**Program Midterm Exam**

of the discipline “Сontinuum Mechanics” (3 course)

The main differentional operations on tensors. Gradient, divergence and rotor (examples: temperature, velocity vector).

The laws of motion of a solid body. The laws of motion of continuous medium (continuum). Lagrangian method. The law of continuum motion. Formulas of moving, velocity and accelaration vectors. Euler’s method. Field of velocity vector. Formula of components of acceleration in Cartesian system. Lagrangian and Euler’s methods and their relatonship.

Trajectory and it’s system of equations. Streamline and it’s system of equations. Vortex line and it’s system of equations. Formula of rotational motion in Cartesian system.

Deformation tensor and it’s geometrical meaning of components. The main axes and main components of the deformation tensor. Formula of coefficient of the volume expansion. The velocity deformation tensor and it’s formula in Cartesian system. Formula of Cauchy-Helmholtz.

**List of literature:**

1. Седов Л.И. Механика сплошной среды.-М.: Наука, 1973.

2. Мейз Дж. Теория и задачи механики сплошных сред.-М.: Мир, 1974

3. Шерьязданов Г. Б. модели механики сплошной среды: Учебное пособие.- Алматы: Қазақ университеті, 2007.-188 с.