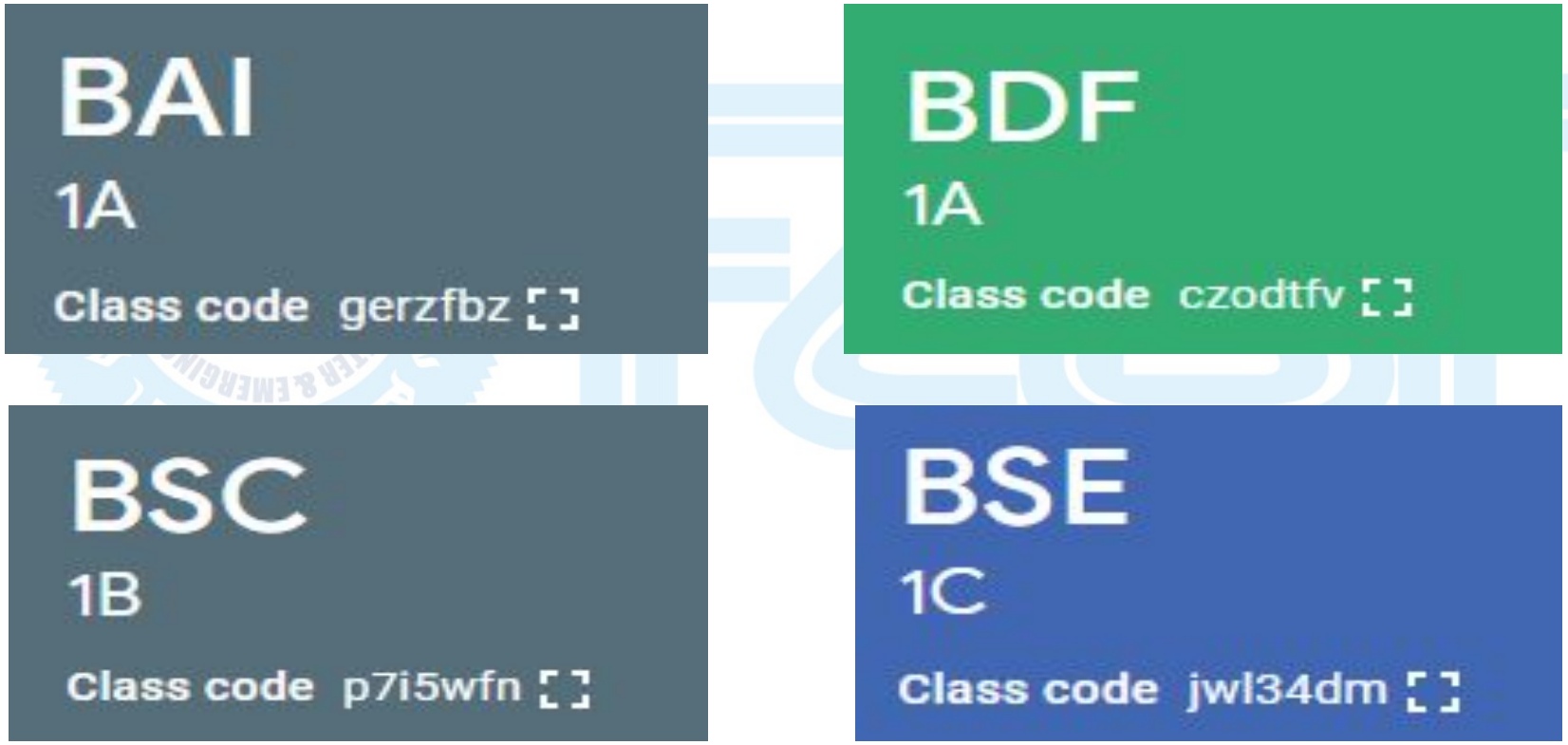
Applied Physics EE (117)

LECTURE # 1

DATE: 16TH SEPTEMBER, 2019

Classes Code



Applied Physics

Course Code	EE117
Course Title	APPLIED PHYSICS
Credit Hours	3

Current Catalog Description	**Part A:** Adding Vectors, Components of Vectors, Unit Vectors, Vector & Scalar Products, Position & Displacement (2/3 dimensions), Average/Instantaneous Velocity/Acceleration, Projectile Motion, Uniform Circular Motion, Newton Laws of Motion, Forces (1D/2D/3D): Gravitational, Friction, Tension, Weight. **Part B:** Simple Harmonic Motion, the Force Law for SHM, Angular SHM, Simple Pendulum, Damped SHM, Circular Motion & SHM, Types of Waves, Sinusoidal Waves, Wavelength and Frequency **Part C:** Electric Charge, Coulomb's Law, Electric Field, Electric Field Due To Point Charge, Due To Electric Dipole, Gauss' Law, Flux Of Electric Field, Cylindrical/Planar/Spherical Symmetries, Capacitance, Parallel Plate/Cylindrical/Spherical Capacitors, Capacitors In Parallel And In Series, Electric Current, Current Density, Drift Speed, Resistance & Resistivity, Ohm's Law, Magnetic Fields And Field Lines, Hall Effect, Circulating Charge Particles, Magnetic Force On Current Carrying Wire, Magnetic Field Due To Current, Ampere's Law, Magnetic Field Inside/Outside Wire/Between Parallel Wires
Textbooks	1. ***Halliday & Resnick* Fundamentals of Physics (Extended 10th Edition),** Jearl Walker, © 2013 John Wiley & Sons Inc.

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Reference Books/ Material	1. **Physics for Scientists and Engineers with Modern Physics (6th Edition),** Raymond A. Serway & John W. Jewett, © 2004 Thomson books/cole US 2. **Physics for Scientists and Engineers (6th Edition),** Paul A Tipler and Gene Mosca, W.H. Freeman and Company 3. **Physics for Scientists and Engineers (3rd Edition),** Fishbane, Gasiorowicz, Thornton, Pearson Prentice Hall. 4. **Physics for Engineers & Scientists (3rd Edition Extended),** Hans C. Ohanian and John T. Markert, W. W. Norton & Company New York. London

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Week-Wise Course Outline:

Date	Duration	Topics Covered
Week 1	**3 hrs**	Adding Vectors, Components of Vectors, Unit Vectors, Vector & Scalar Products, (1hr Lab Python for Applied Physics)
Week 2	**3 hrs**	Position & Displacement (2/3 dimensions) Average/Instantaneous Velocity/Acceleration, (1hr Lab Python for Applied Physics)
Week 3	**3 hrs**	Projectile Motion, Uniform Circular Motion horizontal/vertical motions, equation of the path and horizontal range, (1hr Lab Python for Applied Physics)
Week 4	**3 hrs**	Newton Laws of Motion, Forces (1D/2D): Gravitational, Friction, Tension, Weight, (1hr Lab Python for Applied Physics)
Week 5	**3 hrs**	Simple Harmonic Motion, the Force Law for SHM, Angular SHM (1hr Lab Python for Applied Physics)
Week 6	**3 hrs**	**Mid Term –I**

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Week-Wise Course Outline:

Week 7	**3 hrs**	Simple Pendulum, Damped SHM, Circular Motion & SHM, (1hr Lab Python for Applied Physics)
Week 8	**3 hrs**	Types of Waves, Sinusoidal Waves, Wavelength and Frequency (1hr Lab Python for Applied Physics)
Week 9	**3 hrs**	Electric Charge, Coulomb's Law, Electric Field, Electric Field Due To Point Charge and Dipole, (1hr Lab Python for Applied Physics)
Week 10	**3 hrs**	Gauss' Law, Flux, Flux Of Electric Field, Gauss's Law, Equivalency of Gauss's Law And Coulombs' Law (1hr Lab Python for Applied Physics)
Week 11	**3 hrs**	Capacitance, Parallel Plate, Cylindrical & Spherical Capacitors, Capacitors In Parallel And In Series. (1hr Lab Python for Applied Physics)
Week 12	**3 hrs**	**Mid Term –II**

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Week-Wise Course Outline:

Week 13	**3 hrs**	Electric Current, Current Density and Drift Speed, Resistance & Resistivity, Ohm's Law, (1hr Lab Python for Applied Physics)
Week 14	**3 hrs**	Magnetic Fields And Field Lines, Crossed Fields: Hall Effect, Circulating Charge Particles, Magnetic Force On Current Carrying Wire. (1hr Lab Python for Applied Physics)
Week 15	**3 hrs**	Magnetic Field Due To Current, Ampere's Law, Magnetic Field Inside/Outside Wire, Solenoids & Toroids & Between two Parallel Wires (1hr Lab Python for Applied Physics)
Week 16	**3 hrs**	Revision

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Marks Distribution

Midterms	30%
Lab	10%
Class Quizzes + projects	10%
Final Exam	50%
Total	100%