UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

## Kinesiology 2

**2425-1-I0201D129-I0201D187M**

### Aims

At the end of the course the student should:

- know basic principles of biomechanics and kinesiology
- be able to apply these principles to the assessment of the standing posture and to the analysis of human locomotion
- know the implications of the standing posture on the musculature.

### Contents

Principles of biomechanics and kinesiology applied to the analysis of the standing posture and to the analysis of human locomotion.

### Detailed program

- Planes and axes of movement
- Articular movements
- Center of gravity: definition and his effect on the body
- Body balance (suspended on a point, placed on a surface)
- Force (force of gravity, muscle force)
- Upright standing: application of biomechanical and kinesiologic issues to a kinesiologic assessment.
- Human locomotion
- Gait phases
- Spatiotemporal gait parameters

- Movements of the center of mass during walking
- Gait kinematics
- Gait kinetics
- Energy expenditure during walking
- Leg muscle activity during walking
- Measuring walking

## Prerequisites

Basic concepts of biomechanics (Introduction to kinesiology 1)

## Teaching form

Standard teaching in presence: topics are discussed by the teacher in the classroom
Integrated teaching in presence: students will give presentations to deepen the topics proposed by the teacher.

## Textbook and teaching resource

    - Neumann, D.A. (2016). Kinesiology of the Musculoskeletal System. Foundations for Rehabilitation. (Terza edizione). Ed: Mosby.
- Norkin C. C., D Joyce White D.J., (2016). Measurement Of Joint Motion, A Guide To Goniometry (fifth edition) F. A. Davis Company. Philadelphia, ISBN 080364566X
- Clarkson, HM. (2013). Musculoskeletal Assessment Joint Motion and Muscle Testing, ed 3. Walters Klower Lippincott William and Wilkins, Philadelphia.
- Boccardi S. Lissoni A., Cinesiologia (vol. 2), Società Editrice Universo, 1990
- Le Veau BF, Biomeccanica del movimento umano, Ed. Verduci, 1993
- Judith Burnfield and Jacquelin Perry. (2010). Gait Analysis : Normal and Pathological Function. Second edition.
- Richards & Whittle Levine. (2012). Whittle's Gait Analysis, 5th Edition.
- Slides.
- Scientific papers.

## Semester

First semester

## Assessment method

Written test with: (i) open questions to evaluate the level of knowledge of the students about the topics covered in the classes; and (ii) problems with multiple-choice questions to evaluate the students' problem-solving skills on

relevant topics.

## Office hours

By appointment

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY