BANGLADESH TECHNICAL EDUCATION BOARD
Agargoan, Dhaka-1207.

4-YEAR DIPLOMA-IN-ENGINEERING PROGRAM
SYLLABUS (PROBIDHAN-2016)

CERAMIC TECHNOLOGY

TECHNOLOGY CODE: **676**

2nd SEMESTER

DIPLOMA IN

ENGINEERING

PROBIDHAN-2016

CERAMIC TECHNOLOGY

(676) 2nd 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	65711	Bangla	3	3	4	60	90	50	0	200
2	65712	English	2	0	2	40	60	0	0	100
3	65921	Mathematics -2	3	3	4	60	90	50	0	200
4	65912	Physics -1	3	3	4	60	90	25	25	200
5	66822	Electronic Engineering Fundamentals	2	3	3	40	60	25	25	150
6	67621	Ceramic Engineering Materials-2	2	3	3	40	60	25	25	150
7	67622	Ceramic Model Making	1	3	2	20	30	25	25	100
Total			**16**	**18**	**22**	**320**	**480**	**200**	**100**	**1100**

67621 CERAMIC ENGINEERING MATERIALS-2 T P C
2 3 3

AIMS

To provide the student with an opportunity to develop knowledge and skill to-

- Understand the concept of stone materials.
- Understand the properties of fillers, fluxes, and other ceramic raw materials.
- Analysis and use the different types of fluxes and fillers.
- Understand the concept of color.

Short Description:

Introduction to Filler- Quartz; Fluxes- Feldspar, Limestone, Dolomite, Nephelinesyanite, Cornish stone,Talc, Bone ash; Bauxite; Colorings materials- Antimony Compounds, Cadmium compounds, Chromiumcompounds, Cobalt compounds, Copper compounds, Gold compounds, Manganese compounds, Nickelcompounds, Tin oxide, Barium compounds, Boron compounds, Lead compounds.

1. Understand Filler materials

1.1 Define filler.
1.2 List the filler materials.
1.3 Describe the properties of filler materials.
1.4 Mention the uses of filler materials.
1.5 Describe the function of filler.
1.6 Explain the purpose of filler used in ceramic body.

2. Understand Silica

2.1 Define silica.
2.2 State the different form of silica.
2.3 Mention the behavior of silica on heat.
2.4 Explain physical and chemical properties of quartz as a source of silica.
2.5 Describe the structure of quartz.
2.6 Mention the use and analysis of quartz.

3. Understand Flux

3.1 Define flux.
3.2 List fluxing materials.
3.3 Describe the functions of fux.
3.4 Discuss the necessity of feldspar in ceramics.

4. Understand Feldspar

4.1 Define feldspar.
4.2 Mention the types of feldspar.
4.3 Write the chemical formula of different types of feldspar.
4.4 Describe the different types of feldspar.
4.5 Describe the functions of different feldspar.
4.6 Describe properties of each type of feldspar as ceramic raw material.
4.7 Mention the chemical composition of each type of feldspar.
4.8 Write the uses of feldspar.

5. Understand Nepheline syenite

5.1 Define nepheline syenite.
5.2 Write the chemical formula of nepheline syenite.
5.3 Describe the properties of nepheline syenite.
5.4 Explain the analysis of nepheline syenite.
5.5 Mention the uses of nepheline syenite.
5.6 Explain Nepheline syenite as a more fluxing than Feldespar.

6. Understand Cornish stone

6.1 Define cornish stone.
6.2 Mention the types of Cornish stone.
6.3 Describe the properties of cornish stone as ceramic raw material.
6.4 Mention the chemical analysis of cornish stone.
6.5 List of the uses of cornish stone.

7. Understand Limestone and Dolomite

7.1 Define Lime stone and dolomite.
7.2 Write the chemical formula limestone and dolomite.
7.3 Describe the properties of limestone and dolomite.
7.4 Mention the chemical analysis of limestone and dolomite.
7.5 List the use of limestone and dolomite.
7.6 compare between limestone and dolomite.
7.7 Describe the function of limestone and dolomite

8. Understand Talc

8.1 Define Talc.
8.2 Write the chemical formula of Talc
8.3 Describe the properties of talc.
8.4 Mention the analysis of talc.
8.5 List the uses of talc in ceramics.
8.6 Describe the function of Talc .

9. Understand Bauxite

9.1 Define Bauxite.
9.2 Write the chemical formula of Bauxite.
9.3 Describe the physical and chemical properties of bauxite.
9.4 Mention chemical the analysis of bauxite.
9.5 Describe Bauxite work as refractories material.
9.6 Mention the uses of bauxite

10. Understand Bone ash

10.1 Define bone ash.
10.2 Write the chemical composition of Bone ash.
10.3 Describe the properties of bone ash.
10.4 Explain bone ash production process from bone.
10.5 Mention the chemical analysis of bone ash.
10.6 List the uses of bone ash.

11. Understand Colorant and Decolorent materials

11.1 Define colorant and decolorent.
11.2 State the name with color of coloring materials.
11.3 Describe the necessity of coloring and decolorent materials.
11.4 Describe the function of coloring and decolorent materials.
11.5 Distinguish between coloring and decolorent materials.

12. Understand Antimony compounds

12.1 State the antimony compounds.
12.2 List the name of antimony compounds.
12.3 Explain the properties of antimony oxide.
12.4 Mention the uses of antimony oxide.

13. Understand Chromium compounds

13.1 State the chromium compounds.
13.2 State the list of the name of chromium compounds.
13.3 Explain the properties of chromium oxide.
13.4 Mention the uses of chromium compounds in ceramics.

14. Understand Cadmium compounds

11.1 Define the cadmium compounds.
11.2 State the list of the cadmium compounds.
11.3 Describe the properties of cadmium oxide.
11.4 Mention the uses of cadmium compounds.

15. Understand Cobalt compounds

15.1 Define the cadmium compounds.
15.2 State the list of the cadmium compounds.
15.3 Describe the properties of cadmium oxide.
15.4 Mention the uses of cadmium compounds.

16. Copper compounds

16.1 State the copper compounds.
16.2 State the list of the name of copper compounds
16.3 Explain the properties of copper oxide.
16.4 Mention the uses of copper oxide

17. Understand Gold compound

17.1 Define gold compounds.
17.2 Describe the properties of gold chloride.
17.3 Discuss the process of making liquid gold solution (gold chloride).
17.4 Mention the uses of gold compounds.

18. Understand Manganese compounds

18.1 Define manganese compounds
18.2 Describe the properties of manganese oxide as a colorant.
18.3 Describe the properties of manganese oxide as a decolorant.
18.4 Explain the color and base effect of manganese oxide.
18.5 Mention the use of manganese oxide.

19. Understand Nickel compounds

19.1 Define nickel compounds.
19.2 State the list of the nickel compounds.
19.3 Describe the properties of nickel oxide.
19.4 Mention the uses of nickel oxide.

20. Understand Tin oxide

20.1 Define tin oxide.
20.2 Write the chemical formula of tin compounds.
20.3 Describe the properties of tin oxide.
20.4 Mention the uses of tin oxide.

21. Understand Barium compounds

21.1 Define the barium compounds.
21.2 List State the list of the barium compounds.
21.3 Explain the properties of barium sulphate.
21.4 Explain the properties of barium carbonate.
21.5 Describe the chemical analysis of barium carbonate.
21.6 Mention the uses of barium sulphate and barium carbonate.

22. Understand Boron compounds

22.1 Define the boron compounds.
22.2 Make a list of boron compounds.
22.3 Define boric oxide.
22.4 Explain the properties of boric oxide.
22.5 Mention the uses of boric oxide.

23. Understand Lead compounds

23.1 State the lead compounds.
23.2 State the list of the name of lead compounds.
23.3 Describe the properties of lead oxide
23.4 Describe the properties of white lead.
23.5 Describe the properties of lead silicate.
23.6 Describe the properties of litharge.
23.7 Mention the uses of litharge, red lead, white lead and lead silicate.

Practical:

1. Determine physical identification of quartz.
2. Determine determination of density of quartz.
3. Determine determining specific gravity of quartz.
4. Determine specific gravity of feldspar.
5. Determine density of feldspar.
6. Determine physical identification of lime stone.
7. Determine density of limestone.
8. Determine specific gravity of limestone.
9. D Determine loss on ignition of limestone.
10. Determine physical identification of different coloring oxide.
11. Determine heat treated color of different coloring oxide.
12. Determine mixing portion and given color by different coloring oxide.

REFERENCE BOOKS

1. Ceramic Raw Materials by .Worral W.E.
2. Clay and Ceramic Raw Materials by. Worral W.E.
3. Advanced Ceramic Materials by. Hamid Moshaghaei.
4. Mullite and Mullite Ceramics. byHchnider,okada&pask
5. Properties of Ceramic Raw Materials by W. Ryan.
6. Ceramic processing by Terpstra, R.A. Terpstra, R.A.
7. Ceramic Technology and processing. by king Alam