

PHY 2048 Topic	Physics with Calculus I Sub-Topics	M=Mandatory, O=Optional, R=Review, V=Overview
		M,O,R,V
Measurement and Vectors	Standard units (SI) - basic and derived units.	M
	Vector operations - analytical and graphical solutions	M
	Distinguish between scalar and vector	M
	Curves, tangents to curves, vector field	M
	Dot and cross product	M
Motion	Kinematics - instantaneous and average velocity, acceleration, speed.	M
	Types of motion - Circular, harmonic, linear, projectile, 2-and 3-dimensional, rotational.	M
	Graphical representation of motion	M
Mechanics	Dynamics - Newton's Laws ($F=MA$)	M
	Linear - forces, momentum, center of mass	M
	Rotation - torque, moment of inertia, angular momentum	M
	Static and dynamic fluids	M
	Newton's Law of Universal Gravitation - gravitational acceleration (orbital satellites).	M
Energy and Conservation Laws	Work energy theorem	M
	Work and power	M
	Collision and interaction	M
	Conservation of energy	M
	Kinetic and Potential energy	M
Oscillations and Wave Motion	Conservation of linear and angular momentum	M
	Simple harmonic motion	M(48/49)
	Harmonic waves	M(48/49)
Thermal	Wave equation	M(48/49)
	Heat transport	M(48/49)
	Specific heat, latent heat	V(48/49)
	Thermal expansion	V(48/49)
	Heat engines	V(48/49)
	Ideal gas law	V(48/49)
	Kinetic theory of gas	O(48/49)
3 laws of thermodynamics	V(48/49)	