1. Course title: **Sports Biomechanics**

2. Type of the course**:** **Lectures and regular classes**

3. Form of evaluation: **Examination**

4. Recommended amount of hours: **20**

Classes: **14**
Lectures: **6**

5. Proposed semester: **summer**

6. Course description:

Sports Biomechanics course is designed to provide the students with broadening their knowledge in the area of application of biomechanics into the selected sports. We will present the principles and scope of cooperation in the team: biomechanist - athletes - trainer, and how to use the principles of statics, kinematics and dynamics, as well as translational and angular motion to improve the technique of competitors' movement.

For this purpose, the kinematic analysis uses the appropriate measures and ratios for a particular sport, such as the center of mass, angular positions of the joints, velocity and acceleration of the linear motion of selected points on the body or angle of selected joints. The evaluation of the athlete's motion technique expands and complements the analysis of the dynamic forces, change of momentum, together with an explanation of their impact on movement performance.

The course aims to familiarize students with the possibilities of the use of measurement techniques involved in biomechanical studies and quantitative analysis of the techniques to assess the athlete's movement in any sport.

The course includes the evaluation of strength capacities of the students on the basis of the muscle torque measurements, qualitative and quantitative analysis of the human locomotion (gait, run), measurements of the bioelectrical activity of the muscles in selected sets of exercises and dynamic measurements of human movement on a force platform.

7. Learning outcomes:

1. The student has knowledge of the capabilities and limitations of movement of the athlete's musculoskeletal system.
2. The student knows the structure and use of the equipment needed to movement registration, rules about movement of the athlete's body using the laws of physics.
3. Students is able to do measurements, to assess and optimize the athlete's movement techniques.

8. Qualifications:

The student has the knowledge and skills in the field of biomechanics of sport, which allows him to assess the functional status of the musculoskeletal system and the athlete's movement techniques using appropriate methods.

9. The unit implements the subject:

**Department of Biomechanics, Institute of Biomedical Sciences**

10. Instructors: **dr hab. Wanda Forczek-Karkosz**

11. Recommended credit points: **4**

12. Possibility of conducting classes remotely: 30% (6 h)