   Explain the functions of different instruments and accessories used in plane- table survey.

17.4   Describe the procedure of setting up plane table.

17.5   Explain the term orientation.

17.6   Describe orientation by magnetic needle and back sighting.

17.7   Name the methods of plane table survey.

17.8   Describe radiation, intersection, traversing and resection methods.

18.0   Understand the methods of solving two points and three points' problem.

18.1   Define two points problem.

18.2   Describe the procedure of location of the plan the position of the instrument station of the ground by solving two points problem.

18.3   Define three points problem.

18.4   Describe the procedure of locating on the plan the position of the instrument station on the ground by solving three-points problem

19.0   Understand errors and precautions in plane table survey.

19.1   Describes the advantages and disadvantage of plane table survey.

19.2   List the error in plane table survey.

19.3   List the precautions to be taken in plane table survey.

CADASTRAL SURVEY

20.0   Understand the basic concept of cadastral survey.

20.1   Define cadastral survey.

20.2   Define the purpose of cadastral survey.

20.3   Identify scale used in cadastral survey.

20.4   List the equipment and accessories used in cadastral survey.

20.5   Define the terms Quadrilaterals, intersections, shikmi, chanda, check line, field khaka, revenue survey, revisional settlement.

20.6   State the stages of cadastral survey.

20.7   Explain the procedure of preparing a cadastral survey map.

20.8   Describes the rules for numbering the plots.

21.0   Identify the boundary of property.

21.1   Describe the procedure for demarcation of boundary lines of property.

21.2   Describe the procedure for locating of lost boundary.

Practical:

1. Identify the different instruments and accessories required for chain survey.

2. Test and adjust chain.

3. Measure length of line by chain and tape.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

4. Set perpendiculars with the help of chain and tape.

5. Set parallel lines with chain and tape.

6. Test and adjust an optical square.

7. Set perpendiculars with the help of optical square.

8. Measure distances across obstacles.

9. Conduct a chain survey of a field.

10. Prepare a chain survey map.

11. Calculate the area of map with the help of planimeter.

12. Identify the different instruments and accessories required in compass survey.

13. Measure magnetic bearing by prismatic and surveyors compass.

14. Identify the different instruments and accessories required in plane table survey.

15. Locate the position to point with the help of plane table.

16. Plot the map of a place by radiation, intersection and traversing.

17. Locate the position of the instrument station of the plan of the plane table by solving three points problem.

18. Locate the position of the instrument station on the plan of the plane table by solving three points problem.

19. Calculate the area from a map with the help of planimeter graphically and analytically.

20. Enlarge a given map up to the desired size with the help of pantagraph.

21. Reduce a given map up to the desired size with the help of pantagraph.

22. Calculate the angle of elevation and angle of depression with the help of abney level.

23. Measure the area of a plot from mouza map.

24. Locate the position of a point in the field which is already plotted on the mouza map.

25. Locate the boundary line of a property with the help of chain, tape and plane table which is already plotted on the mouza map.

Reference Book:

1. Surveying and Levelling - T. P. Kanatker

2. Syrveying - Norman Thomas

3. Surveying - Aziz & Shahjahan

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

4. Plane & Geodetic Survey - D. Clark

5. Surveying - B. C. Punmia

6. Text book of surveying - S.K.Husain, M.S Nagraj.

6444   **CONSTRUCTION PROCESS-I**   **T P   C**

3

3   4

AIMS

- To apply relevant theory and practice of concrete construction and its quality control methods.
- To provide understanding and skills for construction and supervision of all type of foundations.
- To assist on understanding the process, techniques and materials used in different types of masonry.

SHORT DESCRIPTION

Concrete, Foundation, Shallow foundation, Deep foundation, Brick masonry, Composite masonry, Partition wall, Cavity wall.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER
DETAIL DESCRIPTION

Theory:

1 **Understand the features of concrete.**

    1.1   State the meaning of concrete.

    1.2   Mention the different kinds of concrete.

    1.3   List the uses of concrete in the construction industry.

    1.4   List the ingredients of different kinds of concrete.

    1.5   Mention the functions of ingredients of concrete.

    1.6   Mention the advantages and limitations of concrete.

    1.7   Write the characteristics of materials used in concrete.

2 **Understand the properties of concrete.**

    2.1   Define the terms: strength, durability, workability, laitance and segregation.

    2.2   State the meaning of water-cement ratio.

    2.3   List the factors affecting the strength of concrete.

    2.4   List the factors affecting the durability of concrete.

    2.5   List the factors affecting the workability of concrete.

    2.6   Describe the affect of water-cement ratio on the strength of concrete.

3 **Understand the techniques of proportioning, mixing, transporting, placing and compaction of concrete.**

    3.1   Explain the significance of proportioning the ingredients of concrete.

    3.2   List the methods of concrete mix design.

    3.3   Describe how batching of concrete mix is achieved by volume and weight.

    3.4   Compare the various processes used to mix concrete.

    3.5   Mention the advantages and limitations of ready mix concrete.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

3.6   State the various methods of transporting concrete.

3.7   Mention the sequence of placing concrete in different situations.

3.8   Describe the processes of compaction of concrete.

4   Understand the concept of curing concrete.

4.1   State the meaning of curing.

4.2   State how the curing process affects the strength of hardened concrete.

4.3   Describe the different methods of curing.

4.4   Mention the advantages and limitations of various methods of curing.

5   Understand the need of different tests on concrete.

5.1   Interpret standard test information to establish the properties of various types of aggregates.

5.2   Express how to draw the grading curve for various sample of aggregate.

5.3   Express how to determine the FM value from the grading curve.

5.4   State the necessity of the following tests on concrete:

    a. Slump test.

    b. Compressive test on hardened cube.

    c. Compressive test on hardened cylinder.

6   Understand the features of different special types of concrete.

6.1   Compare the properties of polymer concrete and super plasticized concrete.

6.2   Mention the procedure used in the production of Ferro-cement construction.

6.3   Explain the term pre-stressed concrete.

6.4   Mention the procedure used in the production of pre-stressed concrete.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

7   Understand the supervisory aspects of concrete construction.

7.1   List the special precautions to be observed for concreting under water.

7.2   List the special precautions to be observed for concreting in cold weather.

7.3   List the special precautions to be observed for concreting in hot weather.

7.4   List the factors to be considered while supervising good quality concrete production.

7.5   List the factors to be considered while supervising good quality RCC construction.

7.6   List the factors to be considered while supervising good quality pre-stressed concrete construction.

8   Understand the aspects of foundation.

8.1   Define the term 'foundation'.

8.2   State the functions of foundation.

8.3   List the essential requirements of a good foundation.

8.4   List the common causes of failure of foundations.

8.5   Explain the remedial measures necessary to overcome the failure of foundations.

8.6   Mention the precautions necessary to prevent uneven settlement of foundations.

9   Understand the features of shallow foundation.

9.1   Define the term 'shallow foundation'.

9.2   Mention the advantages of shallow foundations.

9.3   Mention the limitations of shallow foundations.

9.4   Mention the suitability of various types of shallow foundations.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

9.5   Draw the sketches of strip footing, wide strip footing, eccentrically loaded footing, raft foundation, combined footing, stepped strip foundation, grillage foundation.

10   Understand the features of deep foundation.

10.1   Define the term 'deep foundation'.

10.2   Mention the classification of pile foundations according to function or use, materials and composition, method of construction.

10.3   Write the advantages and limitations in each case of deep foundations.

10.4   Describe the following methods of casting and placing concrete pile foundation:
   a. Cased cast-in-situ concrete pile.
   b. Uncased cast-in-situ concrete pile.
   c. Pre-cast concrete pile.

10.5   Identify the types of hammers used for pile driving.

10.6   Describe the methods for driving concrete pile groups and placing pile caps.

11   Understand the features of brick masonry.

11.1   State the meaning of brick masonry.

11.2   List the tools required for brick masonry.

11.3   State the specific uses of brick masonry tools.

11.4   Distinguish among different types of masonry structures.

11.5   Define the following terms: header, stretcher, lap, course, bed, joint, closers, perpend.

11.6   Identify the defects in brick masonry.

11.7   List the factors to be considered while supervising brick masonry works.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

12 Understand the purpose of bond in brick masonry.

12.1 State the meaning of bond in brick masonry.

12.2 Mention the functions of good brick bonding.

12.3 Describe the steps for brick lying.

12.4 Identify different types of bonds in brick masonry.

12.5 Draw the neat sketches of different types of bonds in brick masonry.

12.6 Differentiate between English and Flemish bond.

12.7 Describe the bonding arrangements around openings and corners.

13 Understand the features of composite masonry.

13.1 State the meaning of composite masonry.

13.2 Identify different types of composite masonry.

13.3 Sketch details of brick backed stone slab masonry.

13.4 Sketch details of reinforced brick masonry.

13.5 Mention the advantages and limitations of using reinforced brick masonry.

13.6 Mention the advantages and limitations of hollow clay block masonry.

14 Understand the features of partition wall.

14.1 State the meaning of partition wall.

14.2 Mention the common requirement of partition walls.

14.3 Mention the functions of partition wall.

14.4 List different types of partition walls.

14.5 Describe the procedure of construction of the following types of partition walls:

      a. Brick partition wall

      b. Concrete partition wall

      c. Glass partition wall

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

     d. Aluminum partition wall

     e. Light weight partition wall(timber stud work, Ferro-cement plate, hollow blocks)

14.6   Mention the advantages and limitations of each type of partition walls.

14.7   Differentiate among the load bearing (main) walls and partition walls.

15 Understand the features of cavity wall.

15.1   State the meaning of cavity wall.

15.2   Explain the necessity of cavity wall construction.

15.3   Sketch the general features of cavity walls.

15.4   Mention the advantages and limitations of cavity walls over solid brick walls.

15.5   Identify different types of wall ties used in cavity wall.

15.6   Determine the spacing of wall ties in used in cavity wall.

15.7   Describe the construction procedure of cavity wall.

15.8   Mention the precautions to be taken while construction of cavity wall.

Practical:

1   Draw the grading curves for various samples of aggregates to find out the FM value.

2   Determine the slump for different concrete works.

3   Conduct cube test for concrete and interpret the results.

4   Conduct cylinder test for concrete and interpret the results.

5   Construct sample brick pillars of sizes 25cm x 25cm to 75cm x 75cm with English bond.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

6	Construct sample brick pillars of sizes 25cm x 25cm to 75cm x 75cm with Flemish bond.
7	Construct sample corner (L) joints of 25cm to 75cm width English bond brick wall.
8	Construct sample corner (L) joints of 25cm to 75cm width Flemish bond brick wall.
9	Construct sample tee (T) joints of 25cm to 75cm width English bond brick wall.
10	Construct sample tee (T) joints of 25cm to 75cm width Flemish bond brick wall.
11	Construct sample cross (+) joints of 25cm to 75cm width English bond brick wall.
12	Construct sample cross (+) joints of 25cm to 75cm width Flemish bond brick wall.

REFERENCE BOOKS

1	Building construction	Dr. B C Punmia
2	Building construction	G J Kulkarni
3	Building construction	S P Aurora and S P Brindra

5821	**SOCIAL SCIENCE – II**	**T**	**P**	**C**

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

(BANGLADESH : HISTORY & CULTURE)	2	0	2

উদ্দেশ্য

- পদ্মা-মেঘনা-যমুনা বদ্বীপ অধ্যুষিত ভৌগোলিক অঞ্চলে বাঙ্গালী সমাজ গঠন এবং নানা ঐতিহাসিক বিবর্তনের পর্যায় পেরিয়ে গঠিত আধুনিক বাংলাদেশ সম্পর্কে শিক্ষার্থীদের যথার্থ অবগত করানো এবং তাদের সঠিক বোধ সৃষ্টিকরণ।
- প্রাকৃতিক ও অর্থনৈতিক কাঠামোর পরিমন্ডলে বাংলাদেশের সাংস্কৃতিক বিকাশের সাথে শিক্ষার্থীদের উজ্জীবিত করে বাংলাদেশের যোগ্য ও পরিশীলিত নাগরিক হিসাবে যথার্থ বিকশিতকরণ।

সংক্ষিপ্ত বিবরণী

ইতিহাস

- ইতিহাসের সংজ্ঞা।
- বাংলাদেশের আবহাওয়া ও অধিবাসী।
- প্রাগৈতিহাসিক ও প্রাচীনকালে বাংলাদেশ।
- বাংলায় মুসলমানদের আগমন, প্রতিষ্ঠালাভ ও শাসন — খলজী ও তুর্কী শাসনে বাংলায় স্বাধীন সুলতানী প্রতিষ্ঠা; বাংলাদেশে শাহী আমল, আফগান ও মোঘল আমলে বাংলার শাসন।
- বাংলায় ইউরোপীয় বণিকদের আগমন; নবাবী আমলে বাংলার শাসন ব্যবস্থা; বাংলায় ইংরেজ শাসন ক্ষমতা লাভ ও প্রতিষ্ঠা।
- ব্রিটিশ বিরোধী সশস্ত্র প্রতিরোধ আন্দোলন; সংস্কার আন্দোলন ও জাতীয়তাবাদের বিকাশ এবং বাংলার নবজাগরণ; বঙ্গভঙ্গ ও বঙ্গভঙ্গ উত্তরকালে বাংলার রাজনীতি ও দেশ বিভাগ।
- পাকিস্তান আমলে বাংলাদেশ এবং বাংলাদেশের মুক্তি সংগ্রাম ও যুদ্ধ।

সংস্কৃতি

সংস্কৃতির সংজ্ঞা, আদিযুগে বাংলার সমাজ-সংস্কৃতির রূপরেখা, সুলতানী, মোঘল ও নবাবী আমলের বাংলার সমাজ সংস্কৃতি; ইংরেজ আমলে বাংলার সমাজ ও সংস্কৃতি।
রবীন্দ্র ও নজরুল যুগ এবং রবীন্দ্র ও নজরুল উত্তর বাংলার সমাজ ও সংস্কৃতি; পাকিস্তান আমলে বাংলাদেশের সাংস্কৃতিক রূপরেখা; স্বাধীনতাউত্তর বাংলাদেশের সংস্কৃতি।

বিশদ বিবরণী
ইতিহাস

১. ইতিহাসের সংজ্ঞা, প্রাগৈতিহাসিক আমলের বাংলাদেশ এবং বাংলাদেশের আবহাওয়া ও অধিবাসী সম্পর্কে অবগত হওয়া।
    ১.১ ইতিহাসের সংজ্ঞা প্রদান।
    ১.২ বাংলাদেশের প্রাচীন জনপদ উল্লেখ করা।
    ১.৩ বঙ্গ বা বাংলা নামের উৎপত্তি ব্যাখ্যা করা।
    ১.৪ বঙ্গের সীমারেখা চিহ্নিত করা।
    ১.৫ বাংলার আবহাওয়া ও এর অধিবাসীদের চরিত্রে আবহাওয়ার প্রভাব বিবৃত করা।
    ১.৬ প্রাগৈতিহাসিক ও প্রাচীন বাংলার আর্থ-সামাজিক ব্যবস্থা বর্ণনা করা।

২. বাংলাদেশে গুপ্ত, রাজা শশাঙ্ক, পাল ও মুসলিম শাসন সম্পর্কে অবগত হওয়া।

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

২.১   গুপ্ত শাসন আমলে বাংলার শাসনব্যবস্থা বর্ণনা করা।

২.২   রাজা শশাঙ্কের রাজ্য বিজয় ও শাসন বর্ণনা করা।

২.৩   বাংলার অরাজকতা ও হিউয়েনসাং এর আমলে বাংলার অবস্থা বর্ণনা করা।

২.৪   গোপাল কর্তৃক অরাজকতার অবসান ঘটানোর কৃতিত্বের বর্ণনা করা।

২.৫   বাংলাদেশে মুসলমানদের আগমন ও বখতিয়ার খলজীর বাংলা বিজয় বর্ণনা করা।

২.৬   বাংলাদেশে স্বাধীন সুলতানী শাসন প্রতিষ্ঠায় শামছুদ্দিন ইলিয়াশ শাঞ্রীর কৃতিত্ব বর্ণনা করা।

২.৭   বাংলায় মোঘল শাসনের ইতিবৃত্ত ব্যাখ্যা করা।

২.৮   ১৭৫৭ সালের পলাশীর যুদ্ধের কারণ, ঘটনা ও ফলাফল বর্ণনা করা।

৩.   পলাশীযুদ্ধ পরবর্তী অবস্থায় ইস্ট ইন্ডিয়া কোম্পানীর আধিপত্য বিস্তার সম্পর্কে জ্ঞাত হওয়া।

৩.১   দেওয়ানী, দ্বৈতশাসন ও বাংলার দুর্ভিক্ষ বর্ণনা করা।

৩.২   ইংরেজদের চিরস্থায়ী বন্দোবস্ত এবং এর ফলাফল বর্ণনা করা।

৩.৩   বাংলাদেশে জমিদার, প্রজাব্যবস্থা প্রতিষ্ঠা এবং আর্থ-সামাজিক ব্যবস্থায় জমিদারদের ভূমিকা ও প্রজাকুলের সার্বিক অবস্থা উল্লেণ্ঢখ করা।

৩.৪   ১৯০৫ সালের বঙ্গভঙ্গ আন্দোলন ও ফলাফল ব্যখ্যা করা।

৩.৫   হাজী শরীয়ত উলণ্ঢাহর ফরায়েজী আন্দোলন ও এর ফলাফল ব্যখ্যা করা।

৪.   বঙ্গভঙ্গউত্তর রাজনীতি ও দেশ বিভাগ সম্পর্কে অবহিত হওয়া।

৪.১   ১৯৩৭ এর নির্বাচন ও এর বৈশিষ্ট্য উল্লেণ্ঢখ করা।

৪.২   লাহোর প্রস্তাব ব্যক্ত করা।

৪.৩   ১৯৪৩ এর বাংলার দুর্ভিক্ষের কারণ ও এর পূর্বাপর অবস্থা উল্লেণ্ঢখ করা।

৪.৪   পাকিস্তানের পূর্বাঞ্চল হিসাবে ১৯৪৭ সালে পূর্ব পাকিস্তানের প্রতিষ্ঠা ব্যাখ্যা করা।

৫.   পাকিস্তান আমলে বাংলাদেশের (তৎকালীন পূর্ব পাকিস্তান) রাজনীতি, অর্থনীতি ও সামাজিক অবস্থা সম্পর্কে অবগত হওয়া।

৫.১   ভাষা আন্দোলন ও সমকালীন রাজনৈতিক ও সামাজিক প্রেক্ষিত ব্যক্ত করা।

৫.২   আওয়ামীলীগ প্রতিষ্ঠা, যুক্তফ্রন্ট ও ২১ দফা দাবীর ভিত্তিতে নির্বাচন অনুষ্ঠান এবং যুক্তফ্রন্টের মন্ত্রিসভা গঠন ও বাতিল আলোচনা করা।

৫.৩   পাকিস্তানের সামরিক অভ্যুথান, আইয়ুব বিরোধী আন্দোলন ও ৬ দফা দাবী, আগরতলা ষড়যন্ত্র মামলার ইতিবৃত্ত বর্ণনা করা এবং পূর্ব-পশ্চিম পাকিস্তানের অর্থনৈতিক বৈষম্যের খতিয়ান উল্লেণ্ঢখ করা।

৫.৪   ১৯৬৯ সালের গণঅভ্যুথান এবং এর ধারাবাহিকতায় বাংলাদেশের মুক্তিযুদ্ধ ও স্বাধীন সার্বভৌম বাংলাদেশ প্রতিষ্ঠা করার পটভূমি ও ঘটনা প্রবাহ বর্ণনা করা।

৫.৫   ১৯৭১ সালের ঐতিহাসিক মুক্তিযুদ্ধ এবং স্বাধীন সার্বভৌম বাংলাদেশের অভ্যুদয় বর্ণনা করা।

৬.   স্বাধীন সার্বভৌম বাংলাদেশের রাজনীতি ও আর্থ-সামাজিক অবস্থা সম্পর্কে অবগত হওয়া।

৬.১   যুদ্ধোত্তর স্বাধীন সার্বভৌম বাংলাদেশের আর্থ-সামাজিক পুনর্গঠন কর্মতৎপরতা বর্ণনা করা।

৬.২   ১৯৭৩ সালের নির্বাচন এবং ১৯৭৪ সালে সংবিধানের ৪র্থ সংশোধনীর মাধ্যমে সরকার পদ্ধতির পরিবর্তন ব্যক্ত করা।

৬.৩   ১৯৭৫ সালের ১৫ আগস্ট জাতির জনক বঙ্গবন্ধু শেখ মুজিবুর রহমান -এর শাহাদাত বরণ এবং রাজনৈতিক পটপরিবর্তন।

৬.৪   ১৯৮১ সালে রাষ্ট্রপতি জিয়াউর রহমানের শাহাদাত বরণ, ১৯৮২ সালের সামরিক অভ্যুথান এবং রাজনৈতিক পটভূমি পরিবর্তন।

৬.৫   ১৯৯০ সালে এরশাদ সরকারের পতন এবং তত্ত্বাবধায়ক সরকার পদ্ধতি অনুসংগে ১৯৯১ সনের নির্বাচন এবং গণতান্ত্রিক অনুশীলনের সূচনা।

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

সংস্কৃতি

৭. সংস্কৃতির সংজ্ঞা এবং প্রাচীন ও মধ্যযুগীয় বাংলার সংস্কৃতি ও সাহিত্য চর্চা সম্পর্কে অবগত হওয়া।
   ৭.১   সংস্কৃতির সংজ্ঞা দান।
   ৭.২   প্রাচীন বাংলার ভাষা সাহিত্য ও সংস্কৃতির রূপরেখা বর্ণনা করা।
   ৭.৩   বাঙ্গালী সংস্কৃতি নির্মাণে মর্সিয়া ও পুঁথি সাহিত্যের প্রভাব বর্ণনা করা।

৮. আধুনিক যুগে বাংলাদেশের সংস্কৃতি ও বাংলাভাষার আধুনিক রূপলাভ সম্পর্কে অবগত হওয়া।
   ৮.১   ইংরেজ শাসন আমলে সামাজিক কুসংস্কার দূরীকরণে (স্যার সৈয়দ আহমদ, সৈয়দ আমীর আলী ও রাজা রামমোহন রায়) এর আবির্ভাব এবং তাদের কর্মতৎপরতা ব্যাখ্যা করা।
   ৮.২   ক্যারি সাহেব এবং ফোর্ট উইলিয়াম কলেজ/সংস্কৃত কলেজ স্থাপনের মাধ্যমে বাংলার নতুন সংস্কৃতির রূপলাভ বর্ণনা করা।
   ৮.৩   ইংরেজদের শিক্ষানীতি প্রবর্তন ব্যাখ্যা করা এবং কলিকাতা বিশ্ববিদ্যালয় ও ইসলামিয়া মাদ্রাসা স্থাপনের মাধ্যমে বাংলার সংস্কৃতির বিকাশ ব্যক্ত করা।
   ৮.৪   ঢাকা বিশ্ববিদ্যালয় প্রতিষ্ঠার ইতিবৃত্ত ব্যাখ্যা করা।

৯. ১৯৪৭ এর দেশ বিভাগ ও সাংস্কৃতিক অবস্থার পরিবর্তন সম্পর্কে অবগত হওয়া।
   ৯.১   তৎকালীন পূর্ব পাকিস্তানের তমুদ্দুন মজলিসের ভূমিকা উল্লেখ করা।
   ৯.২   ১৯৫২ সালের ভাষা আন্দোলনের সাংস্কৃতিক গুরুত্ব উল্লেখ করা।
   ৯.৩   ঢাকা কেন্দ্রিক শিল্পী-সাহিত্যিকদের বাংগালী সংস্কৃতি বিনির্মাণের ভূমিকা পালন উল্লেখ করা।
   ৯.৪   '৬৯ এর গণ আন্দোলনে সাংস্কৃতিক কর্মীদের ভূমিকা উল্লেখ করা।
   ৯.৫   বাঙলা একাডেমীর প্রতিষ্ঠা এবং বাংলা ভাষা ও সাহিত্যে এর ভূমিকা উল্লেখ করা।
   ৯.৬   আন্তর্জাতিক মাতৃভাষা দিবস হিসেবে ২১ ফেব্রুয়ারির তাৎপর্য ব্যক্ত করা।
   ৯.৭   ভাষা, শিল্প সাহিত্য চর্চায় সংবাদপত্র ও ইলেক্ট্রনিক মিডিয়ার ভূমিকা উল্লেখ করা।

১০. সংস্কৃতির উপর গ্রামীণ অর্থনীতির প্রভাব অবগত হওয়া।
   ১০.১   তাঁত শিল্প ও মসলিন উৎপাদনের ইতিবৃত্ত ব্যাখ্যা করা।
   ১০.২   পাট চাষের অর্থনৈতিক প্রভাব ব্যক্ত করা।
   ১০.৩   বাঙ্গালী সংস্কৃতির অংশ হিসেবে দুগ্ধজাত মিষ্টান্ন সামগ্রীর (মিষ্টি, মাখন, দধি, পিঠা-পুলি প্রভৃতি) প্রভাব ব্যক্ত করা।
   ১০.৪   দেশীয় মেলা ও পার্বনের সাংস্কৃতিক গুরুত্ব ব্যাখ্যা করা।
   ১০.৫   গ্রামীণ পেশাজীবিদের (কামার, কুমার, তাঁতী, জেলে, ছুতার, ইত্যাদি) সাংস্কৃতিক গুরুত্ব ব্যাখ্যা করা।

১১. বাংলাদেশের সংস্কৃতিতে আদিবাসী সংস্কৃতি ও প্রত্ন তাত্ত্বিক নিদর্শনের অবদান সম্পর্কে অবগত হওয়া।
   ১১.১   বাংলাদেশের আদিবাসী সম্পর্কে উল্লেখ করা।
   ১১.২   বাংলাদেশের সংস্কৃতিতে গাড়ো, রাখাইন, সাওতাল, চাকমা আদিবাসীদের সংস্কৃতিক অবদান ব্যাখ্যা করা।
   ১১.৩   বাংলাদেশের প্রাচীন সংস্কৃতির ঐতিহ্য হিসাবে মহাস্থানগড়, ময়নামতি ও পাহাড়পুরের প্রত্নতাত্ত্বিক নিদর্শনের বর্ণনা দান।

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

সহায়ক পুস্তক

রহিম, চৌধুরী, মাহমুদ ও ইসলাম, "বাংলাদেশের ইতিহাস (পরিবর্ধিত ও পরিমার্জিত)" ; নওরোজ কিতাবিস্তান, আগস্ট, ১৯৯৯।

কে, আলী "বাংলাদেশের ইতিহাস"; আজিজিয়া বুক ডিপো, ২০০১।

সিরাজুল ইসলাম, "বাংলাদেশের ইতিহাস-১৭০৪-১৯৭১"; ১ম, ২য় ও ৩য় খন্ড;
	বাংলাদেশ এশিয়াটিক সোসাইটি, ফেব্রুয়ারি ২০০০।

কো-আন্তোনভা, প্রি, কতোভস্কি, "ভারতবর্ষের ইতিহাস"; প্রগতি প্রকাশন, ১৯৮৮।

গোপাল হালদার; "সংস্কৃতির রূপান্তর"; মুক্তধারা, মে ১৯৮৪।

মোতাহের হোসেন চৌধুরী, "সংস্কৃতি কথা"; নওরোজ কিতাবিস্তান, জানুয়ারি ১৯৯৮।

গোপাল হালদার, "বাংলা সাহিত্যের রূপরেখা-১ম ও ২য় খন্ড"; মুক্তধারা, জুলাই ১৯৭৮।

		T	P	C
5841	**BUSINESS ORGANIZATION & COMMUNICATION**	**2**	**0**	**2**

AIMS

- To be able to understand the basic concepts and principles of business organization.
- To be able to understand the banking system.
- To be able to understand the trade system and stock exchange activities in Bangladesh.
- To be able to understand the basic concepts of communication and its types, methods.
- to be able to perform in writing , application for job, complain letter & tender notice.

SHORT DESCRIPTION

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

Principles and objects of business organization; Formation of business organization; Banking system and its operation; Negotiable instrument; Stock Exchange; Home trade and foreign trade.

Basic concepts of communication Communication model& feedback; Types of communication; Methods of communication; Formal & informal communication; Essentials of communication; Report writing; Office management; Communication through correspondence; Official and semi- official letters.

DETAIL DESCRIPTION

1 **Understand business organization.**
   1.1   Define business.
   1.2   Mention the objects of business.
   1.3   Define business organization.
   1.4   State the function of business organization.

2 **Understand the formation of business organization.**
   2.1   Define sole proprietorship, partnership, joint stock company. and co-operative
   2.2   Describe the formation of sole proprietorship, partnership , joint stock company, & co operative.
   2.3   Mention the advantages and disadvantages of proprietorship, partnership and joint stock company.
   2.4   State the principles of Co operative & various types of Co operative.
   2.5   Discuss the role of co-operative society in Bangladesh.

3 **Understand the banking system and negotiable instrument.**
   3.1   Define bank.
   3.2   State the service rendered by bank.
   3.3   Describe the classification of bank in Bangladesh.
   3.4   State the functions of Bangladesh Bank in controlling money market.
   3.5   State the functions of commercial Bank in Bangladesh
   3.6   Mention different types of account operated in a bank.
   3.7   Mention how different types of bank accounts are opened and operated.
   3.8   Define negotiable instrument.
   3.9   Discuss various types of negotiable instrument.
   3.10 Describe different types of cheque.
   3.11 Define letter of credit.

4 **Understand the home & foreign trade**
   4.1   Define home trade & foreign trade.
   4.2   Describe types of home trade.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)
THIRD SEMESTER

4.3 Differentiate between whole sale trade and retail trade.
4.4 Define foreign trade.
4.5 Mention the advantages and disadvantages of foreign trade.
4.6 Mention the classification of foreign trade.
4.7 Discuss the import procedure & exporting procedure.
4.8 Discuss the importance of foreign trade in the economy of Bangladesh.

5 **Understand the basic concepts of communication**
5.1 Define communication & business communication.
5.2 Describe the scope of business communication.
5.3 State the objectives of business communication.
5.4 Discuss the essential elements of communication process.

6 **Understand the communication model and feedback.**
6.1 Define communication model.
6.2 State the business functions of communication model.
6.3 Define feedback .
6.4 State the basic principles of effective feedback.
6.5 Explain the essential feedback to complete communication process.

7 **Understand the types of communication.**
7.1 Explain the different types of communication.
7.2 Distinguish between upward and downward communication.
7.3 Define two-way communication.
7.4 Describe the advantages and disadvantages of two-way communication.
7.5 Define formal & informal communication.
7.6 Describe the advantages and disadvantages of formal & informal communication.
7.7 Distinguish between formal and informal communication.

8 **Understand the methods of communication.**
8.1 Define communication method.
8.2 Discuss the various methods of communication.
8.3 Describe the advantages and disadvantages of oral communication.
8.4 Describe the advantages and disadvantages of written communication.
8.5 Distinguish between oral and written communication.

9 **Understand the essentials of communication.**
9.1 Discuss the essential feature of good communication.
9.2 Describe the barriers of communication.
9.3 Discuss the means for overcoming barriers to good communication.

10 **Understand the report writing.**
10.1 Define report , business report & technical report.
10.2 State the essential qualities of a good report.
10.3 Describe the factors to be considered while drafting a report.
10.4 Explain the components of a technical report.

ARCHITECTURE & INTERIOR DESIGN TECHNOLOGY (87)

THIRD SEMESTER

10.5   Distinguish between a technical report and general report.
10.6   Prepare a technical report.

11   Understand the office management.

11.1   Define office and office work.
11.2   State the characteristics of office work.
11.3   Define filing and indexing.
11.4   Discuss the methods of filing.
11.5   Discuss the methods of indexing.
11.6   Distinguish between filing and indexing.

12   Understand the official and semi-official letters.

12.1   State the types of correspondence.
12.2   State the different parts of a commercial letter.
12.3   Define official letter and semi-official letter.
12.4   Distinguish between official letter and semi-official letters.
12.5   Prepare the following letters: Interview letter, appointment letter, joining letter and application for recruitment. Complain letters, tender notice.