A Technician's Guide to Ceramics (Beginner)

This is an introductory course in the manufacturing of ceramics. The goal is to explain how the ceramic batch is developed, how raw materials are selected, and the overall goals of the manufacturing process (outside of the obvious).

The course will discuss batching, addition sequence, mixing, forming, drying, and firing. How raw materials are characterized, including chemistry, mineralogy, particle size, and cost. The course will also discuss raw material substitutions, and quality. An introduction to various forming techniques and potential manufacturing defects will be discussed. In addition, an overview of heat treatment processes will be provided, including drying, pyrolysis and calcination, high-temperature reactions, and sintering. Finally, general quality control approaches will round out the course.

Class Dates	Topics / Activities During Class	Assignments, Notes, Demos
1) Day 1	How are ceramics made? What are the steps of manufacturing and how do they fit together? What is the batch and what is important for batch development? How was the batch developed?	Students will be provided with selected readings that provide additional background.
2) Day 2	Batching, mixing, forming, drying, and firing: How do these steps fit together? Introduction to forming processes and potential manufacturing defects and problems.	
3) Day 3	An overview of heat treatment processes. Overview of quality control processes.	

Additional References or Resources:

1. Glossary of Ceramic Terminology.
2. Handouts posted as course content and presentations.