

Planetary Surface Exploration Course

26.02-01.03.2024

Full Programme



All times in Central European Time (CET / UTC+1).

Mars lectures: Monday and Tuesday – University of Basel, Klingelbergstrasse 27, 4056 Basel
Floor 3 - Room – 3-01

Simulation: Wednesday: University of Basel, Klingelbergstrasse 27, 4056 Basel
Floor 3 – Room – 3-01 & 3-15

Lunar day: Thursday: Marslabor – TZW Technologiezentrum, Benkenstrasse 260, 4108 Witterswil

Wrap – up: Friday: Quiz, presentation, and poster session - University of Basel,
Klingelbergstrasse 27, 4056 Basel - Floor 5 - Room – 5-01

Monday 26.02 – Welcome & Introduction – Mars lectures

Time:	Theme:	Speaker:	Institution(s):
11:00-11:15	Welcome/ course & participants introduction	Gabriela Ligeza	UniBas
11:15- 11:45	UniBas - overview of research activities	Nikolaus Kuhn	UniBas
11:45 - 12:30	Space in Switzerland - opportunities for Students	Gregoire Bourban	Space Exchange Switzerland (SXS)
12:30- 13:30	Lunch break		
13:30 - 14:15	Exobiology and the search for life on Mars	Tomaso Bontognali	Space-X
14:15 -14:45	History of Mars exploration programs	Tomaso Bontognali	Space-X
14:45- 15:00	Coffe break		
15:00- 15:45	ExoMars & CLUPI	Jean-Luc Josset	Space-X
16:00 - 16:45	Imaging on Planetary Surfaces	Detlef Koschny	Space-X, TU Munich
16:45 - 17:00	From Lab to Space - instrument qualification	Detlef Koschny	Space-X, TU Munich
17:00 -onwards	<i>Basel city tour</i>		

Key

Guest talk	Activity	Lectures	Breaks
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Tuesday 27.02 – Mars Day

Time:	Theme:	Speaker:	Institution(s):
09:00 - 09:45	ENGINEERING: Getting to Mars - mission timeline	Detlef Koschny	Space-X, TU Munich
10:00-10:45	ENGINEERING: Instrumentation - how to choose them?	Detlef Koschny	Space-X, TU Munich
11:00 - 11:45	Remote sensing on Mars	Nikolaus Kuhn	UniBas
11:45 - 12:30	SCIENCE: Geology of Mars - landing regions & rock types	Gabriela Ligeza	UniBas
12:30- 13:30	Lunch break		
13:30 - 14:00	SCIENCE: Biosignatures on Mars	Tomaso Bontognali	Space-X
14:00 -14:30	SCIENCE: Morphometry &3D imaging	Axel Bouquety	Space-X
14:30-14:45	Coffe break		
14:45 - 15:30	Introduction to simulation	N.Kuhn & T. Bontoganli	UniBas, Space-X
15:30 - 17:00	Keynote: ExoMars 2028 rover mission with ESA Project Scientist	Jorge Vago	European Space Agency - ESA

Key

Guest talk	Exercise	Lectures	Breaks
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Wednesday 28.02 – Mars simulation

Time:	Theme:	Speaker:	Institution(s):
09:00 - 13:00	Simulation (strategic & tactical plan / operations)	N.Kuhn, T.Bontognali G.Ligeza	UniBas
13:00 -14:00	Lunch break		
14:00- 17:00	Group work Data analysis & interpretation Preparation of summary presentation		
17:00 - 18:00	GUEST - NASA Mars 2020 (remote)	Kathryn Stack Morgans	NASA - JPL

Key

Guest talk	Simulation	Group work	Breaks
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Thursday 29.02 – Lunar Day

Time:	Theme:	Speaker:	Institution(s):
09:00 - 10:00	Visit of Marslabor	N.Kuhn & T. Bontoganli	UniBas, Space-X
10:00-10:30	SCIENCE: Exploration of the Moon	Florian Kehl	University of Zurich
10:30 - 11:15	SCIENCE: Lunar resources	Florian Kehl	University of Zurich
11:15-11:30	Break		
11:30- 12:15	ENGINEERING - challenges for the lunar operations	Hendrik Kolvenbach	ETH Zurich
12:00 - 13:00	Lunch break		
	Exploring the Moon with AI & Robotics:		
13:00 - 13:45	"Shadow Games - Exploring a Hidden World on the Moon with AI"	Valentin Bickel	University of Bern
14:00- 14:45	Space Robotics	Hendrik Kolvenbach	ETH Zurich
15:00 -17:00	Robotic showcase	Philip Arm	ETH
17:00 - 18:00	Dinner and networking		

Key

Event	Exercise	Lectures	Breaks
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Friday 01.03 – Wrap-up

SUMMARY - WAS/ IS THERE LIFE ON MARS & CAN WE FIND IT?			
Time:	Theme:	Instructor(s)/	Institution(s):
09:00 - 09:30	Knowledge quiz	Gabriela Ligeza	UniBas
09:30- 10:15	Student presentations & expert feedback		UniBas, Swiss Space Office, International Space University, ETH Zurich Space
10:15 - 11:00	Further opportunities in space sector:		
	Geology of Artemis Exploration Zone - LPI/NASA JSC internship program	Gabriela Ligeza	UniBas
	Swiss Space Office - overview	Oliver Botta	Swiss Space Office
	ETH Zurich Space - Msc in Space Systems	Simon Stahler	ETH Zurich Space
	International Space University - overview	Bertrand Goldman	International Space University
11:00- 12:30	Lunch & poster session		UniBas

POSTERS - SPACE

1. TRiton - Topography and atmosphere of the moon Triton

Luka Jović, TU Munich

2. Determining asteroid's orbit through neural networks

Isabella Clarie Adriani, Universit of Rome, La Sapienza

3. AGE CubeSat: The Swiss Biology Experiment in Low Earth Orbit

Samuel Schönenberger, ETH Zurich

4. SpIRIT of Exploration: Insight into the SpIRIT Nanosatellite and its Scientific Payloads

Jonathan Green, ETH Zurich

5. MERTIS instrument onboard BepiColombo

Nimisha Verma, DLR

POSTERS - OTHERS

1. Broadening Horizons: Bridging the Gap in Optical Coherence Tomography for High-Resolution and Cost-Effectiveness

Gregory Zaugg, University of Basel

2. Examination of heavy metal content in foliose and fruticose lichens from Lauterbrunnen valley

Fatima Mharchat, University of Basel

3. The Impact of Mobile Genetic Elements on Mutation Rates

Wienke Van Bouchaute, University of Ghent