**Lesson plan**

Name of faculty - Naveen Kumar Pathak

Discipline - mech. , civil, electrical, Ece, cse

Semester - 2nd

Subject - Applied physics

Lesson plan duration - 16 week

Work load (lecture/practical) per week (in hours) lectures – 02, practical - 02

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| week | Theory | | Practical | |
| Lecture day | Topic | Practical day |  |
| 1st | 1 | Wave motion – Introduction, Terms - displacement, amplitude, time  period,frequency,wavelength,wave velocity, | 1 | Familiarization with apparatus (resistor, rheostat, key, ammeter, volt meter, telescope, microscope etc ) |
|  | 2 | Transverse wave motion, longitudinal wave motion |
| 2nd | 3 | Difference b/w Transverse & longitudinal wave motion | 2 | To find the time period of simple pendulum |
|  | 4 | Difference b/w Transverse & longitudinal wave motion |
| 3rd | 5 | Relationship among wave velocity, frequency and wave length . Simple Harmonic Motion (SHM): definition, examples | 3 | To study variation of time period of a simple pendulum with change in length of pendulum |
| 6 | Cantilever  Vibrations & its types |
| 4th | 7 | Acoustics of buildings – reverberation  reverberation time, Echo, noise, coefficient of absorption of sound | 4 | Revision and checked notebook |
| 8 | methods to control reverberation time,Ultrasonics |
| 5th | 9 | Engineering applications of Ultrasonics | 5 | To find and verify the time period of cantilever |
| 10 | Optics – Introduction, Reflection of Light  Refraction of Light |
| 6th | 11 | refractive index  Total internal reflection  Critical angle | 6 | To find Ohm’s laws by plotting a graph between voltage and current |
| 12 | Applications of TIR  conditions for TIR |
| 7th | 13 | super Position of Waves, Definition of Interference, Diffraction and Polarization of Waves Microscope, telescope& their uses | 7 | To study colour coding scheme of resistance |
| 14 | Introduction of Lens, lens Formula (no derivation), Power of Lens Based numerical |
| 8th | 15 | Electrostatics and Electricity –  Introduction, Coulombs law  Unit charge | 8 | To verify laws of resistance in series combination |
| 16 | Electric field  Electric lines of force, its properties |
| 9th | 17 | Electric Intensity , Electric Flux, Electric potential  Electric field intensity due to a point charge | 9 | Revision and checked practical note book |
| 18 | Gauss law(Statement and derivation), Capacitor  Capacitance |
| 10th | 19 | Series combination of capacitors, parallel combination of capacitors, Ohm’s Laws | 10 | To verify laws of resistance in parallel combination |
| 20 | Numerical based on Grouping of  Capacitors, Classification of Materials and their Properties |
| 11th | 21 | Types of materials  Conductor, Semi-Conductor, Insulator and Dielectric with examples | 11 | To find resistance of galvanometer by half deflection method |
| 22 | intrinsic and extrinsic semiconductors ( Introduction only), Introduction to Magnetism  Types of magnetic materials  Dia materials with example |
| 12th | 23 | Para and ferromagnetic materials with examples | 12 | To verify laws of reflection of light using mirror |
| 24 | Magnetic field  magnetic Flux, Magnetic lines of force |
| 13th | 25 | Electromagnetic induction (Definition) | 13 | To verify laws of refraction using glass slab |
| 26 | Modern Physics - Introduction |
| 14th | 27 | Lasers: full form, Principle, absorption, spontaneous emission, stimulated emission, population inversion  Engineering and applications of laser | 14 | To find the focal length of a concave lens using a convex  lens |
| 28 | Fibre optics – Definition, principle, parts, light propagation, fiber types (mono- mode, multi-mode)  Applications in medical, tele-  communication and sensors |
| 15th | 29 | Introduction to nanotechnology-  Definition of nano materials with examples, properties at nano scale | 15 | Revision and checked practical note book |
| 30 | properties of nano scale |
| 16th | 31 | Applications of nanotechnology( brief) | 16 | Revision and checked practical note book |
| 32 | Revision and test |