

Schedule for Basic Radiobiology 9 hp, HT 2024

Teaching activities marked in red are mandatory to attend

Week	Day	Date	Time	Teaching activity	Teacher	Room	Literature ¹	
41	Wednesday	09.10		Introduction to the course	EKL	Video lecture		
				Cell biology	EKL	Video lecture	Notes	
	Thursday	10.10	10:00-12:00		Workshop: cancer biology	EKL	MSF library	
					Cancer biology		Video lecture	Notes
					Interaction of ionizing radiation in biological matter	EKL	Video lecture	1
	Friday	11.10	09:15-09:45		End-of-week quiz 1: Normal and cancer cell biology		MSF library	
					Workshop: DNA damage	EKL	MSF library	2
				Workshop: DNA damage response	EKL	MSF library	2	
				Cell survival curves and models for radiation cell killing	EKL	Video lecture	3	
42	Monday	14.10	13:00-16:00		Workshop: cell survival curves and models for radiation cell killing	EKL	MSF library	3
					Calculation exercises 1 handed out			
					Radiosensitivity and cell age in the mitotic cycle – Autoradiography and bromodeoxyuridine labelling	EKL	Video lecture	4
	Tuesday	15.10	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	16.10	13:00-16:00		Workshop: Repair of radiation damage – the 5 R's and the dose-rate effect	EKL	MSF library	5
	Friday	18.10	09:15-09:45		End-of-week quiz 2: DNA damage and repair		MSF library	
					Workshop: Oxygen effect and reoxygenation	EKL	MSF library	6
					Workshop: Linear energy transfer and relative biologic effectiveness		MSF library	7
					<i>Active learning exercise 1</i>			
43	Monday	21.10		Acute effects of total-body irradiation	ITD	Video lecture	8	
				14:00-16:00	Biological dosimetry. Effects of high doses	AW	Frescati	Handouts
				16:00-17:00	<i>Tour RB lab at SU</i>	AW	Frescati	
	Tuesday	22.10	09:00-10:00		<i>Introduction to the computer exercise</i>	WH	MSF library	
				10:00-15:00	<i>Time for exercises</i>	WH	Computer room	
				<i>Oral presentation of computer exercise (by group) when ready</i>				
Friday	25.10	09:15-09:45		End-of-week quiz 3: Acute effects and biological dosimetry				
				10:00-12:00	<i>Active learning exercise 2</i>	EKL	MSF library	

44	Monday	28.10	09:00-12:00	<i>Calculation exercises</i>	WH	MSF library	
			13:00-16:00	<i>Workshop: Radiation carcinogenesis</i>	EKL	MSF library	10
	Tuesday	29.10 – 30.10		Radioprotectors	EKL	<i>Video lecture</i>	9
				Hereditary effects of radiation	EKL	<i>Video lecture</i>	11
				Effects of radiation on the embryo and foetus	EKL	<i>Video lecture</i>	12
	Wednesday			Radiation cataractogenesis	EKL	<i>Video lecture</i>	13
				Models for risk of second cancer	ITD	<i>Video lecture</i>	Handouts
	Thursday	31.10	10:00-15:00	<i>Workshop: long-term effects of radiation</i>	EKL	MSF library	
	Friday	1.11	09:15-09:45	End-of-week quiz 4: Long-term effects of radiation			
			10:00-12:00	<i>Active learning exercise 3</i>	EKL	MSF library	
13:00-15:00			<i>Active learning exercise 4</i>	EKL	MSF library		
			<i>Tasks for presentation handed out</i>				
45	Monday	04.11	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	
	Tuesday	05.11	10:00-12:00	Nanodosimetry	ITD	MSF library	Handouts
	Wednesday	06.11	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	07.11	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		
46	Tuesday	12.11	10:00-12:00	<i>Presentation of assigned tasks</i>	EKL	MSF library	
			13:00-15:00	Time for questions	EKL	MSF library	
	Wednesday	13.11		STUDY TIME			
	Thursday	14.11	09:00-14:00	FINAL EXAMINATION			Albanova, FA31

Teachers:

WH	Wille Häger, Stockholm University
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