Physics for Biology Majors - University of Minnesota - Physics topic sequence.

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| Physics Topic Semester 1 | Biology Context |
| Introduction – Interactions, causality, and systems | Body mechanics – lifting & throwing  Cell division mechanics |
| Forces and equilibrium | Body mechanics – walking & running, pushing, sports medicine |
| Forces in fluids - pressure | Measuring body fat |
| Torques and equilibrium | Body mechanics – weight lifting, prosthetics |
| Conservation of energy and interactions | Photosynthesis, water cycle, plant growth, cell division mechanics  Body mechanics – throwing, skiing |
| Potential energy and fluid flow | Blood vessels & blood flow |
| Interactions and oscillations | Heartbeat, leg motion, |
| Interactions and non-repetitive motion | Atmospheric sampling, exobiology, microbe propulsion |
| Energy and thermal processes | Specimen temperature control |
| Thermodynamic cycles | Breathing, body temperature regulation, |
| Entropy and free energy | Diffusion, DNA folding |

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| Physics Topic – Semester 2 | Biology Context |
| Controlling energy transfer - Geometrical optics | Structure of eye, optical systems & microscopy, optical examinations  Light transport for diagnostics & therapy |
| Controlling energy transfer - electric circuits | Electrophoresis, nerve signals, cellular energy transport, implantable medical devices, defibrillator |
| Electric interactions - charge and electric force | Electron microscope, polymer tagging |
| Interactions at a distance - electric field | Brain signals |
| Energy and electric potential | Electron microscope, brain signals |
| Magnetic interactions - field and force | Biological magnetism, mass spectrometry, particle beam therapy |
| Connections between electricity and magnetism | Biological magnetic detection, magnetic field measurement, particle accelerators, magnetic fields for MRI |
| Controlling energy transfer - changing magnetic fields and electric potential | Biological effects of power lines, electricity generation and the environment, Transcranial magnetic  stimulation |
| Controlling energy transfer - electro-magnetic waves and optics | Optical techniques for cell research, butterfly wings and thin films, corrective lens coatings, diffraction limits of microscopy, improved optical microscopy, X-ray diffraction & DNA |
| Magnetic resonance imaging. | MRI principles |