Schedule for Basic Radiobiology 9 hp, HT 2025

Teaching activities marked in red are mandatory to attend

Week	Day	Date	Time	Teaching activity	Teacher	Room	Literature[1]
41	Wednesday	08.10	09:30-10:00	Introduction to the course	EKL	*Zoom*	
				Cell biology	EKL	*Video lecture*	Notes
	Thursday	09.10	10:00-15:00	*Workshop:* cancer biology	EKL	MSF library	
				Cancer biology		*Video lecture*	Notes
				Interaction of ionizing radiation in biological matter	EKL	*Video lecture*	1
	Friday	10.10	09:15-09:45	End-of-week quiz 1: Normal and cancer cell biology		MSF library	
			10:00-12:00	*Workshop:* DNA damage	EKL	MSF library	2
			13:00-15:00	*Workshop:* DNA damage response	EKL	MSF library	2
				Cell survival curves and models for radiation cell killing	EKL	*Video lecture*	3
42	Monday	13.10	13:00-16:00	*Workshop:* cell survival curves and models for radiation cell killing *Calculation exercises 1 handed out*	EKL	MSF library	3
				Radiosensitivity and cell age in the mitotic cycle – Autradiography and and bromodeoxyuridine labelling	EKL	*Video lecture*	4
	Tuesday	14.10	13:00-16:00	*Workshop:* Radiosensitivity and cell age in the mitotic cycle	EKL	MSF library	4
				Repair of radiation damage – types of radiation damage	EKL	*Video lecture*	5
	Wednesday	15.10	13:00-16:00	*Workshop:* Repair of radiation damage – the 5 R's and the dose-rate effect	EKL	MSF library	5
	Friday	17.10	09:15-09:45	End-of-week quiz 2: DNA damage and repair		MSF library	
			10:00-12:00	*Workshop:* Oxygen effect and reoxygenation	EKL	MSF library	6
			13:00-16:00	*Workshop:* Linear energy transfer and relative biologic effectiveness *Active learning exercise 1*		MSF library	7
43	Monday	20.10	10:00-12:00	Acute effects of total-body irradiation	EKL	MSF library	8
			14:00-16:00	Biological dosimetry. Effects of high doses	AW	Frescati	Handouts
			16:00-17:00	*Tour RB lab at SU*	AW	Frescati	
	Wednesday	22.10	10:00-10:30	*Introduction to the computer exercise*	EKL	MSF library	
			10:30-15:00	*Time for exercises* *Oral presentation of computer exercise (by group) when ready*	EKL	Computer room	
	Friday	24.10	09:15-09:45	End-of-week quiz 3: Acute effects and biological dosimetry			
			10:00-12:00	*Active learning exercise 2*	EKL	MSF library	

44	Monday	27.10	09:00-12:00	*Calculation exercises*	EKL	MSF library	
			13:00-16:00	*Workshop:* Radiation carcinogenesis	EKL	MSF library	10
	Tuesday 28.10 – Wednesday 29.10			Radioprotectors	EKL	*Video lecture*	9
				Hereditary effects of radiation	EKL	*Video lecture*	11
				Effects of radiation on the embryo and foetus	EKL	*Video lecture*	12
				Radiation cataractogenesis	EKL	*Video lecture*	13
				Models for risk of second cancer	ITD	*Video lecture*	Handouts
	Thursday	30.10	10:00-15:00	*Workshop:* long-term effects of radiation	EKL	MSF library	
	Friday	31.10	09:15-09:45	End-of-week quiz 4: Long-term effects of radiation			
			10:00-12:00	*Active learning exercise 3*	EKL	MSF library	
			13:00-15:00	*Active learning exercise 4* *Tasks for presentation handed out*	EKL	MSF library	
45	Monday	03.11	13:00-16:00	Biostatistics - Distribution plots, probability distribution, Kaplan-Meier survival curves	C-BL	MSF library	Handouts
			16:00-16:30	Exercises and discussion	C-BL	MSF library	
	Wednesday	05.11	13:00-16:00	Biostatistics - Correlation and regression, overview of unsupervised learning	C-BL	MSF library	Handouts
			16:00-16:30	Exercises and discussion	C-BL	MSF library	
	Thursday	06.11	13:00-16:00	Biostatistics - Introduction of clustering analysis (k-means, k-medoids) and dimensionality reduction (PCA, MDS)	C-BL	MSF library	Handouts
			16:00-16:30	Exercises and discussion	C-BL	MSF library	
	Friday	07.11	10:00-12:00	Nanodosimetry	ITD	MSF library	Handouts
46	Tuesday	11.11	13:00-15:00	*Presentation of assigned tasks*	EKL	MSF library	
			15:00-16:00	Time for questions	EKL	MSF library	
	Thursday	**13.11**	**09:00-14:00**	**FINAL EXAMINATION**		Albanova, FB55	

Teachers:

C-BL Chun-Biu Li, Stockholm University
EKL Emely Kjellsson Lindblom, Stockholm University
ITD Iuliana Toma-Dasu, Stockholm University
AW Andrzej Wojcik, Stockholm University

Literature:

1. Eric Hall and Amato Giaccia: *Radiobiology for the Radiologist*, Lippincott Williams and Wilkins Sixth Ed 2006, Chapters 1-13