**PEM5112**

Tipo:POS

Name: Ceramics Processing

Mother Area: Metallic Materials, Ceramic and Polymer (97134)

**Objectives:**

1. To enable students to relate the raw materials, characterization, forming and sintering with the properties of ceramics;

2. Know the methods of forming and sintering of traditional and advanced ceramics;

3. Know and operate equipment involved in processing of ceramics.

**Justification:**

The graduate programs receive students from various fields of knowledge whose formations are not dealt with the processing area and characterization of ceramics. This course provides students of all backgrounds a broad view of ceramics, with emphasis on raw materials, processing and characterization.

**Contents:**

1. Natural and synthetic raw materials.

2. Ceramic powders preparation (crushing and synthesis).

3.Characterization of ceramic powders.

4. Pressing;

5. Slips casting;

6.Extrusion

7. Injection;

8. Drying;

9. Firing (pre-sintering events - sintering and cooling)

10. Surface treatments;

11. Finishing;

12. Mechanical behavior.

**References:**

1. Kingery, W.D. Ceramic Fabrication Processes. The M.I.T. Press, Cambridge, 1957.

2. Barsoum, M. W. Fundamentals of Ceramics. Taylor & Francis, New York, 2003.

3. Carter, C. B.; Norton, M. G. Ceramic Materials – Science and Materials. Springer Science + Business Media, New York 2007.

4. Wang, F. Treatise on Materials Science and Technology. v. 9, Ceramic Fabrication Process. Academic Press, New York, 1976.

5. Fonseca, A.T. Technology Ceramic Processing. Open University. Lisbon, 2000.

7. Reed, J.S. Principles of Ceramics Processing, John Wiley, 1988.

8. Specialized articles of the current literature.

**Evaluation method:**

Two written tests (P1 and P2), 1 Seminar (SEM) and 1 Technical Report (REL), all with scores from 0 to 10 points.

**Observation**

Assessment criteria: Final Average (MF) is calculated taking into account the weights: MF=(2P1+2P2+SEM+REL)/6.