FEDERAL UNIVERSITY OF SÃO CARLOS

GRADUATE PROGRAM IN PHYSIOTHERAPY – PPGFt

COURSE CHARACTERIZATION FORM

Graduate Program: Physiotherapy

Course Code: FIT-221

Credits: 2

Course Title: Integrated Assessment and Analysis of Body Composition and Its Implications for Musculoskeletal Functions and Dysfunctions

Start of Validity: 2026 – 1st Semester

Justification

This course discusses methods for assessing body composition, including their foundations, applications, and limitations, as well as strategies for analyzing research data. It addresses the integrated assessment of fat mass, lean mass, and bone mineral density and their influence on tissue adaptation, functional performance, and musculoskeletal dysfunctions across the lifespan.

Course Workload

Theoretical Classes: 20 hours

Practical Classes: 10 hours

Exercises/Seminars: 0 hours

Course Syllabus

Fundamental concepts of body tissues that compose body composition.

Methods for quantification and segmentation using imaging techniques such as MRI, CT, bioelectrical impedance, and DXA.

Relationships between adipose tissue and the musculoskeletal system in health and disease.

Influence of body composition on motor disorders across different life stages.

Strategies for analysis, interpretation, and processing of body composition data.

Nature of the Course

Elective course for both Master’s and Doctoral programs.

Main Bibliography

Kelly TL et al. PLoS One, 2009.

Borga M et al., 2018.

Krueger D et al., Journal of Clinical Densitometry, 2019.

Goldberg EK, Fung EB., 2019.

Walowski CO et al., Nutrients, 2020.

Pedroso MG et al., Rheumatology International, 2019.

Javed A et al., Pediatric Obesity, 2015.

Zhao R et al., Gerontology, 2022.

Main Responsible Faculty

Stela Marcia Mattiello – Permanent Faculty

Tiago da Silva Alexandre – Permanent Faculty

Approval

Approved at the 299th Ordinary Meeting of the PPGFt Graduate Program Committee on December 4, 2025.

São Carlos, December 4, 2025.

Prof. Dr. Anielle Cristhine de Medeiros Takahashi

Chair of the PPGFt Graduate Program Committee – UFSCar