



FEDERAL UNIVERSITY OF CEARÁ
Provost Office of Research and Graduate Studies

COURSE PROGRAM

1. PROGRAM:		
Program	GRADUATE PROGRAM IN CHEMISTRY	
2. COMPONENT TYPE:		
Activity ()	Course (X)	Module ()
3. LEVEL:		
	Master's Degree (X)	Doctorate (X)
4. COMPONENT IDENTIFICATION:		
Name:	HETEROGENEOUS CATALYSIS	
Code:	CEP9300	
Hours:	64 horas	
Credits:	04	
Optional course:	Yes (X)	No ()
Compulsory course:	Yes ()	No (X)
Area:	There are no mandatory concentration areas for the discipline.	
5. PROFESSOR:		
6. ABSTRACT:		
Studies and debates of the phenomenon of catalysis as well as the synthesis, characterization and catalytic reactions. Study of synthetic routes used in the preparation of catalytic materials. Study of analytical techniques used in the characterization of the catalysts.		
7. COURSE PROGRAM:		
1- Historic. 2- Nature of heterogeneous catalysis. 3 - Characteristics of heterogeneous catalysts. 4 - Catalyst preparation. 5 - Physicochemical properties and structure of catalysts. 6 - Description of the heterogeneous catalytic process. 7 - Treatment of experimental data from heterogeneous catalysis. 8 - Main analytical methods for catalyst characterization. 9 - Model reactions in heterogeneous catalysis. 10 - Metal-support interactions. 11 - Some examples of industrial processes.		
8. EVALUATION PROCESS:		
9. BIBLIOGRAPHY:		
1 - Mathias B. Gunther (editor), Heterogeneous catalysis research progress, Nova Science Publishers, Inc., 2008.		
2 - J. W. Niemantsverdriet, Spectroscopy in Catalysis: An Introduction, WILEY-VCH Verlag		

GmbH & Co. KGaA, Weinheim, 2007.

3 - Bowker, M.; The Basis and Applications of Heterogeneous Catalysis. Oxford University Press, 1998.

4 - ANDERSON, J. R.; PRATT, K. C. Introduction to characterization and testing of catalysts. Orlando: Academic Press, 1985.

5 - M. A. Chaer Nascimento (editor), Theoretical Aspects of Heterogeneous Catalysis, Kluwer Academic Publishers (New York, Boston, Dordrecht, London, Moscow), 2002.

6 - H. H. Kung, Studies in Surface Science and Catalysis - Vol. 45 - Transition Metal Oxides: Surface

Chemistry and Catalysis, Elsevier Science Publisher, Amsterdam, 1989.

7 - L. Arnaut, S. Formosinho, H. Burrows, Chemical Kinetics: From Molecular Structure to Chemical Reactivity, Elsevier Science Publisher, Amsterdam, 2007.