



Firing of Ceramics

Instructor: Denis Brosnan

Instructor Bio



Denis Brosnan, P.E., FACerS, is a ceramic engineer specializing in processing, characterizing, and improving ceramic products while developing a specialization in forensic analysis. He is currently a consultant working on mineral issues, failure analysis, and historic materials characterization.

He previously taught courses in drying and firing of ceramics at Clemson University, worked for more than 20 years in industrial positions in refractories and technical ceramics, and coauthored the book *Introduction to Drying of Ceramics*.

Brosnan received the A. F. Greaves-Walker Award from the Society in 2016 and retired as the Bishop Endowed Chair Emeritus from Clemson University.

Brosnan holds a Ph.D. in ceramic engineering from Iowa State University.

LESSON OUTLINE

UNIT 1: FIRING CHANGES WITHIN THE CERAMIC

Lesson 1: Introduction

Lesson 2: Chemical and Physical Characterizations used in Firing

Lesson 3: Use of Phase Diagrams

Lesson 4: Introduction to Clay Based Ceramics

Lesson 5: Firing of Whitewares

Lesson 6: Firing of Alumina

Lesson 7: Firing of Cordierite Ceramics

UNIT 2: FUELS, COMBUSTION, AND KILN THERMAL OPTIMIZATION

Lesson 8: Intro to Kilns Fuels Combustion

Lesson 9: Fuel Combustion and Burners

Lesson 10: Combustion System Components

Lesson 11: Burner Control, Kilns, and Kiln Safety

Lesson 12: Solid Fuel Firing and Safety

Lesson 13: Refractories, Heat Storage, and Heat Loss in Kilns

Lesson 14: Kiln Simulation/Optimization Part 1

Lesson 15: Kiln Simulation/Optimization Part 2

Lesson 16: Kiln Simulation/Optimization Part 3

Lesson 17: Kiln Emissions and Firing Defects