

Introduction to Medical Science in Space LECTURE

Summer term 2024, Friday 13:15-15:00, Room: G28-027

Date	Topic	Lecturer
12.04.2024	Introduction to microgravity research , everyday life in space, ...	Grimm, Wehland
19.04.2024	History of space science (Mercury, Apollo, Vostok, MIR, Skylab etc.)	Schulz
26.04.2024	Physical basics : motions, dynamics of mass points, Newton, gravity, equivalence principle, etc.	Physics in Space Group
03.05.2024	Platforms for microgravity research I : rotational bioreactors, drop tower, parabolic flight, sounding rockets (suborbital), ballons	Schulz
10.05.2024	Genetics and epigenetics in microgravity	Schulz
17.05.2024	Biological systems, cell biology basics : cells, cell organelles, tissues, organs, body systems	Krüger
24.05.2024	Gravitational biology : perception of gravity, cell physiology under gravitational stress, gravity experiments with living organisms	Krüger
31.05.2024	Tissue engineering under microgravity conditions, bioprinting in space	Wehland
07.06.2024	Human physiology under microgravity conditions I : musculoskeletal system, cardiovascular system, immune system, typical diseases of astronauts	Schulz
14.06.2024	Human physiology under microgravity conditions II : "space pharmacology", bed rest studies, exercise in space, human centrifuges, electrostimulation	Wehland
21.06.2024	Platforms for microgravity research II : satellites, space stations, typical project planning, campaigns, available flight hardware	Trittel
28.06.2024	Artificial intelligence in space research	Puzyrev, Schulz, Abdelfattah
05.07.2024	Technological challenges and strategies in human space exploration : life support systems, space greenhouses, human habitats	Krüger
12.07.2024	EXAM	

Introduction to Medical Science in Space EXERCISE

Summer term 2024, Wednesday 17:15-19:00, Room: G28-027

Date	Topic	Lecturer
14.04.2024	Seminar: Introduction of space science students	MTRM team
17.04.2024	Rotating bioreactors	Schulz
24.04.2024	Physical basics: motions, dynamics of mass points, Newton, gravity, equivalence principle, etc.	Physics in Space Group
08.05.2024	Literature seminar	Schulz
15.05.2024	Platforms for microgravity research: satellites, space stations, typical project planning, campaigns, available flight hardware	Trittel
22.05.2024	Biological systems, cell biology basics: cells, cell organelles, tissues, organs, body systems	Krüger
29.05.2024	Working with human cells (in microgravity): cell culture, cell culture environment, microgravity bioreactors, forces and side effects	Krüger
05.06.2024	Spheroids	Wehland, Schulz
12.06.2024	Literature seminar	Schulz, Abdelfattah
19.06.2024	Molecular biology, genetic engineering, artificial intelligence	Wehland, Abdelfattah, Puzyrev
26.06.2024	Molecular biology, genetic engineering	Schulz, Abdelfattah
03.07.2024	Life support systems I: technology development for biomedical space research: hardware requirements and tests, technical implementations	Krüger
10.07.2024	Life support systems II	Krüger