PHYSICS DEPARTMENT FALL SEMESTER (2025 – 2026)

PHYSICS FOR MEDICAL AND DENTAL STUDENTS (0329105)

Textbook: Douglas C. Giancoli, "**PHYSICS: PRINCIPLES WITH APPLICATIONS".** **Seventh** Edition, Pearson, 2015

Recommended References:

1. Joseph W. Kane and Morton M. Sternheim, "**Physics**", 3rd Edition, (John Wiley & Sons, 1988).
2. Raymond A. Serway and John W. Jewett Jr., "**Physics For Scientists and Engineers with Modern Physics"** 7th Edition, (Thomson Learning, Belmont, CA, USA, 2007).

Coordinator: Dr. Ziad Abu Waar

Course Content:

Chapter no.	Sections	Suggested Problems
1	1-5 Units, Standards, and the SI System 1-6: Converting Units 1-8: Dimensions and Dimensional Analysis	17, 21, 33, 34, 48
2	**Describing Motion: Kinematics in One Dimension** 2-1 Reference Frames and Displacement 2-2 Average Velocity 2-3 Instantaneous Velocity 2-4 Acceleration	5, 7, 9, 11, 17, 20, 21
3	**Kinematics in Two Dimensions: Vectors** 3.1 Vectors and Scalars 3.2 Addition of Vectors Graphical Methods 3.3 Subtraction of Vectors, and Multiplication of a Vector by a Scalar 3.4 Adding Vectors by Components	1, 3, 8, 12
4	**Dynamics: Newton's Laws of Motion** 4.1 Force 4.2 Newton's First Law of Motion 4.3 Mass 4.4 Newton's Second Law of Motion 4.5 Newton's Third Law of Motion 4.6 Weight the Force of Gravity; and the Normal Force 4.7 Solving Problems with Newton's Laws: Free-Body Diagrams 4.8 Problems Involving Friction, Inclines	3,11,28, 31 36, 37, 45, 47, 61
6	**Work and Energy** 6.1 Work Done by a Constant Force 6.3 Kinetic Energy, and the Work-Energy Principle 6.4 Gravitational Potential Energy (Elastic Energy is excluded) 6.5 Conservative and Nonconservative Forces 6.6 Mechanical Energy and its Conservation 6.7 Problem Solving Using Conservation of Mechanical Energy 6.8 Other Forms of Energy; 6.9 Energy Conservation with Dissipative Forces: Solving Problems 6.10 Power	9, 10, 18, 23, 28, 36, 41, 44, 55, 57
7+8	**Ch7: Linear Momentum** 7-8 Center of Mass (CM)	Ch7:

	7-9 CM for the Human Body **Ch8: Rotational Motion** 8.4 Torque	46, 51, 52, 53 Ch8: 24, 25, 27
9	**Static Equilibrium: Elasticity and Fracture** 9-1 The Conditions for Equilibrium 9–2 Solving Statics Problems 9–3 Applications to Musclesand Joints 9–4 Stability and Balance 9–5 Elasticity; Stress and Strain 9–6 Fracture	4, 5, 16, 17, 18, 32, 38, 39, 43, 46, 50
10	**Fluids** 10.1 Phases of Matter 10.2 Density and Specific Gravity 10.3 Pressure in Fluids 10.4 Atmospheric Pressure and Gauge Pressure 10.5 Pascal's Principle 10.6 Measurements of Pressure; Gauges and the Barometer 10.7 Buoyancy and Archimedes' Principle 10.8 Fluids in Motion; Flow Rate and the Equation of Continuity 10.9 Bernoulli's Equation 10.10 Applications of Bernoulli's Principle:Torricelli, Airplanes, Blood Flow 10–12 Flow in Tubes: Poiseuille's Equation, Blood Flow	5, 10, 11, 18, 20, 26, 27, 38, 48, 54, 56, 60, 88
23	**LIGHT: GEOMETRIC OPTICS** 23-1: The Ray Model of Light 23-4: Index of Refraction 23-5: Refraction: Snell's Law 23-6: Total Internal Reflection; Fiber Optics 23-7: Thin Lenses; Ray Tracing 23-8: The Thin Lens Equation	25, 26, 28, 31, 34, 36, 40, 42, 45, 48, 50, 53, 78, 79
30	**Nuclear Physics and Radioactivity** 30-1 Structure and Properties of Nucleus 30-3 Radioactivity 30-8 Half-Life and Rate of Decay 30-9 Calculations Involving Decay Rates and Half-Life	2, 37, 43, 42, 46, 49
31	**Nuclear Energy; Effects and Uses of Radiation** 31.4 Passage of Radiation Through Matter; Biological Damage 31.5 Measurement of Radiation Dosimetry 31.6 Radiation Therapy 31–8 Emission Tomography: PET and SPECT 31–9 Nuclear Magnetic Resonance (NMR) and Magnetic Resonance Imaging (MRI)	38, 40, 41, 44, 46

Dates of Exams: You will be informed of the date of each exam by your instructor.
Weights: First Exam (**30%**),
Second Exam (**20 %)**
Final Exam (**50%**)