Course Description Form

1. Course Name:
Medical Physics
2. Course Code:
Phcls24_1210
3. Semester / Year:
2nd Semester/1st year
4. Description Preparation Date:
01.02.2025
5. Available Attendance Forms:
Theoretical Lectures/Practical Laboratory attendance forum
6. Number of Credit Hours (Total) / Number of Units (Total)
2 hours theoretical + 2 hours practical (60)/3 units
7. Course administrator's name
Theoretical + Practical
Name: Dr. Manal A. Ibrahim Email: alfarhamanal@uomosul.edu.iq Name: Assis. Prof. Zahraa Siddiq Name: Assis. Lec. Sarah Yahya
8. Course Objectives

Course Objectives Learning the basic concepts of physics and its role in medicine	1. Concepts of basic physics. 2. Application of physics in medical fields. 3. Principles of some medical device working
9. Teaching and Learning Strategies	
Strategy	Lecturing Reports Quiz

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	Thermodynamics system	Explain how to plot graph and make laboratory report	Theoretical lectures & laboratory work	Paper-based exams
2	2	Pressure in medicine	Optical Fiber Loss (bend) Measurement	Theoretical lectures & laboratory work	Paper-based exams
3	2	Temperature in medicine, Heat and energy	Simple pendulum	Theoretical lectures & laboratory work	Paper-based exams
4	2	State of the matter, equation of state	Spectral photometric	Theoretical lectures & laboratory work	Paper-based exams

5	2	Temperature scales (Celsius, Fahrenheit, Kelvin).	Density of liquid	Theoretical lectures & laboratory work	Paper-based exams
6	2	Gas: Kinetic theory of a gas; ideal gas and real gas; general law of gases; clauses equation and Vander Waales equation.	The focal length of convex lens	Theoretical lectures & laboratory work	Paper-based exams
7	2	Gas: Equilibrium and types of equilibrium; compressibility factor, coefficient of volume expansion, elastic coefficient (bulk modulus)	Measurement of Viscosity of liquids	Theoretical lectures & laboratory work	Paper-based exams
8	2	Electromagnetic waves; Maxwell equations; physical optics	Ostwald´s Viscometer: find viscosity of unknown; find the molecular weight; find concentration of unknown substance	Theoretical lectures & laboratory work	Paper-based exams
9	2	Radiation: terms & law (Kirshoffs law; planks law; Stefan-Boltzman law; Wiens law)	Measuring surface tension (by capillary rise method and traveling microscope)	Theoretical lectures & laboratory work	Paper-based exams
10	2	Radiation: Heat transfer (radiation, convection, conduction).	Measuring surface tension (differential height capillary method)	Theoretical lectures & laboratory work	Paper-based exams
11	2	Radiation: X-Ray spectra; absorption of X-Ray		Theoretical lectures & laboratory work	Paper-based exams
12	2	Radiation: U.V and IR effects.	Boyle’s Law	Theoretical lectures & laboratory work	Paper-based exams
13	2	Radiation: Medical and	Decay curve and half life	Theoretical lectures	Paper-based exams

		biological effects of radiation; Radioactive of isotopes.		& laboratory work	
14	2	Radiation: Dangerous of radioactivity on human body. Effects of α β γ and neutron on human body; Radiotherapy.	Laser application for measurement of single slit	Theoretical lectures & laboratory work	Paper-based exams
15	2	Sound in Medicine	Speed of sound	Theoretical lectures & laboratory work	Paper-based exams

11. Course Evaluation

- 20 M Theoretical assessment;
  (paper-based mid-term exam + quiz + attendance)
- 20 M practical assessment (attendance + quiz + report + practice)
- 60 M paper-based theoretical final exam

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- 100 M total

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1. Cameron J. R., Skofronick J.G, Grant R. M. Physics of the body, Madison, WI:Medical Physics Publishing, 1992 2. Armitage E. Practical Physics in S.I.2nd edition, 2009,John Murray, London
Main references (sources)	1. Cameron J. R., Skofronick J.G, Grant R. M. Phys of the body, Madison, WI:Medical Physics Publishing, 1992 2. Armitage E. Practical Physics in S.I.2nd edition, 2009,John Murray, London
Electronic References, Websites	https://aapm.onlinelibrary.wiley.com/journal/24734209