TRAJECTORY PLANNING AND CONTROL

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Ungraded test

The discipline is devoted to the study of the problems of control and planning of the trajectories of the motion of mobile robotic systems. Within the discipline, the issues of constructing kinematic and dynamic models of mobile robots are also considered. A set of different algorithms for trajectory planning, tracking given trajectories and stabilizing the trajectories of mobile robotic systems is considered.

Course structure:

1. MATHEMATICAL MODELS OF MOBILE ROBOTS
    1.1. Kinematic models and their properties.
    1.2. Dynamic models and their properties.

2. TRAJECTORY PLANNING ALGORITHMS
    2.1. RRT-based algorithms.
    2.2. Planning of smooth trajectories.

3. TRAJECTROY TRACKING ALGORITHMS
    3.1. Static feedback linearization.
    3.2. Dynamic feedback linearization.
    3.3. Nonlinear control.

4. TRAJECTORY STABILIZATION ALGORITHMS
    4.1. Motion on the plane.
    4.2. Motion in space.