



FEDERAL UNIVERSITY OF SÃO CARLOS
CENTER OF BIOLOGICAL AND HEALTH SCIENCES
GRADUATE PROGRAM IN PHYSICAL THERAPY

Concentration: Physical Therapy and Functional Performance
Via Washington Luís, Km 235 – São Carlos, SP 13.565- 905
Phone: (016) 3351 - 8448 Email: ppgft@ufscar.br

**COURSE: FIT 157 - Clinical Biomechanics: Basic Concepts, Methods,
and Applications**

Credits: 8

Course Load: 120 hrs.

Instructors: Ana Beatriz de Oliveira, Ph.D
Fábio Viadanna Serrão, Ph.D.

Course Overview:

Theoretical-practical course that discusses and implements methods and techniques of clinical biomechanics, emphasizing electromyographic, kinetics, and kinematic analyses. Understand and measure the potential of diagnostic tests.

Course Materials:

1. DE LUCA C. The Use of Surface Electromyography in Biomechanics. *Journal of Applied Biomechanics*. 1997; 13(2): 135-163.
2. MERLETTI, R, PARKER, P. *Electromyography - Physiology, Engineering, and Noninvasive Applications*. 2004. New Jersey: John Wiley & Sons, Inc.
3. KUMAR S, MITAL A. *Electromyography In Ergonomics*. 1996. CRC.
4. SODERBERG GL, COOK TM. Electromyography in biomechanics. *Physical Therapy*. 1984; 64(12): 1813-20.
5. HÄGG GM, LUTTMANN A, JAGER M. Methodologies for evaluating electromyographic field data in ergonomics. *Journal of Electromyography and Kinesiology*. 2000; 10(5): 301-12.
6. BURDEN, A. How should we normalize electromyograms obtained from healthy participants? What we have learned from over 25 years of research. *Journal of Electromyography and Kinesiology*. 2010; 20: 1023-35.
7. CHAFFIN DB. Localized muscle fatigue – definition and measurement. *Journal of Occupational Medicine*. 1973; 15(4):346-354.
8. KAMEN G, CALDWELL GE. Physiology and Interpretation of the Electromyogram. *Journal of Clinical Neurophysiology*. 1996; 13(5): 366-384.
9. RICHARDS J. *The comprehensive textbook of clinical biomechanics*. 2nd Ed: Elsevier. 2018.
10. ROBERTSON DGE, CALDWELL GE, HAMILL J, KAMEN G, WHITTLESEY SN.

Research methods in biomechanics. 2nd Ed: Human Kinetics. 2014.- Métodos de avaliação do sistema musculoesquelético (dinamômetro isocinético, plataforma de força, sistemas de avaliação cinemática e cinética – Flock of Birds ® e Vicon ®, eletromiografia); interpretação de resultados em condições patológicas e após intervenção fisioterapêutica.