



REDE TEMÁTICA EM ENGENHARIA DE MATERIAIS
UFOP - UEMG
Pós-Graduação em Engenharia de Materiais



Programa de Disciplinas

Disciplina: RED 901 - Applied Tribology		
Carga Horária: 45 horas-aula	Caráter: Optativa	Créditos: 03
Cursos para os quais é ministrada: Mestrado / Doutorado / Aperfeiçoamento		
Professores: I – Dr. Adilson Rodrigues da Costa II – ****		
Ementa: Topics: Surface topography. Friction and lubrication. Wear of materials surfaces. Mechanisms of wear. Wear and design of equipments and parts. Surface engineering in tribology. Selection of materials. Surface treatment technologies. Surface hardening for increased wear resistance. Fundamentals of thin-film technology. Non destructive tests and assessment of coatings.		
Concepts: Dynamic interaction of surfaces, atomic structure of surfaces, friction and wear, rugosity, lubrication to control friction, fundamentals of sliding friction, adhesion, adherence, interfaces, ...		
Case studies: Wear in mining and metallurgy activities: drilling, ore extraction, dressing and transportation. Wear by molten metals and alloys flowing. Discussion of selected articles (Seminars).		
Laboratory activities: Measurement of friction coefficient. Tests methods for determination of slurry abrasivity during pumping;,, estimation of wear rates in abrasion and erosion; characterization of abrasive particles (hardness, shape and size distribution). Measurement of rugosity. Characterization of engineered (coated and heat treated) surfaces.		
Field trip.		



Referências Bibliográficas

Disciplina: RED 901 - Applied Tribology	
1.	Tribology: Friction and wear of Engineering Materials – I. M. Hutchings. ISBN 0-340-56184-x 1992
2.	Modern Surface Technology. F.-W. Bach, A. Laarmann, T. Wenz (Editors). Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany. 2006
3.	Friction Science and Technology: from concepts to applications. Peter J. Blau CRC Press – Taylor & Francis Group. 2009
4.	AVERY, H.S.; WEAR; 4, 1961, p. 427-449
5.	BAYER, Raymond George. Mechanical Wear Fundamentals and Testing. 2ª Ed. New York: Marcel Dekker, 2004.
6.	DE MELLO, José Daniel Biasoli. Abordagem Global do Estudo do Processo Abrasivo – Parte 1: Considerações Sobre os Métodos Abrasométricos. In: I Seminário sobre Materiais Resistentes ao Desgaste, 1989. 251 f. São Paulo: Associação Brasileira de Metais, 1989. p. 29-45.
7.	DUIGNAN, M.R., 2002. RPP-WTP Slurry Wear Evaluation: Slurry Abrasivity. Westinghouse Savannah River Company Document No. WSRC-TR-2002-00062. [also under No. SRT-RPP-2002-00022] - January, 2002.
8.	GATES, J.D., Two-body and three-body abrasion: a critical discussion, Wear, v. 214, p. 264-281, 2001.
9.	NEALE, M.J. O Manual de Tribology. 2ª Edição. Ed. Butterworth Heinemann P.D18.1, 1995.
10.	ROWE, G.; “Friction Wear and Lubrification-Terms and Definitions” O.E.C.D., Paris, 1966