



UNIT INFORMATION

Program	Mechanical Sciences (53001010053P0)
Course unit	MATERIALS CHARACTERIZATION BY THERMAL ANALYSIS
Unit code	PPGINT
Unit number	1980
Credit points	4
Period	01/01/2014 -
Professor	Sandra Maria da Luz
Prerequisites	No

UNIT OUTLINE

Objective:	This course's main objective is to provide to students, a solid knowledge about the thermal behavior of polymeric materials, composites, metals, and ceramics, among others. These properties are closely related to the structural performance of the materials.
Purpose:	Thermal analysis encompasses a group of techniques in which a physical or chemical property of a material or substance, or its reaction products, is monitored as a function of time or temperature, while the temperature of the sample under a specific atmosphere is subjected to a controlled program. These techniques can be applied to the characterization of polymeric materials, composites, metals, and ceramics, among others, and their knowledge is essential for mechanical sciences, where thermal properties can affect the mechanical performance of these materials.
Contents:	Introduction to Thermal Analysis. Concepts and applications. Thermogravimetric Analysis. Concepts, equipment operating principle and applications. Differential Scanning Calorimetry. Concepts, equipment operating principle and applications. Dynamic Mechanical Analysis. Concepts, equipment operating principle and applications. Calibration in Thermal Analysis. Main techniques and methods. Other Thermal Analysis Techniques. Concepts, equipment operating principle and applications.
Assessment:	Assessments will be obtained from classroom participation (10%), carrying out experiments and reports (30%), preparation and presentation of work (20%) and tests (40%). Mention will be given to the students based on the final grades, according to the UnB's grading criteria. unforeseen cases will be solved by the professor in charge of the unit.
Obs:	
References:	<ol style="list-style-type: none">1. MOTHÉ, C.G. Análise Térmica de Materiais. São Paulo: Artliber, 2009. 324 p.2. BROWN, M.E. Introduction to Thermal Analysis Techniques and Applications. London: Chapman and Hall, 2001.3. HATAKEYAMA, T.; QUINN, F.X. Thermal Analysis – Fundamentals and Applications to Polymer Science. New York: Wiley, 1999.4. MENARD, K.P. Dynamical Mechanical Analysis- A Practical Introduction. Boca Raton: CRC Press, 2008.