## **Department of Industrial Chemistry**

**Faculty of Science** 

IC (209)313 Unit Operations in Ceramic Manufacturing 3(2/2-1/3)

Abbreviation UNIT OP CERAMIC MANUFAC

Prerequisite IC 211

This course is opened for MAJOR ELECTIVE COURSE

## **Course Description**

Ceramic raw material treatment unit, comminution unit, particle size separation unit, mixing unit, casting machine and extruder, glazing unit, color decoration unit, drying unit and design, kiln and kiln design, and principles of production and quality control in ceramic manufacturing

## **Objectives**

- 1. Students will be able to understand principles of unit operations in ceramic manufacturing.
- 2. Students will be experienced with experiments on unit operations in ceramic manufacturing.

Course Content		Lecture Hours
1. Ceramic raw material treatment unit		2
2. Comminution unit		2
3. Particle size separation unit		3
4. Mixing unit		3
5. Casting machine and extruder		3
6. Glazing unit		3
7. Color decoration unit		3
8. Drying unit and design		4
9. Kiln and kiln design		4
10. Principles of production and quality control in ceramic manufacturing		3
	Total	30
Laboratory Topics		Laboratory Hours
Laboratory Topics  1. Ceramic raw material treatment unit		Laboratory Hours
	_	
Ceramic raw material treatment unit	_	3
Ceramic raw material treatment unit     Comminution unit		3
Ceramic raw material treatment unit     Comminution unit     Size grading unit		3 3 3
<ol> <li>Ceramic raw material treatment unit</li> <li>Comminution unit</li> <li>Size grading unit</li> <li>Mixing unit</li> </ol>		3 3 3 3
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<ol> <li>Ceramic raw material treatment unit</li> <li>Comminution unit</li> <li>Size grading unit</li> <li>Mixing unit</li> <li>Casting machine and extruder</li> <li>Glazing unit</li> <li>Color decoration unit</li> <li>Dryer design</li> </ol>		3 3 3 3 6 3 3 3

## References

- 1. F. Singer and S. Singer, *Industrial Ceramic*, 2<sup>nd</sup> edition, Chapman and Hall Press, London, 1978.
- 2. J. T. Jones and M. F. Berard, *Ceramics Industrial Processing and Testing*, 2<sup>nd</sup> edition, Iowa State University Press, Iowa, 1993.
- 3. W. E. Worrall, *Ceramic Raw Materials*, 2<sup>nd</sup> edition, A. Wheaton & Co.Ltd., London, 1982.
- 4. W. Ryan and C. Radford, *Whitewares : Production, Testing and Quality Control*, The Institute of Materials, London, 1987.