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| 1. Course title:Fundamentals of Physics seminar | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.):Seminar | | |
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| 4. Contact hours:2 hours/week | | 5. Number of credits (ECTS):2 | | |
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| 6. Preliminary conditions (max. 3): — | | | | |
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| 7. Announced:fall semester, spring semester, both | | | | |
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| 8. Limit for participants: – | | | | |
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| 10. Responsible teacher (faculty, institute and department):Dr. Erostyák János | | | | |
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| 11. Teacher(s) and percentage: | | Tokodi Levente | | 100% |
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| 12. Language:English | | | | |
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| 13. Course objectives and/or learning outcomes:  Compulsory course for students in biology, geography, mathematics.  The major learning outcomes for this course are Quantitative Reasoning and Appropriate presenting.  Upon successful completion of the course, the student must be able to understand the basic concepts of Experimental Physics. Students will be able to process a topic and hold an appropriate presentation. | | | | |
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| 14. Course outline  Scope of physics.  MECHANICS. Linear and rotational motion. Newton’s Laws. Work and power. Work equation. Principle of the conservation of mechanical energy. Principle of the conservation of momentum. Oscillation and waves. Acoustics. Doppler effect. Ultrasound. Hydrostatics. Capillarity. Equation of continuity. Bernoulli equation. Viscosity. Hagen-Poiseuille’s Law. Laminar and turbulent flow.  thermodynamics. State of condition and change of state. Atmospheric humidity. Diffusion and osmosis. Gas law. Thermal dilatation. Thermal conduction, radiation and convection.  Electrophysics. Work and potential of electric field. Current intensity and current density. Ohm’s law. Work of electric current. Joule heat. Capacity, capacitor. Inductivity and inductor device. Apparent resistance, apparent values. Thermoelectric effects. Electrolysis. Magnetism.  Optics. Velocity of light. Reflection and refraction. Optical fibers. Plane and spherical mirrors. Lenses. Interference. Diffraction. Polarization. Optical activity.  Radiation. Luminescence. Thermal radiation. X-ray. Isotopes. Decay law. Dosimetry. Detectors. | | | | |
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| 15. Mid-semester works  Presentations | | | | |
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| 16. Course requirements and grading  Maximum number of absence is: 3.  The form of final exam: written.  Written exam is based on lectures, accessible electronic sources and lecture materials. Most common questions in the structure of end term examination are: describing notions, relations, multiple choice questions.  The given grade is based on the results of the presentation (in the mid-semester) and the exam.  Grades:  0–39% fail  40–54% acceptable  55–69% average  70–84% good  85–100% excellent | | | | |
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| 17. List of readings  Paul A. Tipler, Gene Mosca: Physics for Scientists and Engineers with Modern Physics (6th edition)  W. H. Freeman, USA, (2007), ISBN 978-1-429-20124-7  Halliday, Resnick, Walker: Fundamentals of Physics (10th edition).  Wiley, USA, (2014), ISBN 978-1-118-23072-5 (Extended edition) | | | | |
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| 18. Recommended texts  Serway, Jewett: Physics for Scientists and Engineers with Modern Physics (9th Edition).  Brooks/Cole, ISBN-13: 978-1-133-95405-7  Young, Freedman, Ford: University Physics with Modern Physics (13th Edition).  Addison-Wesley, ISBN-13: 978-0-321-69686-1 | | | | |
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| **Date** | 13 April 2017 | **Prepared** | Dr. Erostyák János | |
| responsible teacher | |
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| **Endorsed** | | | Dr. Kollár László | |
| director of the Institute | |