



MarsX: Mars Subsurface Exploration

**February 12-16, 2018
Overview Schedule**

**Monday, February 12, 2018 - Salvatori Seminar Room
South Mudd Building (3rd floor) - Caltech**

Short Course:
MarsX - Mars Subsurface Exploration:
Life and Resources in the Martian Subsurface
Introductory Lectures - Open to All Interested Students, Researchers and Faculty

Time	Event	Speaker
8:00 - 8:30	Coffee and Refreshments	
8:30 - 8:40	Why MarsX?	Team Leads
8:40 - 9:20	Life in the Subsurface	Penny Boston (NASA Ames)
9:20 - 10:00	The Search for Life on Mars	Roh Bhartia (JPL)
10:00 - 10:30	Break	
10:30 - 11:10	Subsurface Sounding on Mars and the Search for Water Ice: What Are the Techniques, What Are We Learning?	Nathaniel Putzig (PSI)
11:10 - 11:50	Drilling: How Do We Access the Subsurface on Mars?	Kris Zacny (Honeybee Robotics)
11:50 - 12:30	Resources & ISRU from the Martian Subsurface	Jerry Sanders (NASA JSC)
12:30 - 1:30	Short Course Ends: Informal Lunch is Provided Outside Salvatori Seminar Room	

**Invitation-Only Workshop Begins: Overview & Connecting the Dots
Keck Center - Think Tank, Room 155**

Time	Event	Speaker
1:30 - 1:45	Walk to Keck Center, Pick Up Badge and Welcome Packet, Find Seat in the Think Tank	
1:45 - 2:30	Workshop Logistics and Introduction to KISS	Michele Judd / Tom Prince
2:30 - 3:00	1 min Participant Introductions	Michele Judd
3:00 - 3:30	Study Vision, Goals, and Agenda for this Workshop	Team Leads
3:30 - 4:00	Break	
4:00 - 5:15	Finalize Study Vision and Workshop Goals via Plenary Discussion	All
5:15 - 5:30	Orientation Next Day	Team Leads
5:30 - 7:30	Poster Session, Reception, and Informal Food Truck Dinner at the Keck Center (Dinner Starts at 6:30 pm)	

Tuesday, February 13, 2018: Keck Center - Think Tank, Room 155
Science Rationale: Why Do We Need to Explore the Martian Subsurface, What Do We Want to Measure & Where (for Life, Resources, and Planet Evolution)?

Time	Event	Speaker
8:00 - 8:30	Coffee and Refreshments at Keck Center	
8:30 - 8:40	Logistics	Michele Judd Team Leads
8:40 - 10:00	Lightning Talks	Speakers
10:00 - 10:30	Plenary Discussion Formation of 3 Breakout Groups ((i) Life, (ii) Resources, (iii) Planet Evolution)	All
10:30 - 11:00	Break	
11:00 - 12:00	Breakout Groups I (<i>What Can We Learn From the Subsurface?</i>)	In Breakout Groups
12:00 - 1:30	Group Picture and Lunch at the Athenaeum	
1:30 - 2:15	Breakout Groups II (<i>What Do We Want to Measure?</i>)	In Breakout Groups
2:15 - 3:00	Breakout Groups III (<i>What Subsurface Sites Do We Want to Explore?</i>)	In Breakout Groups
3:00 - 3:30	Break	
3:30 - 4:10	Reports from All Three Groups (Each Group 10 min)	Groups
4:10-5:30	Plenary: <i>What Are the Shared Scientific Aspirations for Life, Resources, and Planet Evolution Related to Subsurface Exploration?</i>	All
5:30 - 5:45	Plan for Next Day	Team Leads
6:00	OPTIONAL: No-Host Dinner Organized by Team Leads in Pasadena (Location TBD)	

Wednesday, February 14, 2018: Keck Center - Think Tank, Room 155
 How Do We Do This: Drill, Sound, *In Situ* Analysis Instrumentation,
 other Exploration Tools?

Time	Event	Speaker
8:00 - 8:30	Coffee and Refreshments at Keck Center	
8:30 - 8:40	Summary of Previous Day's Shared Scientific Aspirations	Team Leads
8:40- 10:00	Lightning Talks	Speakers
10:00- 10:30	Plenary Discussion Formation of 4 Breakout Groups (Architecture, Engineering Constraints & Feasibility of (i) Drilling, (ii) Sounding, (iii) <i>In Situ</i> Analysis Instruments, and (iv) Other Exploration Tools)	All
10:30 - 11:00	Break	
11:00 - 12:00	Breakout Groups Meet I	In Breakout Groups
12:00 - 1:30	Lunch on Your Own	
1:30 - 2:10	Reports From All 4 Breakout Groups (Each Group 10 min)	Groups
2:10 - 3:00	Plenary Discussion and Formation of Focused Breakout Groups	All
3:00 - 3:30	Break	
3:30 - 4:20	Focused Breakout Groups Meet II	In Breakout Groups
4:20-5:00	Reports From Focused Breakout Groups	Groups
5:00-6:00	Plenary: <i>Engineering —Constraints, Feasibility, & Needed Innovations</i>	All
6:00	Dinner at the Athenaeum	

Thursday, February 15, 2018: Keck Center - Think Tank, Room 155
Real Missions

Time	Event	Speaker
8:00 - 8:30	Coffee and Refreshments at Keck Center	
8:30 - 8:40	Plan for the Day	Team Leads
8:40- 10:00	Lightning Talks	Speakers
10:00- 10:30	Plenary Discussion Formation of 3 Breakout Groups (to Collect Mission Ideas)	All
10:30 - 11:00	Break	
11:00 - 12:00	Breakout Groups Meet I	In Breakout Groups
12:00 - 1:30	Lunch on Your Own	
1:30 - 2:00	Pitch Best Mission Ideas (Each Group 10 min)	Groups
2:10 - 3:00	Plenary Discussion: Select Best Mission Ideas Formation of Focused Breakout Groups to Further Study Selected Missions	All
3:00 - 3:30	Break	
3:30 - 4:30	Focused Breakout Groups Meet II to Explore Selected Mission Ideas	In Breakout Groups
4:30-5:00	Reports From Focused Breakout Groups	Groups
5:00-6:00	Plenary: <i>From Mission Ideas to Success</i>	All
6:00	Dinner at the Athenaeum	

Friday, February 16, 2018: Keck Center - Think Tank, Room 155
The Road to Success: Strategy & Plan to Move Forward

Time	Event	Speaker
8:00 - 8:30	Coffee and Refreshments at Keck Center	
8:30 - 9:00	Summary of Mission Ideas/Previous Day	Team Leads
9:00- 10:30	Breakout Groups: <i>Roadmap and Strategy to Success</i> (e.g., Meetings (MEPAG, COSPAR, AGU (Session?)), Funding Opportunities, International Collaboration, Private Sector, Technology Transfer, Connection to Human Exploration, ...?)	In Breakout Groups
10:30 - 11:00	Break	
11:00 - 12:00	Last Panel Discussion & Summary of Last Breakout Groups Session	All
12:00-12:30	Workshop Closeout	Team Leads / Michele Judd
12:30	Workshop Concludes	