Course Specifications

General Information

Course name	Radiation Protection
Course number	AMSR3390
Faculty	
Department	
Course type	Major Needs
Course level	3
Credit hours (theoretical)	3
Credit hours (practical)	0
Course Prerequisites	

Course Objectives

1 - This course provides the student with the opportunity to gain a conceptual understanding of the radiation protection principles involved in the research, diagnostic, and therapeutic uses of radiation sources

2 - To anticipate, recognize, evaluate, and control ionizing radiation hazards in an occupational setting

3 - To understand the fundamental safety principles required for the safe use of ionizing radiation

4 - To apply health physics safety principles to common biomedical research, diagnostic physics, and therapy physics applications

Intended Learning Outcomes

Knowledge and Understanding	* Explain the basics of ionizing radiation biological effects and risks from cellular to human
	* Summarize the factors that affect the dose-effect relationship
	* Summarize acute and late effects from ionizing radiation
Professional Skills	* Understanding the dose-response curves
	* Applying Radiation Protection Act and the relevant radiation protection regulations
General Skill	* Planning and implementing radiation protection education/information for patients, general public or professionals
	* Explain the principles of radiation protection for both ionizing and non-ionizing radiation

Course Contents

1 - The course covers basic knowledge on biological effects of radiation and risks on cellular level to humans, factors that affect the dose-effect relationship and a deeper knowledge on radiation protection for ionizing and non-ionizing radiation, both in legislation and practical radiation protection technology

2 - The course covers radiation effects at cellular level including the formation of free radicals, chromosome breakage and repair mechanisms as well as target theory and the dose-response curves. It also includes radiation effects on individual organs and humans, somatic, genetic as well as immediate and late radiation damages and factors affecting the relationship between dose and biological effects

3 - The course also covers in-depth knowledge of radiation protection, international recommendations, Swedish radiation protection legislation and regulations for ionizing, ultraviolet, laser and electromagnetic fields. It also includes methods for personal dosimetry, radiation protection instruments and handling of radioactive substances. The course includes mandatory lab and seminars

Teaching and Learning Methods

1 - Standard lectures

2 - Project based learning

3 - Discussion and class activities

Students Assessment

Assessment Method	TIME	MARKS
Assignments	The first trimester	30%
Midterm Exam	Week 8	30%
Final Exam	Week 15	40%

Books and References

Essential books	Bushong, S. C. (2020). Radiologic science for technologists e-book: physics, biology, and protection. Elsevier Health Sciences
Recommended books	Health Physics Journal, selected readings. Operational Health Physics, Supplement to Health Physics, selected readings