

PHYSICS

SYLLABUS

FIRST YEAR STUDENTS OF DENTAL MEDICINE

2012 – 2013

1. Circular motion. Centrifugation.
2. Elements of biomechanics. Levers – classes and equilibrium.
3. Acoustics. Sound and ultrasound.
4. Fluids and flows. Viscosity.
5. The molecular structure of liquids. Surface tension.
6. Haemodynamics. Blood circulation and blood pressure.
7. Mechanical properties of solids and tissues. Deformations.
8. Atmospheric pressure. Breathing.
9. Electric field. Electrocardiography
10. Direct electric current. Conductivity of metals, electrolytes and gases.
11. Magnetic field. Magnetic properties of tissues.
12. The nature of light. Photometry. Reflection and refraction. The endoscope.
13. Optical lenses. Optical system of the eye.
14. The compound microscope. Magnification and resolution.
15. Polarisation of light. Optical activity.
16. Infrared and ultraviolet light. Medical uses.
17. Emission, absorption and scattering of light. Applications in medicine and biology.
18. The electron microscope. Magnification and resolution.
19. Electron paramagnetic resonance. Nuclear magnetic resonance. Magnetic resonance imaging.
20. X-rays and their interaction with matter. X-ray diagnostics. X-ray computed tomography.
21. Radioactivity. Applications in medicine.
22. Dosimetry. Radiation safety.

LITERATURE

1. R.K.Hobbie, Intermediate Physics for Medicine and Biology, Springer, 2007.
2. P.Davidovits, Physics in Biology and Medicine, Harcourt Academic Press, 2008.
3. Handouts.