



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:	SPECTROMETRIC METHODS	
Code:	CEP7900	
Hours:	96	
Credits:	6	
Optional course:	Yes (X)	No ()
Compulsory course:	Yes ()	No (X)
Area:	Inorganic Chemistry	
5. PROFESSOR:		
Eduardo Henrique Silva de Sousa Luiz Gonzaga de França Lopes Izaura Cirino Nogueira Diógenes		
6. ABSTRACT:		
Spectrometric technique applied to inorganic chemistry: Theory and practice.		
7. COURSE PROGRAM:		
<p>1. Raman and Infrared Spectroscopy: Aspects of group theory related to the study and analysis of molecular vibrations, absorption and scattering of light, fundamental principles and basic differences involving the two spectroscopies, polarizability and dipole moment, use of internal coordinates in determining vibrations fundamental. Symmetry coordinates, overtones and combination bands, instrumentation and experimental methodology; procedure and technique for preparing samples and obtaining spectra, qualitative and quantitative analysis; spectrum-structure correlation and substance identification.</p> <p>2. Ultraviolet and visible electronic spectroscopy: General theory of visible UV spectroscopy; fundamental aspects, light and color absorption, beer-Lambert law, electronic transitions - selection rules, instrumentation and analytical procedure for obtaining spectra, spectrum-structure correlation with a focus on the chemistry of coordination compounds.</p> <p>3. Fluorescence Spectroscopy: Fundamental theoretical principles, luminescent properties of Eu (III) and Tb (III) ions, application of fluorescence spectroscopy in coordination chemistry, basic instrumentation, obtaining and analyzing spectra.</p> <p>4. Nuclear Magnetic Resonance: Basic concepts, principles and applications, spectrum-structure correlation and substance identification.</p>		
8. EVALUATION PROCESS:		

Tests, seminars

Frequency equal to or greater than 75%

9. BIBLIOGRAPHY:

1. Hobart H. Willard, Lynne L. Merritt. Jr. And John A . Dean. Instrumental Methods of Analysis, D. Van Nostrand Company. 5th ed. 1974
2. Zoi Svafram, Ronald M. Pike and Mono M. Singh, Microscale Inorganic Chemistry: a comprehensive laboratory, John & Sons, 1st ed. 2008
3. F. Albert Cotton. Chemical Applications of Group Theory, Wiley – Interscience, 3rd ed. 1990.
4. Ronald C. Denney and Roy Sinclair, Visible and Ultraviolet Spectroscopy, John Wiley & Sons. 1st ed. 1988.
5. F. A . Cotton G. Wilkinson and P.L. Gaus - Basic Inorganic Chemistry, John Wiley & Sons, 3rd ed. 1995.
6. Kazuo Nakamoto – Infrared and raman spectra of coordination compounds, Wiley, 6th ed, 2009.