BANGLADESH TECHNICAL EDUCATION BOARD

Agargoan, Dhaka-1207.

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM

SYLLABUS (PROBIDHAN-2016)

GRAPHICS TECHNOLOGY

TECHNOLOGY CODE: **696**

4th SEMESTER

DIPLOMA IN ENGINEERING
PROBIDHAN-2016

GRAPHICS TECHNOLOGY (696)

4th 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	69641	Image Preparation -2	2	3	3	40	60	25	25	150
2	69642	Elementary Graphic Design	2	6	4	40	60	50	50	200
3	69643	Photography (Digital & conventional)	2	3	3	40	60	25	25	150
4	69644	Basic Video Editing	1	6	3	20	30	50	50	150
5	69541	Screen Printing	2	6	4	40	60	50	50	200
6	69054	Environmental Studies	2	0	2	40	60	0	0	100
7	65841	Business Organization & Communication	2	0	2	40	60	0	0	100
Total			**13**	**24**	**21**	**260**	**390**	**200**	**200**	1050

69641 Image Preparation -2

T	P	C
2	3	3

AIMS:

- To be able to identify various kinds of raw-material for image preparation.
- To be able to handle and use various types of tools & equipment of image preparation.
- To be able to prepare various kinds of image carrier.
- To be able to develop knowledge of physical and chemical properties of materials used in image preparation.

SHORT DESCRIPTION

Various image preparation; Image preparation for flexographic printing; Digital flexo plates; Image preparation for Gravure printing; Offset printing image preparation; Various tools & equipments used in Offset image preparation; Application of raw materials used in image preparation; Various troubles for preparing a plate; Computer to Plate systems for Offset printing.

DETAIL DESCRIPTION

Theory:

1. Understand various image preparation.

1.1 Define image preparation.
1.2 Describe various types of image carrier.
1.3 Identify tools & equipments for plate making.
1.4 Identify surface preparing raw materials.

2. Understand the image preparation for flexographic printing.

2.1 Describe various types of flexo plates.
2.2 Describe Processing method of rubber & photopolymer plates.
2.3 Distinguish between Sheet photopolymer & Liquid photopolymer Plate.
2.4 Compare between rubber & photopolymer plates.
2.5 Describe the storage & handling of raw & used plates.

3. Digital Flexo Plates.

3.1 Define digital engraving.
3.2 Describe the characteristics of digital flexo plate.
3.3 Define HD flexo.
3.4 Describe the use of CDI (Cyrel Digital Imager) .
3.5 Describe Thick Plate, Digital Sheet-Solvent and Liquid Photopolymer
3.6 Explain Thin Plate, Digital Sheet-Solvent and Digital Sheet- Thermal Plates.
3.7 Describe Digital Sheet-Thermal and Liquid Photopolymer Plates.
3.8 Describe different types of images used in digital flexo plate making.
3.9 Describe different types of lasers used in digital flexo plate making.

4. Understand the image preparation for Gravure printing.

4.1 Define De-Chrome and Re-Chrome.
4.2 Describe the materials & equipments used for Gravure image preparation.
4.3 Discuss Copper Plating & Polishing.
4.4 Describe storage and changing of Gravure cylinders.
4.5 Explain Computer to Cylinder for Gravure printing.

5. Understand the Digital & Offset printing image preparation.

5.1 Describe the processing method of Digitally Imaged Plates (Di & Laser).
5.2 Describe the processing method of Laser-Edge Ctp Plates.
5.3 Describe the processing method of Laser-Edge X Ctp Plates.
5.4 Describe the processing method of D-STAT Thermal Plates & Ribbons.
5.5 Describe the processing method of Kimoto Poly Plates.
5.6 Describe the processing method of Inkjet Ctp Metal Plates
5.7 Describe the processing method of Metal Computer-To-Plate
5.8 Describe the method of Dry offset plate preparation.
5.9 Describe the importance of maintenance of image area and non-image area of offset plate.

6. Understand the operation of various tools & equipments used in Offset image preparation.

6.1 Describe tools & equipments for Offset plate making.
6.2 Discuss on operating the machines & equipments used in Offset image preparation.
6.3 Describe the operating procedure and function of auto exposing equipment.
6.4 Describe the operating procedure and function of auto processing equipment.
6.5 Explain the following procedures:
a) Plate coating, b) Plate exposing, c) Plate developing, d) Plate backing: need, process and advantages, e) Offset plate punching system.
6.6 Explain the procedure of using tools for measuring and testing solutions.

7. Understand the application of raw materials used in Image preparation.

7.1 Describe image preparing raw materials of different printing process.
7.2 Describe the procedure of coating solution making.
7.3 Describe the procedure of Gum solution making.
7.4 Describe the procedure of preparing developing solution for offset plate.
7.5 Describe the base martial of Offset plate.

8. Understand various troubles for preparing a offset plate.

8.1 Describe different types of trouble in plate making.
8.2 Explain the necessary correction for minor defect.
8.3 Describe the causes of scumming in Plate.
8.4 Describe the causes of poor image in plate.

9. Understand the technology of Computer to Plate Systems for Offset Printing.

9.1 Explain Computer to Plate (CtP) system in Offset image preparation.
9.2 Describe the advantages & disadvantages of CtP systems.
9.3 Describe the problems & solutions in Offset image preparation with CtP system.
9.4 Describe the offset image setting methods & techniques in CtP system.
9.5 Describe the software's used in CtP system.

PRACTICAL:

1. Familiar with the tools and equipments of Flexo, Gravure & Offset image Preparation.
2. Identify the various Chemicals used in various kind of plate making.
3. Engrave a gravure cylinder.
4. Plate & polish a Gravure Cylinder.
5. Make a flexo plate using CDI.
6. Make a digital flexo plate.
3. Prepare a Plate Using (Ctc) Computer to Cylinder.
4. Remove the unnecessary image from image area by image remover.
9. Operate an automatic stencil cutting machine.

10 Prepare a stencil using Computerized Stencil Machines.

Reference: www.Printwiki.org , https://shop.markandy.com , www.Cyrel.com

69642 Elementary Graphic Design

T	P	C
2	6	4

AIMS:

- To be able to develop the knowledge and skill in graphic design suitable for printing.
- To be able to acquire knowledge in print production
- To enable to use type & Image as an original medium for illustration.

SHORT DESCRIPTION

Illustrator -history & introduction, the file menu, the tools, Drawing lines & shapes. Inserting picture and shapes, filling colors, Image correction, text effects, filters, Creating design patterns. Type facing and type design; Thumbnail sketches; Text wrap, Drawing, Working with Objects, Transforming and Distorting Shapes, Applying color, Producing consistent color, Transparency, Gradients, and Patterns, Appearance Attributes, Styles, and Effects.

DETAIL DESCRIPTION

Theory

1. Understand the typographical design (Illustrator Program CS6/CC)

1.1 Define typographical design.
1.2 Classify the type Character.
1.3 Explain the Paragraph Indent
1.4 Explain the type Tab setting.
1.5 Describe the Type Alignment
1.6 Discuss the type Case.
1.7 Discuss the type formatting.
1.8 Discuss the various fonts (serif, sans serif, display, script)

2. Understand basic styles and special formats (Illustrator Program)

2.1 Explain the Apply styles (bold, italic, underline, shadow, small cap, outline, 2D, 3D)
2.2 Explain the Special formats: contour, texture, color, drop cap, reverse type, text wrap
2.3 Define the display type.
2.4 Explain the uses of Threaded type.
2.5 Explain the uses of Link type.
2.6 Define the Text wrapping.
2.7 Define True type & Post script Font
2.8 Describe the uses of Italic & Roman types in graphic.

3. Understand Drawing Basic Shapes using (Illustrator Program)

3.1 Discuss the Shape Tool.
3.2 Discuss the Constrain Proportions of Shape.
3.3 Explain the Resizing & Rotating Shapes.
3.4 Explain the Pathfinder
3.5 Discuss the Clipping mask for Shape
3.6 Define line segment tools
3.7 Discuss the Scale tool

4. Understand Drawing Advance Shapes using (Illustrator Program)

4.1 Discuss the Drawing with the pen tool.
4.2 Discuss the Adjusting path segments.
4.3 Explain the various shapes using pen tool.
4.4 Explain the Pathfinder
4.5 Define of Miter Limit
4.6 Discuss the Drawing spirals, grids and symbols.

5. Understand Color & Gradient (Illustrator Program)

5.1 Define Color modes
5.2 Discuss the Fill, Stroke & Gradient Color
5.3 Explain the spot and process color types
5.4 Explain the color using the toolbox
5.5 Explain the Swatches palette
5.6 Discuss Swatch Libraries
5.7 Describe Color Picker.

6. Understand Saving and Exporting file (Illustrator Program)

6.1 Discuss the saving and exporting.
6.2 Discuss saving file in EPS format
6.3 Explain the Saving file in Adobe PDF format
6.4 Discuss the file Extension
6.5 Discuss the Exporting image /Object in other program

7. Understand Brush Stroke and pattern Brush (Illustrator Program)

7.1 Discuss the Brush Stroke.
7.2 Discuss Calligraphy Brush Stroke
7.3 Explain the Create a Border Pattern
7.4 Discuss the Applying Pattern Brush
7.5 Discuss the Brush Libraries
7.6 Explain Brush effect in text

8. Understand Output Setting (Illustrator Program)

8.1 Discuss the various Paper Size.
8.2 Discuss Machine & Plate Size
8.3 Explain the Various Mark (Cutting, Registration, Gripper, Folding Mark)
8.4 Discuss the Color separation Preview
8.5 Discuss the Overprint Preview
8.6 Discuss the Color separation Preview
8.7 Discuss the RIP

PRACTICAL

1. Create Various Shape Design
2. Create a Color Chart
3. Create Voucher Design
4. Create ID card Design
5. Create a Simple Logo Design
6. Create a Complex Logo Design
7. Create Invitation card
7. Create a Book cover

8. Create a Inner pages design
9. Create a Brochure Design (3 Folded)
10. Create a Leaflet Design
11. Create a poster Design
12. Make a back drop of a education related seminar.

69643 Photography (Digital & Conventional)

T	P	C
2	3	3

AIMS:

- To be able operation any kind of digital camera.
- To be able to develop ability to exercise qualitative judgment when selecting photographic originals for reproduction
- To be able to provide practical photography techniques for digital photography and output

SHORT DESCRIPTION

camera and image, digital workflow, controlling exposure, controlling sharpness, light and color, lenses, flash photography, studio photography, still image.

DETAIL DESCRIPTION

Theory:

1. Understand about digital camera and image.

1.1. Define digital photograph.
1.2. Explain the history of digital photograph.
1.3. Describe various types of Digital Camera.
1.4. Explain how to control Camera.
1.5. Explain about taking photo with full auto mode.
1.6. Describe digital camera sensor.
1.7. Define image size.
1.8. Explain about composing image.
1.9. Describe maintenance the lens and sensor.

2. Understand about digital workflow.

2.1. Describe image formats.
2.2. Explain camera storage.
2.3. Describe transferring image to a computer.
2.4. Explain about organizing digital photograph.
2.5. Describe photo editing.
2.6. Describe color management of digital photograph.
2.7. Explain Raw and Jpeg image quality.
2.8. Define color depth.

3. Understand the controlling exposure.

3.1. Describe the importance of exposure.
3.2. Explain how affect exposure to an image.
3.3. Explain exposure control aperture and shutter.
3.4. Describe various types of exposure.
3.5. Explain shutter control light and motion.
3.6. Describe automatic exposure.
3.7. Define normal, under and over exposure.
3.8. Explain calculation of shutter speed.

4. Understand the controlling sharpness.

4.1. Describe how to eliminate blur from motion camera.
4.2. Explain about increasing sensitivity (ISO).
4.3. Describe digital image sharpness.
4.4. Explain taking a sharp photo from motion objects.
4.5. Describe a plain of critical focusing.
4.6. Explain focusing area and techniques.
4.7. Define depth of field.
7.8. Define selective focus.
7.9. Describe ISO and Noise.

5. Understand the capturing light and color.

5.1. Define color.
5.2. Describe white balance.
5.3. Explain color balance any time in a day.
5.4. Describe the technique of taking photograph sunrise and sunset time.
5.5. Describe taking photograph rough weather condition.
5.6. Explain to take photograph in night time.

6. Understand the lenses.

6.1. Define lens.
6.2. Define focal length.
6.3. Explain difference types of lens.
6.4. Describe photo framing.
6.5. Define 55-85mm lens.
6.6. Perspective view of digital photography.
6.7. Describe wide angle lens distortion.
6.8. Define optical and digital zoom.

7. Understand on camera flash photography.

7.1. Describe flash power and range.
7.2. Explain flash synchronize and shutter speed.
7.3. Define auto flash.
7.4. Explain Red-eye reduction.
7.5. Describe fill flash and off.
7.6. Explain controlling flash exposure.
7.7. Describe the use of external flash and accessories.

8. Understand studio photography.

8.1. Define continuous light.
8.2. Describe the use of strobes.
8.3. Explain connecting camera with studio lights.
8.4. Define hard and soft light.
8.5. Describe technique of light control.
8.6. Explain choosing background.
8.7. Explain positioning camera.
8.8. Describe portrait and landscape photograph.

9. Understand beyond the still image.

9.1. Describe 360^0 vs Panorama photograph.
9.2. Explain continuous mode photography.
9.3. Describe time lapse photography.
9.4. Explain movie mode.

PRACTICAL:

1. Draw a diagram how sensor works.
2. Draw a picture of a digital camera and show the units and parts.
3. Practice on exposure calculation filter and light setting.
4. Practice on digital photo editing.
5. Practice on digital photo manipulation.
6. Shoot a photo for advertising modeling.
7. Perform a portrait picture which background is out of focus.
8. Select a place and take a digital photograph where some object are sharp & some objects are motion blur.
9. Perform a picture with normal expose, over expose and underexpose.
10. Perform a night photography.

69644 Basic Video Editing

T	P	C
1	6	3

AIMS:

To provide the students with an opportunity to acquire knowledge, skill and attitude in the field of basic video editing and applications with a special emphasis on:

- Basics of video editing
- Applications
- Hardware/software essentials
- Audio in video editing
- Render/ Output

SHORT DESCRIPTION

Basics of video editing; Application, Hardware and software used in video editing; Workspace; Various windows; toolbox; keyboard shortcut; sequencing; Real time editing; Transition; color; opacity; audio; output.

DETAIL DESCRIPTION

Theory:

1. **Understand the Basics of video editing.**
   - 1.1 Define video & video editing.
   - 1.2 Describe the history of video editing.
   - 1.3 Discuss various types of video editing.
   - 1.4 Mention the field of application for video editing.
   - 1.5 List hardware and software used in video editing.
2. **Understand Workspace.**
   - 2.1 Define project setting.
   - 2.2 Describe various windows in workspace.
   - 2.3 Identify various tools in tool box.
   - 2.4 Describe the process of importing video clips & image.
   - 2.5 Mention the keyboard shortcuts customizing process.
3. **Understand the Sequencing and basic Real time editing.**
   - 3.1 Define sequencing.
   - 3.2 Define real time editing.
   - 3.3 Describe the process of adding video clips in the timeline.
   - 3.4 Mention trimming process.
4. **Understand the Transition.**
   - 4.1 Define transition.
   - 4.2 List various transitions.
   - 4.3 Describe the process of inserting transitions.
   - 4.4 Mention transitions controlling process.
5. **Understand Color & Opacity.**
   - 5.1 Define Color & Opacity.
   - 5.2 Mention color correction video effect applying process.
   - 5.3 Define blue screen opacity.
   - 5.4 List various color effect.

6. **Understand the Audio.**
   - 6.1 Define audio.
   - 6.2 List various audio file extensions.
   - 6.3 Describe audio mixer.
   - 6.4 Mention unlinking process of the video and audio.
   - 6.5 List hardware and software used in video editing.

7. **Understand the Output.**
   - 7.1 Define key and key frame
   - 7.2 Define render.
   - 7.3 List various video file formats.
   - 7.4 Describe file exporting process.

PRACTICAL:

1. Install video editing software.
2. Identify the interface of video editing software.
3. Identify the hardware with external features, settings and connections of sound equipment.
4. Prepare a project and import video clip and image.
5. Edit video clip in time line with real time editing.
6. Prepare a project with transition.
7. Prepare a project with transition control.
8. Prepare a project with color effect.
9. Prepare a project with color effect control.
10. Prepare a project with audio clip.
11. Output a complete project.

69541 Screen Printing

T	P	C
2	6	4

AIMS:

- To be enable to understand the screen printing process.
- To be enable to acquire knowledge and skill in printing various stocks of different shapes and sizes.
- To be able to develop the ability to establish a good printing practice.
- To be able to develop the awareness of handling materials.
- To be able to develop the ability to operating the printing machine.
- To be able to develop the ability to establish small printing industry based on screen printing process.

SHORT DESCRIPTION:

History of screen printing; Raw materials & chemicals for screen printing equipment used in screen printing process; Mesh materials; stencil making direct, indirect & photographic process. Inks, Mechanical process in screen printing on flat bed press, cylinder press, textile & fabrics, screen printing on uneven surface, cylindrical surface, rigid sheets glass & ceramic, taste of screen printing inks, drying process & equipment used in screen printing.

DETAIL DESCRIPTION

Theory:

1. Understand the history of screen printing:

1.1 Describe the history of screen printing.
1.2 Describe the major printing process.
1.3 Define diamond sutra
1.4 Describe the invention of screen printing process.
1.5 Describe the invention of mechanical system of screen printing.
1.6 Describe the advantages and disadvantages of screen printing.

2. Understand Raw materials and chemicals for used screen printing:

2.1 List the materials used in screen printing.
2.2 Describe screen printing stock.
2.3 Explain light sensitive film.
2.4 List the chemicals for direct & indirect process.
2.5 List the chemicals for cleaning stencil.
2.6 Describe the different types of element for light sensitive emulsion.
2.8 Describe the different types of element for making hard the emulsion.

3. Understand the equipment and tools used in screen printing process:

3.1 List the equipment used in screen printing process.
3.2 List the tools & equipment used in screen printing.
3.3 Describe the equipment for screen printing.
3.4 Describe the instruments used in screen printing.
3.5 State the used of the following

I. Squeegee

II. Wooden rack
III. Screen printing table
IV. Wooden, Steel, Aluminum frame.

4. Understand the mesh materials:

4.1 Define mesh materials.
4.2 Mention different types of mesh materials.
4.3 Describe the characteristics of mesh materials.
4.4 Define mesh count.
4.5 Explain the thread thickness for ink deposit.
4.6 Identify different meshes for various types of works.

5. Understand the classification of screen:

5.1 Define screen.
5.2 State different types of screen.
5.3 Describe the characteristics of the following:
I. Organic Screen.
II. Metallic Screen.
III. Phosphors braze Screen.
5.4 Describe play condensation process.
5.5 Distinguish the following stating their advantages and disadvantages
I. Synthetic Screen.
II. Polyamide cloth.
III. Stainless steel wire cloth.

6. Understand the direct & indirect process for stencil making:

6.1 Define the art work for direct & indirect and function of digital studio.
6.2 State the process of direct & indirect stencil making.
6.3 Describe the photographic emulsion for direct process.
6.4 List different types of solution used indirect process.
6.5 Explain the characteristics of direct & indirect process.
6.6 Describe the photo emulsion drying procedure.
6.7 Describe the method of correction of direct & indirect stencil.
6.8 Describe the computer to stencil for screen printing.
6.9 Describe the various problems for direct & indirect stencil making.

7. Understand the manual process of screen printing:

7.1 State the features of manual screen printing.
7.2 Describe the manual of screen printing.
7.3 List different types of materials for manual screen printing process.
7.4 Compare the manual process with mechanical, semi automatic and automatic process.

8. Understand the screen printing on flat bed press:

8.1 Define different types of screen printing bed.
8.2 State the difference materials used for making flat bed.
8.3 Describe automatic flat bed for screen printing.

9 Understand the screen printing on cylinder press:

9.1 Define cylinder press.
9.2 Describe screen printing process on
9.3 State the process of stencil transfer mechanical printing.

9.4 Describe the reciprocating cylinder press.
9.5 Explain the operation principal of cylinder screen printing press.
9.6 Describe the uses of various uneven & cylindrical rigid surface.
9.7 Compare different methods of screen printing as glass & ceramic.

10. Understand screen printing on textile & fabrics:

10.1 Identify textile & fabrics for screen printing.
10.2 Describe the manual and automatic process of screen printing on textile & fabrics.
10.3 Describe flock printing process.
10.4 Describe the flock powder.
10.5 Describe emboss printing process.
10.6 Describe the various types of glitters used in screen printing.
10.7 Describe the various types of foil used in screen printing.
10.8 Describe the printing process of heat transfer film, foil, paper & board used in heat transfer method.

11. Understand screen printing inks:

11.1 Mention various types of inks.
11.2 Explain the characteristics of screen printing inks.
11.3 State the uses of different types of screen printing inks.
11.4 List the ingredients types of screen printing inks.
11.5 Describe the ingredients of screen printing inks.
11.6 Describe the following methods of testing of screen printing inks
i. Fastness to light.
ii. Hardness
iii. Elasticity
iv. Thermal conductivity
v. Adhesive straight
vi. Opacity
vii. Chemical resistant
11.7 Describe the function of pantone color chart used in color mixing.

12. Understand the drying process and equipment used in screen printing finished goods:

12.1 State the importance of drying process in screen printing.
12.2 Describe the different types of drying process.
12.3 Distinguish between chemical process and absorption process.
12.4 List the used in screen printing for drying the printed stock.
12.5 Explain the following
i. Drying rack
ii. Set drying
iii. Tunnel drying
12.6 Distinguish between UV and IR drying.

13. Understand the potential for further development and environmental protection:

13.1 Describe the main focus of further development lies principally in the plate making sector of screen printing.
13.2 Describe the traditional screen printing and its implication for health, safety and environment.
13.3 Describe the how traditional screen printing enter the body.
13.4 Describe the environmental protection in screen printing and hazard management.
13.5 Describe the probable of screen printing for our national economy.
13.6 Explain the importance of screen printing to remove the unemployment.

PRACTICAL

1. Identify the tools equipment used in screen printing.
2. Prepare a wooden, steel and aluminum frame.
3. Prepare the stencil by direct and indirect process.
4. Coating, Drying, Exposing, developing and correcting the stencil.
5. Prepare the ink for color mixing.
6. Correct the registration point in the screen printing table.
7. Make ready the screen printing machine for T- shirt, Shari and other garments products.
8. Print on paper.
9. Print on fabrics.
10. Print on T shirt.
11. Print on Glass & Ceramics.
12. Print on Plastic & Leather.

REFERENCE BOOKS

1. Screen printing the complete water based system - Thames and Hudson.
2. Screen printing 1-2 (BTEB) - Md. Sayef Shahriar Zahedee.
3. Hand Book of Print Media - Heidelberg.

69054 Environmental Studies

T P C
2 0 2

AIMS

- To be able to understand the basic concepts of environment and environmental pollution.
- To be able to understand the concepts of ecology and ecosystems
- To be able to understand the basic concepts of environmental degradation relating to industrial production.
- To be able to understand the major environmental issues and problems.
- To be able to understand legislative measures to protect environment.

SHORT DESCRIPTION

Basic concepts of environment; natural resources; biogeochemical cycling; ecology and ecosystem; air; water; soil; solid waste management; development and environment; global environmental challenges; legislative protection of environment.

DETAIL DESCRIPTION

Theory:

1. **Understand the multidisciplinary nature of environmental studies.**
   - 1.1. Define environment, nature, pollution, pollutant, contaminant.
   - 1.2. Describe the scope of environmental studies.
   - 1.3. Describe the importance of environmental studies.
   - 1.4. Describe the formation and structure of the Earth.
   - 1.5. Describe the earth's natural system.
   - 1.6. Describe the changing attitudes to the natural world.
   - 1.7. Mention the main components of environment.
   - 1.8. Define natural and man-made environment.
   - 1.9. Distinguish between natural and man-made environment.
2. **Understand the natural resources.**
   - 2.1. Define natural resources.
   - 2.2. Classify natural resources.
   - 2.3. Describe forest resources.
   - 2.4. Describe water resources.
   - 2.5. Describe mineral resources.
   - 2.6. Describe food resources.
   - 2.7. Describe energy resources.
   - 2.8. Describe land resources.
   - 2.9. Describe environmental problem relating to resources use.
   - 2.10. Describe the role of an individual in conservation of natural resources.
3. **Understand the biogeochemical cycling.**
   - 3.1. Define biogeochemical cycle.
   - 3.2. Describe hydrologic cycle.
   - 3.3. Describe carbon cycle.
   - 3.4. Describe nitrogen cycle.
   - 3.5. Describe oxygen cycle.
   - 3.6. Describe phosphorus cycle.
   - 3.7. Describe sulfur cycle.
   - 3.8. Describe nutrient cycle.

4. Understand the ecology and ecosystem.

4.1. Define ecology and ecosystem.
4.2. Structure and function of an ecosystem.
4.3. Describe the components of ecosystem.
4.4. Explain the stability of ecosystem.
4.5. Describe ecological factors.
4.6. Describe interdependency between abiotic and biotic component.
4.7. Describe the meaning of following terms: species, population, community, ecological succession, community periodicity, climax community, ecological niche, habitat, plankton, nekton, ecological indicator, evolution, adaptation, producers, consumers, decomposers, food chains, food webs, ecological pyramids, bio-concentration, bio-magnification, biodiversity, threatened species, endanger species, extinct species, exotic species, biodiversity conservation and biogeography.
4.8. Describe energy flow in the ecosystem.
4.9. Describe the ecosystem of pond, ocean, estuary, grassland, cropland, forest, desert and mangrove.

5. Understand the air as a component of environment.

5.1. Define air.
5.2. Describe the composition of the clean dry atmospheric air at ground level.
5.3. Describe the atmospheric structure.
5.4. Define air pollution.
5.5. Describe major air pollutants and their impacts.
5.6. Describe the sources of air pollutants.
5.7. Explain the formation of photochemical smog and its effects.
5.8. Describe the effects of air pollution on vegetation, animal, human health and materials and resources.
5.9. Define sound and noise.
5.10. Describe the classification of sound.
5.11. Describe the effects of noise.

6. Understand the water as a component of environment.

6.1. Define water.
6.2. Describe the characteristics of water.
6.3. Describe the sources of water.
6.4. Describe the uses of water.
6.5. Explain that the water is a universal solvent.
6.6. Define water pollution, biological oxygen demand (BOD), effluent treatment plant (ETP).
6.7. Describe the sources of water pollution.
6.8. Describe the effects of water pollution.

7. Understand the soil as a component of environment.

7.1. Define soil.
7.2. Describe the constituents of soil.
7.3. Define soil pollution.
7.4. Describe causes soil degradation.
7.5. Describe the sources of soil pollution.
7.6. Describe the effects of soil pollution.

8. Understand the concept of solid waste management.

8.1. Define solid waste, refuse, garbage, rubbish, trashes, demolition and construction waste, e-waste, agricultural waste, pathological waste, radioactive waste, hazardous waste, 3R, 4R.
8.2. List the sources of solid waste.
8.3. Mention the classification of solid waste.
8.4. Mention the methods of collection of solid waste.
8.5. Describe the recycling of solid wastes.
8.6. Describe resource recovery from solid waste.
8.7. Describe the potential method of disposal of solid waste.
8.8. Describe control measures of urban and industrial wastes.

9. Understand the development and environment.

9.1. Define environmental ethics and environmental stress.
9.2. Describe environmental stress.
9.3. Define sustainable development.
9.4. Define urbanization.
9.5. Describe the causes of urbanization.
9.6. Describe the effects of urbanization on environment.
9.7. Define industrialization.
9.8. Describe the causes of industrialization.
9.9. Describe the effects of industrialization on environment.

10. Understand the global environmental challenges.

10.1. Define greenhouse gas and greenhouse effects.
10.2. Make a list of greenhouse gases and their contribution on greenhouse effects.
10.3. Describe the causes and consequences of greenhouse effects.
10.4. Describe acid rain.
10.5. Describe importance of ozone layer.
10.6. Define ozone depleting substances (ODS).
10.7. Describe ozone layer depletion mechanism.
10.8. Describe hazardous waste.
10.9. Describe chemicals pesticides.
10.10. Describe radioactive pollution.
10.11. Describe natural disaster.

11. Understand the legislative protection of environment.

11.1. Define environmental impact assessment (EIA) and environmental auditing (EA).
11.2. Mention environmental act and legislations prescribed for air, noise, water, soil and wild life protection.
11.3. Describe environmental conservation act 1995 in Bangladesh.
11.4. Describe the environment conservation rule 1997 in Bangladesh.
11.5. Describe the environmental framework in Bangladesh.
11.6. Describe The Montreal Protocol and The Kyoto Protocol.
11.7. Describe role of an individual in prevention of pollution.

REFERENCES:

1. Fundamentals of Environmental Studies, Mahua Basu and S. Xavier, Cambridge.
2. Ecology and Environment, P.D. Sharma, Rastogi Publications.
3. Basics of Environmental Science, Michael Allaby, Routledge.
4. Environmental Science, Jonathan Turk and Amos Turk, Sauders golden sunburst series.

65841 Business Organization & Communication

T	P	C
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 of 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:

Principles and objects of business organization; Formation of business organization; Banking system and its operation; Negotiable instrument; 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:

Theory:

1 Concept of 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 Formation of Business organization.

2.1Define sole proprietorship, partnership, Joint Stock Company. and co-operative
2.2Describe the formation of sole proprietorship, partnership, joint stock Company, & co operative.
2.3Mention the advantages and disadvantages of proprietorship, partnership and Joint Stock Company.
2.4State the principles of Co operative & various types of Co operative.
2.5Discuss the role of co-operative society in Bangladesh.

3 Basic idea of Banking system and negotiable instrument.

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

4 Home & foreign trade

4.1 Define home trade.
4.2 Describe types of home trade.
4.3 Define foreign trade.
4.4 Mention the advantages and disadvantages of foreign trade.
4.5 Discuss the import procedure & exporting procedure.
4.6 Define letter of credit.
4.7 Discuss the importance of foreign trade in the economy of Bangladesh.

5 Basic concepts of communication

5.1 Define communication & business communication.
5.2 State the objectives of business communication.
5.3 Describe the scope of business communication.
5.4 Discuss the essential elements of communication process.

6 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.

7 Types and Methods of communication.

7.1 Explain the different types of communication;-

a) Two-way communication
b) Formal & informal communication
c) Oral & written communication
d) Horizontal & vertical communication
e) external & internal communication
f) Spoken & listening communication.

7.2 Define communication method.
7.3 Discuss the various methods of communication.
7.4 Distinguish between oral and written communication.

8 Essentials of communication.

8.1 Discuss the essential feature of good communication.
8.2 Describe the barriers of communication.
8.3 Discuss the means for overcoming barriers to good communication.

9 Report writing.

9.1 Define report, business report & technical report.
9.2 State the essential qualities of a good report.
9.3 Describe the factors to be considered while drafting a report.
9.4 Explain the components of a technical report.
9.5 Prepare & present a technical report.

10 Office management.

10.1 Define office and office work.
10.2 State the characteristics of office work.
10.3 Define filing and indexing.
10.4 Discuss the methods of filing.
10.5 Discuss the methods of indexing.
10.6 Distinguish between filing and indexing.

11 Official and semi-official letters.

11.1 State the types of correspondence.

11.2 State the different parts of a commercial letter.

11.3 Define official letter and semi-official letter.

11.4 Prepare & present the following letters: Interview letter, appointment letter, joining letter and application for recruitment. Complain letters, tender notice.

REFERENCE BOOK:

1.উচ্চ মাধ্যমিক ব্যবসায়নীতি ও প্রয়োগ -মোহাম্মদ খালেকুজ্জামান

2.উচ্চ মাধ্যমিক ব্যাংকিং ও বীমা -প্রফেসর কাজী নুরুল ইসলাম ফারুকী

3.আধুনিক কারবার পদ্ধতি -লতিফুর রহমান

4.কারবার যোগাযোগ ও সচিবের কার্যপদ্ধতি -প্রফেসর লতিফুর রহমান ও প্রফেসর কাজী নুরুল ইসলাম ফারুকী

5.ব্যবসায়িক যোগাযোগ এবং অফিসের কর্মপ্রণালী –ড. এম, এ, মান্নান

6.ব্যবসায় যোগাযোগ – মোহাম্মদ খালেকুজ্জামান ও মোঃ মুশাররফ হোসেন চৌধুরী

7. Business organization & management- M.C. Shukla

8. Business organization & management- R.N. Gupta