Intended Learning Outcomes (ILOs) of the Medical Physics Program

The definition of the ILOs of the degree program of medical physics and also the requirements of post-graduate studies have been taken into account in the definition of the learning outcomes. Therefore, the learning outcomes for B.Sc. Program in Medical Physics is defined as follows:

a. Knowledge	**Summary description of the knowledge to be acquired and on completing this program, students will be able to:** **a1. Acquire the major aspects of nature and subject of medical physics and the application of physics to medicine.** **a2. List matter in various forms, including crystals, semiconductors, atoms, nuclei and understand the principles of laser and its application in medicine.** **a3. Recognize Bioinformatics in order to know how to analysis data which is used to diagnose with the aid of different medical devices such as X- ray machines, gamma camera, accelerator and nuclear magnetic resonance.** **a4. Define different quantitative, mathematical science and physical tools analyze problems and list some foundations of systems theory to solve and analysis different problems.** **a5. Recognize the nature, properties, dosimetery of radiation and basics of radiation protection and also medical effects of ionizing and non-ionizing radiation.** **a6. Outline the principles of physics of different medical radiation devices and their modern advances, especially in medical radiation therapy and different applications in medical physics.**
b. Cognitive Skills	**Summary description of the Cognitive Skills to be acquired and on completing this program, students will be able to:** **b1. Reorganize mathematical and physical formulas and demonstrate skills of critical thinking and analytical reasoning to solve problems in medical physics and related fields of studies.** **b2. Interpret the data obtained from testing, diagnostic instruments such as MRI, X-rays, ultrasonic images, CT images and gamma camera images.** **b3. Analyze and apply the mathematical expressions in evaluating and understanding of essential facts, concepts, principles and theories of medical physics.** **b4. Formulate and test hypotheses using appropriate experimental design and analysis of data (Computer simulation) and integrate IT-based solutions into the user environment effectively.**
c. Interpersonal Skills and Responsibility	**Summary description of the Interpersonal Skills, and Responsibility to be acquired and on completing this program students will be able to:** **c1. Analyze and evaluate information by using computational tools to interpret experimental data relevant to medical physics by using packages from different theoretical and experimental resources, and perspectives.** **c2. Operate some medical instrumentation such as that used for diagnosis of different diseases in medical centers and demonstrate competency in laboratory techniques and safety.** **c3. Use scientific literature effectively and prepare technical reports that for**

	individual student or making a group of researchers. **c4. Justify ethical, social and legal responsibilities concerning Medical Physics.**
d. Communication, Information Technology and Numerical Skills	**Summary description of the Communication, Information Technology and Numerical Skills to be acquired and on completing this program students will be able to:** **d1. illustrate and employ the processes of scientific inquiry and research methods through use effectively information and communications technology (IT) tools and use the basic software, to ensure global understand of medical physics issues.** **d2. Demonstrate scientific concepts and analytical argument, in a clear and organized way, verbally and on writing.** **d3.implement all kinds of relevant information in medical physics through the use of local and internationally accessible libraries, information database, and electronic data and use that information in problem solving activities.** **d4. Work independently and demonstrate the ability to manage time and to work as a part of a team, and learn independently with open– mindedness to learn how solve the daily life problems.**
e. Psychomotor Skills (if applicable)	NA