Professional Physics Seminar:

Provides a look at some of the major developments of current interest in physics research and discusses the activities physicists undertake in research, education, industry, government, and other areas of the economy.

- Syllabus (details TBD):

  Structure of Physical Science: Basic, Fundamental (on Frontiers of research), Applied/
  Experimental, Theoretical, Computational/

  Subdisciplines (subdivision) in Physics:
      ……;

  Interaction of Physics with other Sciences;

  Physics and Society, Government;

- Email contacts
  (rsagdeev@gmail.com)
- Phone:
  240-476-3860 (mob)
- Office: Comp. and Space Sciences Bldg. R.2309
Phys 170 (Fall of 2015):
Professional Physics Seminar
(1 credit)

Format:
Conversations on Suggested topics, Discussions, Assignments to prepare and participate in Debates Issues;

Grading Method:
Integral on overall activity and participation in debates.

Literature and References:
Class and discussion material on suggested topics.
Suggested Topics:

• Profession of Physicists (Today and in retrospect).
• Impact on other scientific disciplines.
• Physics and Society.
• Physics on the Frontline of Knowledge vs. Applied Physics.
• XX century Revolution in Physics:
  • Relativity and Quantum Physics.
  • Legacy of XX century revolution in applications:
    • In condensed matter, Nuclear, Lasers, GPS etc.
    • From Barions and Leptons to Standard Model.
  • Tools to study in High Energy Physics: Cosmic Ray Detection and Colliding Beam Experiments (LHC and beyond).
• Gravitation and Evolution of Universe. Big Bang and Inflation.
• Entrance of Dark Matter. Do we need to go beyond Standard Model.
• Dark Energy.
• Frontlines in Applied Physics: Condensed Matter.
• Modern Atomic Physics and Quantum computing
• Nano-science and Metamaterials.
Suggested topics (cont.)

- Physics and Global Problems of XXI century.
- Understanding the Global Climate Change.
- Physics for the Energy Crisis.
- Nuclear Energy and Weapons. Manhattan Project as an Example of Large Scale Organized Efforts.
- Arms Race and International Treaties.
- Role of Physics in Space Program. Global implications and Treaties.
- Physics for Medicine.
Books
Optional