LS 101 - PHYSICS FOR BIOLOGISTS - (2 CREDITS)

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S. no.	Topic	Faculty	No. of lectures
1	**Quantum Physics**	A. K. Saxena	
	- Wave versus Particle ; - Heisenberg and Uncertainty		1
	- Radioactivity;- Photoelectric effect		1
	- Atom and Nuclei; - Particles		1
2	**Properties of Matter**	K. Kar	
	- Elasticity;- Hydrostatic		1
	- Surface tension; - scalars and vectors		1
	- Newton laws, Forces, Work, Energy		1
3	**Crystal theory**	A. K. Saxena	
	- Structure of solids, amorphous solids		1
	- Structure of single crystals		1
	- Basic introduction to x-ray crystallography		1
	- Crystal theory		1
4	**Thermal Physics**	A. K. Saxena	
	- Laws of Thermodynamics and its application in Biological system		1
	- Temperature and related topics		1
	- Internal energy, Heat and First law of Thermodynamics		1
	- The ideal monatomic gas		1
	- Application of first law to Ideal Gases		1
	- Entropy and the Second law		1
5	**Optics, waves and sound**	S. Gourinath	
	- Black body radiation; Optics, Geometrical optics		1
	- Sound; Interferences		1
6	**Fundamental Electromagnetism**	S. Gourinath	
	- Charge and Current		1
	- Coulomb's law, Electric field, Electrostatic potential		2
	- Magnetic effects on study currents		2
	- Forces on current in a Magnetic field		1
	- Forces on charges in Electric and Magnetic field		2
7	**Introduction to Nanotechnology**	K. Kar	
	- Fundamental aspects of nanotechnology and its		1
	biological relevance.		1
	- Self-assembly of molecules into nanostructures		1
	- Rationally Engineered Nanomaterials for biomedical applications		1
	- Nanobiotechnology in tissue engineering and drug delivery systems		

Suggested books/Reding materials

1. Fundamentals of Physics: by Halliday, Resnick, Walker
2. Fundamental of Physics: by Alan Giambattista, Betty Richardson
3. Nanomaterials, Nanotechnologies and Design: Michael F. Ashby, Paulo J. Ferreira and Daniel L Schodek. Elsevier Ltd 2009, Butterworth-Heinemann

4. NANO: The Essentials: Understanding Nanoscience and Nanotechnology, T. Pradeep, McGraw Hill education, 1st edition 2017.