

The 7th UNISEC-Global Meeting



November 30 - December 3, 2019
the University of Tokyo, Japan





MESSAGE FROM GENERAL CHAIR



Professor
Shinichi Nakasuka

As a General Chair of the 7th UNISEC-Global Meeting, I am very pleased and honored to welcome all of you to this meeting held at our University of Tokyo. As you may know, UNISEC-Global and its sister symposium “Nano-satellite Symposium” started as one international activity of “Hodoyoshi-project,” which the University of Tokyo coordinated during 2010-2014 in Japan. Therefore, I am very glad that UNISEC-Global Meeting has come back to its birth place this year. We will do our best to “omotenashi (welcome)” you in our university.

UNISEC-Global’s concept originated from a very successful university organization “University Space Engineering Consortium (UNISEC)” in Japan. UNISEC was established in 2002 with the objectives to support university students’ practical space engineering activities such as micro/nano/pico-satellite and hybrid rocket development in Japan. Since then, UNISEC-Japan has grown very rapidly and in 2019 we now have 79 member groups from 58 universities and colleges. UNISEC has had such tremendous success in technological development that more than 50 satellites have been launched into space. In terms of education, many young engineers and researchers graduating from UNISEC are now playing very important roles in space agency and industry, as well as in many other areas. With the success in Japan, UNISEC-Global activities started in 2013 with several international professors who were willing to establish their own UNISECs in their regions. Now, we have 53 Points of Contacts (POCs) and 18 Local Chapters across the world, and we can convey our opinions to United Nations as “a Permanent Observer of COPUOS.” We believe that UNISEC can be an excellent model of university-level space education in many countries.

In this year’s meeting, I would especially like to encourage the participating universities to discuss the possibility of joint projects, such as joint satellite development or a network of multiple satellites to solve common social problems, jointly tackling debris problem, joint research on various topics etc., as many problems now cannot be solved without international collaborations. Also the meeting would be a wonderful opportunity to strengthen our mutual understanding and friendships.

Please enjoy the meeting, and find new friends!

MESSAGE FROM SECRETARY GENERAL



Rei Kawashima

Welcome to the 7th UNISEC-Global Meeting in Tokyo Japan 2019.

At first, I would like to express my sincere gratitude to Institute for Open Innovation, the University of Tokyo for providing generous support for this meeting. In addition, I must emphasize here that we have received useful and meaningful assistance from the Prof. Nakasuka and Prof. Funase Laboratory, and also from the Tateishi Science and Technology Foundation of Kyoto.

Now, it has been 17 years since the establishment of UNISEC in Japan in 2002. At that time, few people believed that university students could build satellites by themselves. And there were many skeptics about the sustainability of a university consortium for space engineering. However, today we see that university students design, build, test, and operate satellites in many corners of the globe. The call for new UNISEC local chapters is being heard in the same corners, and so we are growing year after year.

Some universities have made mounting progress in dealing with making not only near-earth satellites, but also deep space probes. On the other hand, there are those universities who have just started making it or are still at the stage to make kick-off plans. UNISEC-Global recognizes such gaps with concern.

Today we have a global boom of university satellites, big and small, of growing sophistication. We can safely say that they are contributing to the SDGs of the United Nations. These satellites are mitigating the damage from natural disasters and are addressing other world-level issues. Their societal contributions multiply when more and more satellites are deployed as constellations.

I think that we should secure healthy and robust satellite development at the university level, and for this purpose, it is important to pay attention to diversity, to gender equality, and to economic handicaps, of the participants. We should bear in mind that “no one should be left behind.” Finally I want to share with you my favorite African proverb: “If you want to go faster, go alone. If you want to go further, go together.”

Rei Kawashima





Program Committee (Alphabetical Order)

Chair: Shinichi Nakasuka, the University of Tokyo
A Rustem Aslan, Istanbul Technical University
Mengu Cho, Kyushu Institute of Technology
Mohammed Khalil Ibrahim, Cairo University
Rei Kawashima, UNISEC-Global
Shinichi Kimura, Tokyo University of Science
Yasuyuki Miyazaki, Nihon University
Harunori Nagata, Hokkaido University
Rainer Sandau, International Academy of Astronautics (IAA)
Fabio Santoni, Sapienza – University of Rome
Klaus Schilling, University of Würzburg
Herman Steyn, Stellenbosch University
Sir Martin Sweeting, Surrey Satellite Technology Ltd (SSTL) and Surrey Space Centre (SSC), UK

Local Organizing Committee (Alphabetical Order)

Chair: Yasuyuki Miyazaki, Nihon University
Rei Kawashima, UNISEC
Toshihiro Obata, University of Tokyo
Michio Ozawa, UNISEC

Review Committee for MIC6

Chair: Herman Steyn, Stellenbosch University
Rene Laufer, Baylor University
Shinichi Nakasuka, the University of Tokyo
Rainer Sandau, IAA
Jerry Sellers, TSTI
Sir Martin Sweeting, SSTL and Surrey Space Centre
Chirs Welch, ISU
<i>ISEEP</i> Makoto Kanazawa, Space BD
<i>ICECubes</i> Hilde Stenut, Space Applications Services

Point of Contact

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Angola / Ivandro Rodrigues / the Angolan National Office for Space Affairs (GGPEN)
Argentina / Marco Alvarez Reyna / Córdoba Regional Faculty (UTN-FRC), National Technological University
Bangladesh / G.M. Tarekul Islam / Bangladesh University of Engineering and Technology (BUET)
Bangladesh / Md. Khalilur Rahman / CSE Department, BRAC University
Bangladesh / Raihana Shams Islam Antara / Nanosatellite Technology & Research (NASTER), BRAC University
Belarus / Vladimir A. Saetchnikov / Belarusian State University
Bolivia / Eddy Vino / Universidad Mayor de San Andres, Universidad Privada Boliviana
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Bulgaria / Plamen I. Dankov / Sofia University
Bulgaria / Nikolay Tomov / Cluster Aerospace Technologies, Research and Applications (CASTRA)
Canada / Lawrence Reeves / Canadian Satellite Design Challenge Management Society
Chile / Cristian F. Chavez Tapia / Center of AstroEngineering & Mechanical Engineering Department, Pontifical Catholic University of Chile
Colombia / José Fernando Jiménez Vargas / University of the Andes
Colombia / Ramirez Giovanna Estefania (Sub-POC) / AESS-IEEE
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Egypt / Ayman Kassem Mohammed / Cairo University
Egypt / Mohammed Khalil Ibrahim / Cairo University

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Ghana / Sharon Emelia Dornukie Sappor / All Nations University College (ANUC)
Guatemala / Willy Ricardo Cabañas Villagrán / Central American Association for Aeronautics and Space
India / G.P.Ganapathy / Centre for Disaster Mitigation and Management Vellore Institute of Technology (VIT)
India / K.Gopalakrishnan / Dean (R&D), New Horizon College of Engineering
Indonesia / Thombi Layukallo / The Advanced Marine Vehicles Research Center
Indonesia / Yazdi Jenie / Institut Teknologi Bandung (ITB)
Italy / Fabio Santoni / Sapienza University of Rome
Japan / Mengu Cho / Kyushu Institute of Technology (KIT)
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Korea / In-Seuck Jeung / Seoul National University (SNU)
Korea / Hyochong Bang / The Korea Advanced Institute of Science and Technology (KAIST)
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Lithuania / Vidmantas Tomkus / Lithuanian Space Association
Luxembourg / Edder Rabadán Santana / University of Luxembourg
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Oman / Al-Shidhani / Sultan Qaboos University
Peru / Héctor Manuel Bedón Monzón / The National University of Engineering (UNI)
Russia / Igor V. Belokonov / Samara State Aerospace University
Saudi Arabia / Sultan Hasan AlSultan / International Society of Photogrammetry and Remote Sensing (ISPRS)
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South Africa / Arno Barnard / University of Stellenbosch
South Africa / Robert van Zyl / The Cape Peninsula University of Technology
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Thailand / Phongsatorn Saisutjarit / King Mongkut's University of Technology North Bangkok (KMUTNB)
The Philippines / Rogel Mari Sese / Regulus SpaceTech
The Philippines / Paul Jason Co / University of the Philippines-Diliman (UPD)
Tunisia / Kamel Besbes / Faculté des Sciences de Monastir
Turkey / A. Rüstem Aslan / Astronautical Engineering at Istanbul Technical University (ITU)
Ukraine / Oleksii V. Kulyk / National Aerospace Educational Center of Youth
United States / Jordi Puig-Suari / Aerospace Engineering Department, Cal Poly
United States / Amal Chandran / University of Colorado
United States / Amelia Greig / the California Polytechnic State University (Cal Poly)
Vietnam / Nguyen Huu Diep / Vietnam National Space Center (VNSC)- Vietnam Academy of Science and Technology (VAST),

The 7th UNISEC-Global Meeting Program

Day1 – November 30th (Saturday)

Day
1

9:00-10:00	Registration	
10:00-11:00	<p>Opening Ceremony MC: Toshihiro Obata, the University of Tokyo</p> <p>Welcome Speech Simonetta Di Pippo, Director, United Nations Office for Outer Space Affairs.(Video) Rei Kawashima, UNISEC-Global</p> <p>Keynote Speech Stepping up from Pico to Micro, Education to Practical Use -First 15 Years of the University of Tokyo's Satellite Development History Shinichi Nakasuka, the University of Tokyo Challenges to Deep Space Exploration by Nano/Micro-Satellites-Lessons Learned and Future Perspective Ryu Funase, the University of Tokyo & JAXA</p>	
11:00-15:30	<p>Group Discussion Session Moderator: Norilmi Amilia Ismail, University Sains Malaysia (USM)</p>	
11:00-12:00	Group Discussion Overview	Rei Kawashima , UNISEC-Global
	Group 1: Space Laser Communications	Alberto Carrasco-Casado , National Institute of Information and Communications Technology (NICT)
	Group 2: CubeSat Interface	Marloun Sejera , Kyushu Institute of Technology
	Group 3: Deep Space Exploration Mission with CubeSats	Masahiro Fujiwara , the University of Tokyo
	Group 4: Business Development of HEPTA-Sat	Masahiko Yamazaki ,Nihon University and Michael Siddall , the University of South Australia

11:00-12:00	Group 5: Global University Space Debris Observation Network (GUSDON)	Fabio Santoni, Sapienza University of Rome
	Group 6: International collaboration proposal	Nicolas Martinod, EPFL Space Center
	Group 7: How can space technology contribute to improving the accuracy of prediction for natural disasters?	Quentin Verspieren, the University of Tokyo
	Group 8: Commercialization of ISS - How to keep the ISS sustainable by promoting private sectors' involvement	Mac Kanazawa, Space BD, Inc. and Hilde Stenuit, Space Applications Services
	Group 9: Global Space Job Fair	Bernd Weiss, Space Job Fair

12:00-13:00	Group Lunch (Please follow assistants of each group)
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13:00-15:30	Breakout Session at Building #7
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15:30-15:50	Coffee/Tea Break
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15:50-16:50	Sponsor/Exhibitor Presentation Moderator: Jim Hefkey , the University of Auckland	
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15:50-16:00	Space BD	Makoto Kanazawa
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16:00-16:10	Kyusyu Institute of Technology	George Maeda
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16:10-16:20	ICECUBES	Hilde Stenuit
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16:20-16:30	UNISEC	Masahiko Yamazaki
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16:30-16:40	AAC Clyde Space	Mattias Örtb
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16:40-16:50	Mitsui Bussan Aerospace Co., Ltd.	Gota Mishima
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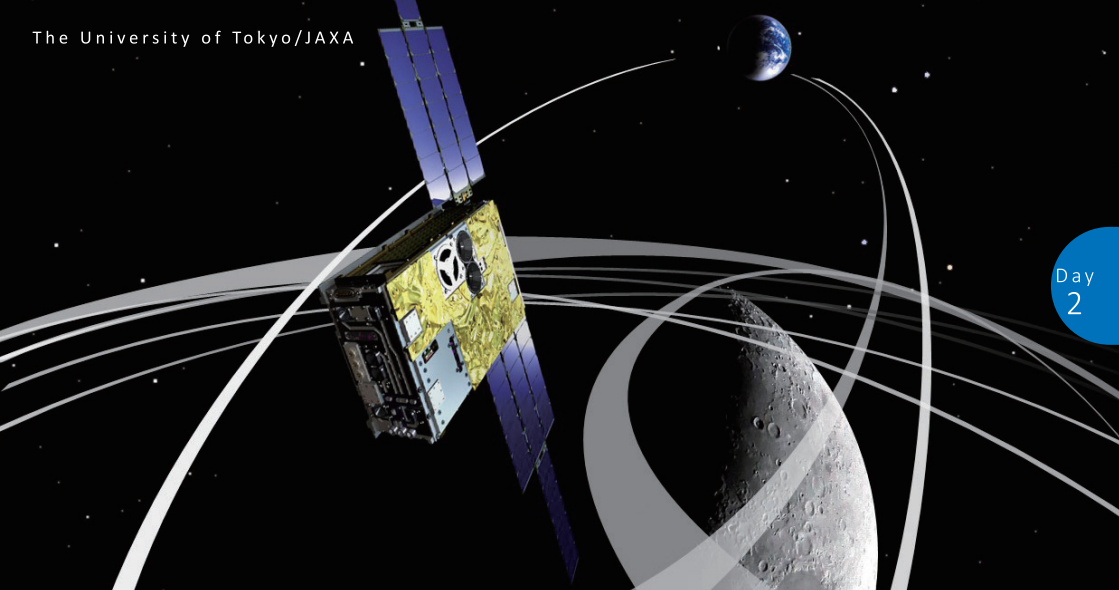
16:50-17:00	ISIS-Innovative Solutions In Space	Haley Doyle
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17:00-18:00	Panel Discussion How can Space Technology Solve Droughts and Floods? Moderator: Shinichi Nakasuka , the University of Tokyo Panelist: Yohei Sawada , the University of Tokyo, Kei Yoshimura , the University of Tokyo, Shiori Kimura , Synsperspective, Alice Pellegrino , Canon Electronics Inc.	
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18:30-20:30	Reception at Sanjo Kaikan MC: Toshihiro Obata , the University of Tokyo	
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Day 2 – December 1st (Sunday)

8:00-9:00	Registration	
9:00-9:15	A Handbook for Post-Mission Disposal of Satellites Less Than 100Kg	Yasuyuki Miyazaki , Nihon University
9:15-9:30	Worldwide Survey of Capacity Building Activities	Mengu Cho , Kyushu Institute of Technology
9:30-11:40	Regional Report from Point of Contact part 1 Moderator: Toshinori Kuwahara , Tohoku University	
9:30-9:40	Bulgaria	Plamen I. Dankov , Sofia University
9:40-9:50	Egypt	Mohamed Magdy , Cairo University on behalf of Ayman Kassem, Cairo University
9:50-10:00	India	K.Gopalakrishnan , New Horizon College of Engineering
10:00-10:10	Italy	Fabio Santoni , Sapienza University of Rome
10:10-10:20	Japan	Mengu Cho , Kyushu Institute of Technology
10:20-10:40	Coffee/Tea Break	
10:40-10:50	Germany	Alexander Kramer , Wuerzburg University
10:50-11:00	SAR (Angola, Namibia, South Africa)	Herman Steyn , University of Stellenbosch
11:00-11:10	Turkey	A. Rüstem Aslan , Istanbul Technical University (ITU)
11:10-11:20	Malaysia	Norilmi Amilia Ismail , Universiti Sains Malaysia (USM)
11:20-11:30	Philippines	Paul Jason Co , University of the Philippines-Diliman (UPD)
11:30-11:40	Taiwan	Jyh-Ching Juang , National Cheng Kung University
11:40-13:40	Lunch & Laboratory Tour	
13:40-15:10	<p>Panel discussion on «Gender Equality in the Space Field» part 1 Moderator: Alice Pellegrino, Canon Electronics Inc.</p> <p>Video Message: Prof. Dr. Pascale Ehrenfreund, German Aerospace Center (DLR), Chair of the Executive Board and Chancellor of ISU</p> <p>Panelist: Garvey McIntosh, NASA / Motoko Mizuno, JAXA Naoko Yamazaki, former JAXA's Astronaut Tidiane Ouattara, African Union Commission Yuko Kawabata, Mitsubishi Heavy Industries (MHI) Norilmi Amilia Ismail, University Saints Malaysia (USM)</p>	



15:10-15:30	Photo Session and Coffee/Tea Break
15:30-17:20	Panel discussion on «Gender Equality in the Space Field» part 2 Moderator: Alice Pellegrino , Canon Electronics Inc.
17:45-20:00	ISU-UNISEC Collaboration night 17:45-19:00 Plenary Session MC: Hajime Yano , JAXA Greetings from UNISEC-Japan: Yasuyuki Miyazaki , Nihon University and Chairperson of UNISEC-Japan Greetings from Board member of ISU: Norimitsu Kamimori , JAXA Greetings from JASI: Kenta Maruyama , JAXA Lecture: “Introduction to ISU”: Chris Welch , ISU Alumni talks - Toshinori Kuwahara , Tohoku University, SSP2007 - Alison Reneau (USA), SSP 2014, 2015, 2016 - Hazuki Mori , JAXA, SSP 2018 - Michael Siddall (Australia), SHSSP2019 19:00-20:00 Networking with wine (provided by IHI) at the foyer of Koshiba Hall

Day3 – December 2nd (Monday)

8:00-9:00	Registration	
9:00-14:10	The 6th Mission Idea Contest for Achieving Sustainable Development Goals with Human Spaceflight Moderator: A. Rustem Aslan , Istanbul Technical University	
9:00-9:10	Overview of MIC6	Herman Steyn , University of Stellenbosch
9:10-10:30	MIC6 Category: iSEEP	
9:10-9:30	On-orbit Measurement of Radiation Effects on Commercial-Off-The-Shelf (COTS) Hardware for Small Satellites	Senior Shimhanda , Kyushu Institute of Technology
9:30-9:50	Gamma-Ray Astronomy Observation as a Subsidiary Function of CubeSat Communication Swarms	Plamen Dankov* , Ivan Iliev* , Daniel Hristov^ , Nikolai Neshev* , *Sofia University, ^Technical University
9:50-10:10	Spectrum Monitoring from Space with i-SEEP (SMoSIS)	Genedyn Gems S. Mendoza , Advanced Science and Technology Institute and University of the Philippines-Diliman
10:10-10:30	Mountain VIEWS (Mountain Volcano Identification and Early Warning System)	Muhammad Purwa Manggala , Muhammad Hafizh , and Syaeful Hilman Supratman , Telkom University
10:30-10:50	Coffee/Tea Break	
10:50-11:50	MIC 6 Category: ICECUBES	
10:50-11:10	Quantification of metal extraction from a substrate by biomining processes in bacteria of the genus Bacillus under microgravity conditions	Graciela Lopez Campos and Catalina Porras Silesky , Universidad de Costa Rica
11:10-11:30	MUSA: An ISS Experiment for the research of a dual culture for Panama Disease	Valeria Maria Dittel-Tórtos and Fiorella Arias-Bonilla , Costa Rica Institute of Technology (TEC)
11:30-11:50	MARGE - Melanoma Apoptosis Reduced Gravity Experiment	Giorgio Bagolan, Gianluca Cocirla, Angelo Fabbrizi, Pierluigi Federici, Emanuele Neri, Maria Giulia Pancalli, Alessio Piergiacomo, Maurizio Renda, and Eleonora Vestito , Sapienza University of Rome
11:50-13:10	Lunch	

13:10-13:30	HVBM: Heart Valve prosthesis Behavior in Microgravity environment	Anisia Lauditi , Politecnico di Milano and Chiara Manzini , ISAE-Supaero
13:30-13:50	Technology Demonstrate of Bone-Loss-Reducing Bacteria Culture for Deep Space	Watcharin Unwet , Mahidol University and Ms.Julinthip Puttawong , Prince of Songkla University
13:50-14:10	Bacteriological Mutation by Cosmic Radiation	Santos Gustavo Javier , UTN-FRC (Video Presentation)
14:10-15:20	Special Lecture Moderator: Mengu Cho , Kyushu Institute of Technology	
14:10-14:40	Special Lecture “Africa: The New Eldorado For Space Business”	Tidiane Ouattara , African Union Commission
14:40-15:00	Special Lecture “How does space technology save our lives?: Case study on drought monitoring and prediction”	Yohei Sawada , the University of Tokyo
15:00-15:20	Special Lecture “Small satellite trends in Europe”	Dennis Elgaard , GomSpace
15:20-15:40	Coffee/Tea Break	
15:40-16:40	Regional Report from POC part 2 Moderator: Fabio Santoni , Sapienza University of Rome	
15:40-15:50	Colombia	Giovanna Estefanía Ramírez Ruiz , AESS-IEEE
15:50-16:00	Costa Rica	TBD
16:00-16:10	New Zealand	Jim Hefkey , the University of Auckland
16:10-16:20	Spain	Fernando Aguado Agelet , Vigo University
16:20-16:30	Sudan	Hind Mahmoud Elhaj Mohammed , Kyushu Institute of Technology On behalf of Mirghani Daffalla Moutaman Elbasheer , Institute of Space Research and Aerospace
16:30-16:40	Switzerland	Alfonso Villegas , EPFL Space Center
16:40-16:50	Thailand	Phongsatorn Saisutjarit , King Mongkut's University of Technology North Bangkok
16:50-17:20	MIC6 Award Ceremony and photo session MC: Shinichi Nakasuka	
17:40	Departure for Yakatabune Cruise	
18:00-21:00	Gala Dinner (Yakatabune) MC: Michio Ozawa , UNISEC	

Day 4 – December 3rd (Tuesday)

9:00-10:00	Registration and preparation for Group Discussion Final Presentation	
10:00-10:50	Group Discussion Final Presentation Moderator: Paul Jason Co , University of the Philippines-Diliman(UPD)	
	Group 1: Space Laser Communications	
	Group 2: CubeSat Interface	
	Group 3: Deep Space Exploration Mission with CubeSats	
	Group 4: Business Development of HEPTA-Sat	
	Group 5: Global University Space Debris Observation Network (GUSDON)	
	Group 6: International collaboration proposal	
	Group 7: How can space technology contribute to improving the accuracy of prediction for natural disasters?	
	Group 8: Commercialization of ISS- How to keep the ISS sustainable by promoting private sectors' involvement	
	Group 9: Global Space Job Fair	
10:50-11:00	Group Discussion Remarks Shinichi Nakasuka , the University of Tokyo	
11:00-11:20	Coffee/Tea Break	
11:20-12:00	Student Representative Presentation Part 1 Moderator: Makiko Kishimoto , Kyushu Institute of Technology and Hiroto Seki , the University of Tokyo	
11:20-11:30	Argentina (video)	Federico Collado , UTN-FRC
11:30-11:40	Colombia	Alvin David Gregory Tatis , University of the Andes
11:40-11:50	Egypt	Mohamed Elsherbiny Emam and Mohamed Magdy Ahmed , Cairo University
11:50-12:00	Germany	Alexander Kramer , Wuerzburg University
12:00-13:00	Lunch	
13:00-14:30	Student Representative Presentations part 2 Moderator: Makiko Kishimoto , Kyushu Institute of Technology and Hiroto Seki , the University of Tokyo	
13:00-13:10	India	Nikhil Riyaz , New Horizon College of Engineering

13:10-13:20	Italy	Paolo Marzioli , Sapienza University of Rome
13:20-13:30	Japan	Makiko Kishimoto , Kyusyu Institute of chnology
13:30-13:40	Japan	Hiroto Seki , The University of Tokyo
13:40-13:50	Malaysia	Farah Hanum Mohd Fadzil , University of Science Malaysia
13:50-14:00	Philippines	Bryan R. Custodio , University of the Philippines Diliman
14:00-14:10	Switzerland	Tristan Trebaol , EPFL Space Center
14:10-14:20	Taiwan	Yun-Rong Yang , National Cheng Kung University
14:20-14:40	Acknowledgement of New Local Chapters MC: A. Rustem Aslan , Istanbul Technical University	
14:40-15:00	Closing Ceremony	

Note

- Coffee/Tea, and Reception on Nov 30 during the Meeting are included in the registration fee.
- Information in this document is subject to change without notice.
- All presentation materials will be uploaded to UNISEC Global website.
- Photos and videos taken during the meetings will be uploaded to UNISEC-Global website/facebook and used for other publications.

Associated Events



HEPTA-Sat Training

Dates : December 4-5, 2019

9:00 am – 5:00 pm

Venue : Tower Schola, College of Science and Technology, Nihon University
3-11-3 Kanda-Surugadai, Chiyoda-ku, Tokyo 101-0062

Website: <http://hepta-sat.unisec-global.org/>

Contact: hepta@unisec.jp



International Workshop on Lean Satellite–2019

Dates : December 4-5, 2019

Venue : The Kikai Shinko Kaikan Building

3-5-8 Shiba-park Minato-ku, Tokyo, 105-0011, Japan

Website: https://lean-sat.org/2019_nets-regist/

Contact: kawano@ise.kyutech.ac.jp



UNISEC SPACE JOB FAIR

Dates : December 6, 2019

Venue : HIBIKOKU CONFERENCE SQUARE Hibiya Kokusai Building 8F, 2-2-3,
Uchisaiwai-cho, Chiyoda-ku, Tokyo, 100-0011, Japan

Website: <http://unisec.jp/archives/3437>

Contact: space_job_fair@unisec.jp



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By the end of 2030,
let's create a world
where university students can
participate in practical
space projects in all countries.



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