



***INTERNATIONAL  
SPACE  
UNIVERSITY***

2020-2021



INTERNATIONAL SPACE UNIVERSITY ISU

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## MESSAGE FROM THE CHANCELLOR



Dear friend,

Welcome to the International Space University, where you will feel the strength of international collaboration, multicultural understanding, the enthusiasm for Space exploration and development, and how these topics help tackle the challenges on Planet Earth.

When I meet with ISU students or alumni, I see people committed to a career in Space, and how the multidisciplinary skills and the international network they acquire make them successful professionals. ISU students and alumni are not only embedded in a network of more than 4800 Space professionals, but they also become network-builders themselves.

This is an essential skill today, because the Space sector is dynamic and growing and Space projects involve many stakeholders including government agencies, research organizations, industry, academia, and the financial community worldwide.

I am proud of being part of the ISU community and hope that you will also decide to become an active member if you are not one already. In the meantime, I wish you a very rich learning experience.

Prof. Pascale Ehrenfreund  
Chair of the Executive Board, German Aerospace Center – DLR  
ISU Chancellor

# ISU CREDO

ISU's approach

**INTERNATIONAL  
INTERDISCIPLINARY  
INTERCULTURAL**

ISU is an institution dedicated to international affiliations, collaboration, and open, scholarly pursuits related to outer space exploration and development.

It is a place where students and faculty from all backgrounds are welcomed; where diversity of culture, philosophy, lifestyle, training and opinion are honored and nurtured.

## MISSION

- ☛ Develop the future leaders of the space community
- ☛ Nurture the exchange of knowledge and ideas on the challenging issues related to space in a neutral forum
- ☛ Impart the critical skills essential to future space initiatives

ISU founders Todd Hawley, Bob Richards and Peter Diamandis in 1987



*"The International Space University is an institution founded on the vision of a peaceful, prosperous and boundless future through the study, exploration and development of space for the benefit of all humanity."*

# STATISTICS

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109

COUNTRIES



4.800  
ISU ALUMNI



3.000.000€  
ISU FUNDING

300  
FACULTY  
EXPERTS

14.000  
TWITTER  
FOLLOWERS



1.000.000.000\$  
ISU ALUMNI START-UPS RAISED

86%  
ALUMNI FINDING  
A JOB WITHIN  
9 MONTHS



150

TEAM PROJECTS

# ISU EDUCATION

## THE ISU EDUCATIONAL EXPERIENCE

ISU specializes in the education of postgraduates and professionals to prepare them for work in an exciting, progressive sector. Space future leaders and influential thinkers need new skills and a global perspective to prepare them to meet the challenges of a constantly evolving world.

Headquartered in Strasbourg, France, ISU provides an incomparable opportunity for an international, interdisciplinary and intercultural education. Students and teachers come from around the world, with experience in many fields related to the space sector, both technical – physical and life sciences, technology and engineering, applications, medicine – and

non-technical - law, economics, business, humanities, art, policy, philosophy, history.

Living and working in a unique international environment, sharing the daily experience of different cultural approaches to common challenges and working towards a collective goal using diverse methods – an intense and unforgettable experience.

A singular opportunity for interacting with some of the world's space experts and leaders, and for building lasting relationships with dedicated professionals and fellow students, brought together by a common interest in the exploration and utilization of space.

## ISU AND THE SPACE WORLD

ISU is the center of a worldwide network:

- More than 4800 alumni from over 109 countries
- Several hundred faculty and lecturers drawn from around the globe
- Space Studies Program host institutions in different international cities
- Master of Space Studies Program internship host organizations worldwide
- Governing bodies consisting of leading international space representatives
- Sponsors from around the world, including space agencies, industries, non-governmental organizations, foundations and individuals

ISU is involved with several International and National Organizations:

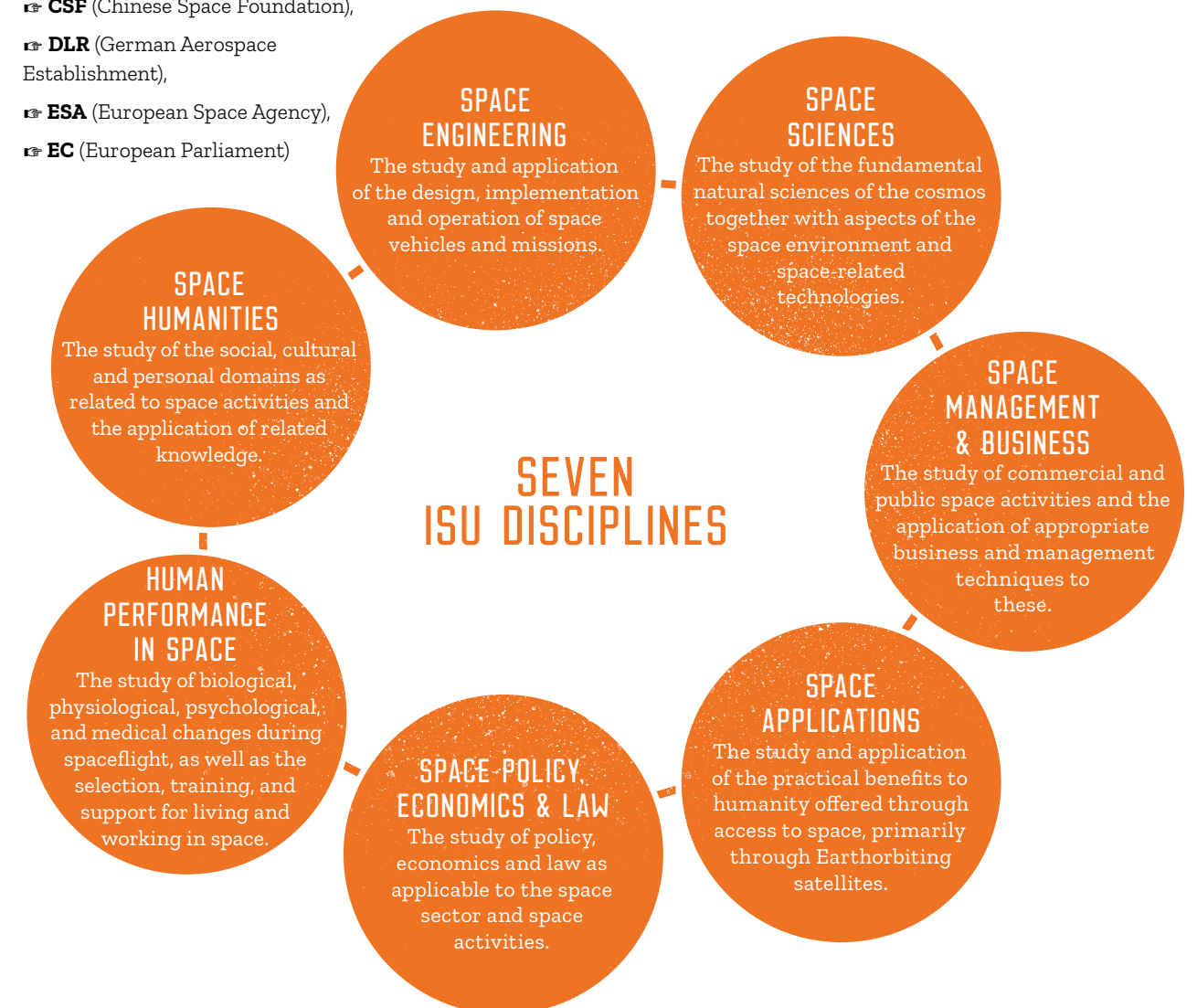
- ASI (Italian Space Agency)
- Observer status at COPUOS (the Committee on the Peaceful Uses of Outer Space of the United Nations Office for Outer Space Affairs),
- CSA (Canadian Space Agency),
- CASC (China Aerospace Science and Technology Corporation),
- CLTC (China Launch and Tracking Technology General)
- CNES (French Space Agency)
- CSF (Chinese Space Foundation),
- DLR (German Aerospace Establishment),
- ESA (European Space Agency),
- EC (European Parliament)

- JAXA (Japanese Aerospace Exploration Agency),
  - KARI (Korean Aerospace Research Institute)
  - NASA (National Aeronautics and Space Administration),
  - Member of the IAF (International Astronautical Federation),
  - Focal point for space education matters at SAF (the Space Agency Forum),
- Cooperative agreements with organizations devoted to furthering public understanding and knowledge about space, such as the US National Space Society, The Planetary Society, the AAS and the AAAF in France.

## SPACE EDUCATION AT ISU

The **3is approach** generates a special set of skills and qualities needed to meet current and future challenges in the space domain

- ISU provides this **international** experience and expertise
- ISU imparts this **interdisciplinary** knowledge and understanding
- ISU teaches this **intercultural** insight and open-mindedness



# CENTRAL CAMPUS FACULTY

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## JUAN DE DALMAU



**Faculty**  
**ISU President**  
**Communication**

A participant of the 1989 Space Studies Program, Juan de Dalmau studied mechanical engineering and business administration. After joining ESA in 1985, he was seconded to CNES in Kourou to become Range Operations Manager for Ariane-4 launch campaigns. He subsequently worked as ground systems engineer and communication spokesperson in ESA's launcher directorate and in 1999 took on a strategy and communication role for CNES. In 2010, he became the head of the Communication Office of the European Space Research and Technology Centre in Noordwijk, The Netherlands. Juan de Dalmau was Director of the SSP for four consecutive years, and an elected chair of the ISU Academic Council before taking office as President of the ISU in September 2018. He is a national of Germany and Spain.

## DR. BERTRAND GOLDMAN



**Associate Professor**  
**Research Facilitator**

Dr. Goldman has degrees in Theoretical Physics, Astronomy and studied Epistemology and the History of sciences at Princeton University through the Proctor fellowship. His postdoctoral astronomy research took him to the United States and the University of New-Mexico, from which he was seconded for a year to NASA Ames research center. He later joined the Max-Planck Institute for Astronomy in Heidelberg where he conducted several studies of brown dwarfs. Dr. Goldman is a member of the French Society for Astronomy and Astrophysics, a former referee for the Calar Alto Observatory and the European Southern Observatory, and an expert for the Marie Curie COFUND programs. He is a national of France.

## DR. HUGH HILL



**Associate Professor**  
**Space Sciences**

Dr. Hugh Hill has a PhD in Astronomy, an MSc awarded for meteorite research and a BA in Physics and Computing. Formerly employed at Armagh Planetarium in Ireland, as Associate Lecturer in Astronomy & Planetary Science and Location Advisor for the Open University, Dr. Hill was also a Fellowship holder at NASA Goddard Space Flight Center. His research interests include: astrochemistry, astrobiology, hypersonics studies, and experimental microgravity. Evaluator for the NASA Astrobiology Institute and referee for several peer-reviewed journals, he is a member of several academic committees and societies including the Meteoritical Society and the European Astrobiology Network Association. He is a national of Ireland.

## DANIJELA IGNATOVIC STUPAR



**Faculty**  
**Lecturer and Research Associate**

Danijela is a geodetic engineer and PhD researcher in space innovation for future Lunar settlements. She worked at the Republic Geodetic Authority of Serbia (2000-2003), maintaining the cadaster land management. She was attached to research and construction of railway and roadway in France (2005- 2012). She is familiar with ISU since 2012 when she was a Master student and thereupon a Teaching Associate. She is currently working as a Lecturer of remote sensing, focusing on GNSS applications. Her research interest lies in Earth's civil engineering technologies applied onto extraterrestrial construction processes. She is a national from France and Serbia.

## PROF. WALTER PEETERS



**Full Professor**  
**Space Business and Management**

Prof. Peeters has a PhD in Engineering for Industrial Organization, an MBA, and a Bachelor of Industrial Engineering. Previous responsibilities at ESA have included project control and coordination assignments on the Hermes project and the EUROMIR flights. Former Head of the Coordination Office of the European Astronaut Centre. Author of the book "Space Marketing" (Kluwer, 2000), and various publications in the field of contract development, incentive contracting, cost management and financing of space activities. Advisor to various organizations and companies on space tourism development. A former President of the ISU, Prof. Peeters is Director of the International Institute of Space Commerce. His present research interests are in space commercialization and personal spaceflight. He is a national of Belgium.

## GONGLING SUN



**Full Professor**  
**Space Engineering**

Prof. Gongling Sun, an ISU SSP98 alumnus, has degrees in mechanical engineering, aircraft design and applied mechanics. He started working in the Chinese launch sector as a system engineer and later as a program manager. After working on the first Chinese manned flights, he became director of EuraSpace GmbH in 2000, the only joint company between Chinese and European space industries. Gongling was also the Chief Representative of CASC in Europe, and gave several presentations as a lecturer in the ISU programs about the Chinese space sector. He is a national of China.

## DR. TAIWO RAPHAEL TEJUMOLA



### Assistant Professor Space Applications

Dr. Tejumola is a Nigerian Space Systems Engineer who worked initially for NASRDA in this area. He was involved in the development and leading of SmallSat projects at the Kyushu Institute of Technology in Japan, under the guidance of former ISU resident faculty, Prof. Mengu Cho. He recently submitted a PhD thesis in the field of Space Systems Engineering with focus on instrumentation and Earth Observation. The combination of his knowledge of different space applications with his experience in the development of space hardware provides ISU with a very strong asset to develop in this field. In addition to this, the unique combination of Taiwo's knowledge of both the African space community as well as the Asian one, provides ISU with a very valuable intercultural asset. He is a national from Nigeria.

## PROF. CHRIS WELCH



### Full Professor Master's Program Director Space Engineering

Chris has a PhD in Spacecraft Engineering, an MSc in Experimental Space Physics and a BSc in Physics. Although technically a physicist-turned-engineer, Chris sees himself more as a 'spaceist', interested in all aspects of space. His research interests are in space propulsion, microgravity science and planetary exploration. Chris is a former Vice-President of the International Astronautical Federation and member of European Commission H2020 Space Advisory Committee. He is also a Fellow of the British Interplanetary Society (BIS), the Royal Aeronautical Society and the Royal Astronomical Society respectively. Chris sits on the boards of the BIS, the Spacelink Learning Foundation and the Aluna Foundation, is an advisor to the Initiative for Interstellar Studies and the Moon Village Association and is Vice Chair of the World Space Week Association. He has extensive media experience and a significant track record in both space education and outreach and higher education, receiving the 2009 Sir Arthur Clarke Award for Space Education and 2015 IAF Distinguished Service Award. He has published more than 100 papers in journals, book chapters and conferences. He is a national of the United Kingdom.

## DR. VIRGINIA WOTRING



### Associate Professor Human Performance in Space

Dr. Wotring has a BS in Chemistry and Biochemistry, and a PhD in Pharmacological and Physiological Science. In Houston, she was an Associate Professor at the Center for Space Medicine and Department of Pharmacology & Chemical Biology of the Baylor College of Medicine, and a Deputy Director and Chief Scientist at the Translational Research Institute for Space Health. She later worked as Science and Technology Integration Manager for the National Space Biomedical Research Institute and prior to joining ISU, was Discipline Lead of Pharmacology at the NASA Johnson Space Center. Her research involves examining the changes in physiology and pharmacology that occur in the environment of a space mission, from the molecular level to that of the whole human, and includes a wide variety of techniques and collaborations. She is a national of the United States of America.

## DR VASILIS ZERVOS



### Associate Professor Space Economics and Policy

Dr. Zervos has a BA and an MSc in Economics and his PhD thesis was on the Economics of the European Space Industry. Formerly employed at the University of York Economics Department and at the Nottingham University Business School, he is an Associate member of Strasbourg University Associate Professor at ISU in economics and policy, his teaching, consulting, research interests and publications are primarily focused on space, aerospace and defence industries and policies, as well as foreign direct investment, strategic partnerships and economics of innovation and technology policy. He is a referee for numerous peer-reviewed Economics, Science and Technology Journals. He is a national of Greece.



# CONGRATULATIONS



# JESSICA!

**Jessica Meir**  
Astronaut,  
ISU Alumna,  
Master of Space  
Studies 2000





**Juan de Dalmau**  
President



**Walter Peeters**  
Special Advisor to the  
President



**Steve Brody**  
VP, North American  
Operations



**Hameed Mohamed**  
Teaching Associate



**Ana Cristina Baltazar  
Garduno**  
Teaching Associate



**James Hurrell**  
Teaching Associate



**Sylvie Mellinger**  
Director, Administration  
and Finance



**Chris Welch**  
Director, Master's  
Program



**Arif Göktuğ Karacahoğlu**  
Director, Space Studies  
Programs



**Cecile Paradon**  
Manager, Human  
Resources



**Alexandra Ryan**  
Academic Coordinator,  
Space Studies Program



**Sebastien Bessat**  
Logistics Coordinator,  
Space Studies Program



**Didier Guillaume**  
Human Resources  
Assistant



**Geraldine Moser**  
Head, Business  
Development Unit



**Joel Herrmann**  
Manager, IT Services



**Nicolas Moncussi**  
Multimedia Assistant, IT  
Services



**Christine Jenck**  
Assistant, Reception,  
Travel Services,  
Conferences



**Muriel Riester**  
Librarian



**Nassim Bovet**  
Head of Admissions and  
Alumni Affairs



**Marie Wack**  
Executive Assistant



**Marzena Kapusta**  
MSS Program Planning  
Coordinator



**Kristell Bars**  
MSS Student Affairs Lead



**Yadvender Singh Dhillon**  
Mission Systems  
Engineer



**Laurence Heiser**  
Accountant

# ISU STAFF



# ALUMNI PROFILES

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**ISU ALUMNI  
1988-2019**  
4,800 Alumni in  
109 countries.



**CHENGLAN  
LIU**

"ISU is a window that opens a new world for me. ISU is a unique platform where you can learn all aspects of space. Here, it is full of challenges and possibilities. As long as you want, you can fully release yourself, show yourself, and discover a brand new yourself" – MSS19, China.



**YONATAN  
WINETRAUB**

"I was fascinated by space since I was a kid and I liked building amateur rockets and spacecraft models. Trained as a space engineer, I knew that only ISU would provide me with the interdisciplinary skills and network necessary to become an entrepreneur. I then co-founded SpaceIL, a competitor in the Google Lunar XPRIZE" – SSP09, Israel, Cofounder at SpaceIL.



**STEPHANIE  
BEDNAREK**

"My experience at the Space Studies Program directly benefited my long term career goals. Beyond the stellar lectures and team project work, developing a global network of peers has continued to pay dividends as we've grown together in our positions within the space industry." – SSP08, USA, Director of Commercial Sales, SpaceX



**ADRIANOS  
GOLEMIS**

"Coming from a medical background, the ISU Master's has been for me the gateway into the space world. This shows the value of the programme's 3-i approach. And much more; my class has been a great company, a melting pot of people and ideas. My ISU internship led me to Antarctica, to MEDES, and ESA." – MSS13, Greece, ESA Flight Surgeon (via MEDES).

# TOP RECRUITERS



NASA



Euroconsult



Planet



European Space Agency (ESA)



Airbus



Spire



Blue Origin



Inmarsat



Urthecast



PwC

PwC – space unit



China Aerospace Science and Technology Corporation, (CASC)



Opencosmos



your satellite company

SES



Indian Space Research Organisation, (ISRO)



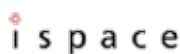
Nothern Sky research



JAXA



Space X



Ispace



*"I got the chance to attend the Executive MBA 2012 (EMBA12) and it was one of the few one-of-opportunities you get in life. Working in the private satcom industry for a few years before it was a great chance to see the big picture of the space industry - from the subsystems to the missions - from the business plan to the geopolitical impact of space. After ISU I started with a partner a company in Switzerland - ThorGroup - working on business intelligence in space and cyber."*

**Torsten Kriening**  
EMBA12, Germany, Chief Operating Officer at ThorGroup and Chief Business Officer at PTScientists

UUMASJIL  
FSPACES  
DIESMSSM  
ASTEROF  
PACES  
MCM



## MASTER OF SPACE STUDIES

The ISU Master of Space Studies Program (MSS) is intended for individuals seeking professional development, further academic study, or both, through a one- or two-year graduate degree program. For experienced professionals, the MSS supports career advancement, a shift of career within the space sector or a career move into the space sector. For students who wish to make their careers in space, the MSS supports entry into the sector through access to space agencies, space commerce, space research and related actors.

### The MSS aims are to:

Provide an interdisciplinary, international, intercultural (3Is) Master's course for highly-motivated students from a diverse range of educational, cultural and professional backgrounds.

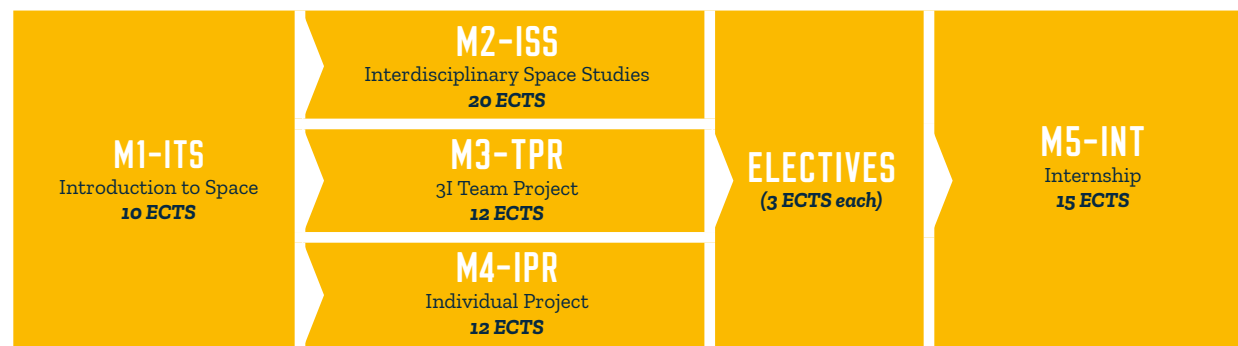
Deliver high-quality 3Is education in the space domain and associated areas which both enhances students' knowledge, skills and effectiveness and offers them the opportunity to achieve their full potential.

Maintain, promote and build productive links with the global space community, including ISU alumni, and use these to provide a contemporary 'real-world' dimension to the program.

Produce graduates capable of contributing effectively and holding responsible positions within the global space sector.

MSS 2019 students come from 18 different countries. Their average age is 29 and 29% of them held degrees at Master's level or higher.

# MSS STRUCTURE



The MSS is structured as a one- or two-year program. The first year is essentially a taught one and is delivered primarily at the ISU Central Campus in Strasbourg. Some students will take only this year and graduate with a Master of Space Studies. During the first year, students who perform at an appropriate level may apply for the second 'thesis year' in which they perform a single extended project or scholarly activity, either at ISU, or an appropriate host institution. These students will graduate with a Master of Science in Space Studies with Thesis.

## MSS YEAR A

MSS Year A is an intensive year worth 75 ECTS. It consists of three types of module:

**CORE MODULES** are mandatory taught modules designed primarily to deliver academic program content and are broad and interdisciplinary in their scope.

**M1-ITS** Introduction to Space (10 ECTS)

**M2-ISS** Interdisciplinary Space Studies (20 ECTS)

**PRACTICE MODULES** are mandatory student-activity focused modules, designed to deliver experience in the application of academic program content in a broad 3Is context.

**M3-TPR** 3I Team Project (12 ECTS)

**M4-IPR** Individual Project (12 ECTS)

**M5-INT** Internship (15 ECTS)

The 12-week internship is usually carried out in a space organisation or other host institution. Supported and advised by ISU, students identify their internship opportunities in accordance with their particular interests/career goals.

**ELECTIVE MODULES** are shorter, optional, taught modules designed to deliver academic program content. They are narrower and more discipline-focused than core modules. Students must take two elective modules. During MSS19, the following electives ran:

**M7-LSS** Life Support Systems for Future Human Space Voyages

**M8-CMD** ChipSat Spacecraft and Mission Design

**M10-ABL** Astrobiology

**M13-NSE** New Space and Entrepreneurship

Not all elective modules will necessarily be offered/run each academic year. This will depend on both resourcing and uptake.

MSS Year A can be completed in full-time mode from September of one year to September of the following year or in part-time mode by completing one or more modules per year within a maximum of seven years.

## MSS YEAR A CORE AND PRACTICE MODULE AIMS

### M1-ITS Introduction To Space

- To introduce students to the fundamental MSS disciplines and build a firm foundation for interdisciplinary study in subsequent modules.

- To develop students' transferable skills, including intercultural awareness, time management, team working, written communication and oral presentations.

### M2-ISS Interdisciplinary Space Studies

- To extend students' knowledge of the MSS disciplines and enhance their understanding of the interdisciplinary links between them.

- To demonstrate the integrated and interdisciplinary nature of space activities.



### M3-TPR 3I Team Project

- To provide students with experience in interdisciplinary, intercultural and international (3I) teamwork.

- To develop in students the relevant skills (e.g., research, problem-solving, design, communication, organizational and project management) required to perform a significant 3I project in a 3I team environment.

- To allow students to engage with and apply principles learned elsewhere in the course and apply them in a 3I context.

### M4-IPR Individual Project

- To provide students with experience of performing a significant individual piece of investigative work characterized by a requirement for independent initiative, self-organization and critical thinking.

- To develop in students a professional level of communication (orally, graphically and in writing).

- To encourage students to explore the current limits of knowledge and demonstrate originality and creativity.

### M5-INT Internship

- To allow participants to apply their knowledge and skills to on-going activity in a real-world space context.

- To provide participants with the opportunity to establish professional links within the global space community.

## MSS YEAR B (OPTIONAL)

MSS Year B consists of a single module:

### M14-THP Thesis Project (45 ECTS)

Taking MSS Year B is not an automatic right of all students taking MSS Year A. Eligibility for MSS Year B is assessed during Year A. Subject also to a suitable Thesis Project being approved, successful candidates may then transfer to the two-year program. Thesis Projects may take place at ISU's Strasbourg Central Campus or at other institutions/organizations as appropriate.

MSS Year B can be completed in full-time mode over seven months or in part-time mode over a longer period within a maximum of seven years from the start of MSS Year A.

#### THE AIMS OF M14-THP ARE

- ☛ To enhance students' individual knowledge in a given area of intellectual enquiry significantly above its initial level.
- ☛ To develop students' individual research, design, development, problem solving, communication, organizational and project management skills.
- ☛ To allow students to apply the knowledge gained in the first year of the MSS and apply relevant principles in a multidisciplinary context.
- ☛ To refine students' communication skills in a variety of forms, e.g. oral presentations, written reports, graphically, etc.

## PROFESSIONAL VISITS

During the academic year, students have the opportunity to visit significant space-related enterprises and activities in Europe. Previously, visits have been made to Airbus Defence and Space, Safran Aircraft Engines, SES, European Space Operation Centre, European Space Agency HQ, European Astronaut Centre, CNES (French Space Agency), EUMETSAT, Telespazio Vega, UNESCO, University of Stuttgart Institute for Space Research and DLR (German Space Agency). Outside of the official MSS programme some students have organized their own visits to the ESA launch site in French Guiana, the European Space Technology Centre in The Netherlands and space-related facilities in Russia.

## LANGUAGE CLASSES

Before the start of the MSS program, students are given the opportunity to attend a week of intensive French classes. We highly recommend taking advantage of these classes in order to obtain a good basic level of French early on, before the program work intensifies. These French classes are continued during M1-ITS at two levels: Beginner and Intermediate. English classes are also offered during Module 1 to those students wishing to improve their English language skills in order to follow better the program.



*"ISU provided me with the fundamental knowledge to understand a new sector, the contacts necessary to navigate the industry, and the friendships to celebrate the good and bad times. ISU helped to organize an internship for me in Tokyo at Ispace, at the time a small company. As the company grew I became a manager, managing director our EU subsidiary, and now the Vice President of Global Sales and Strategy"*

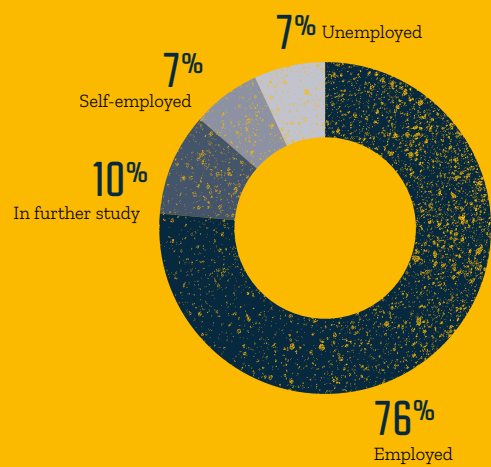
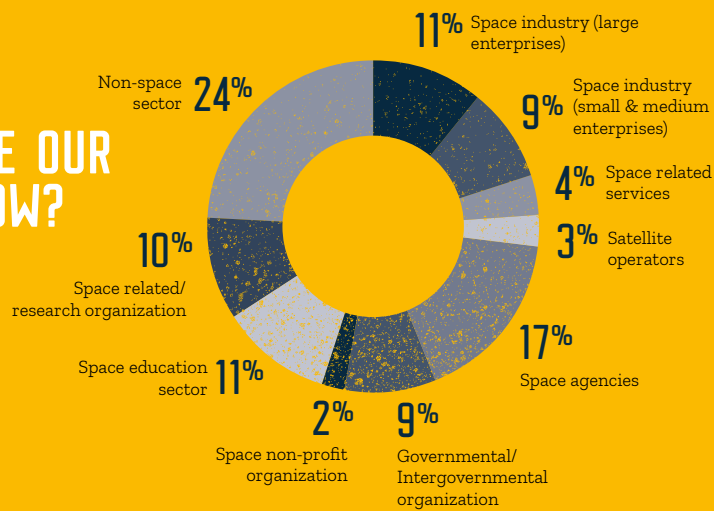
Kyle Acierno  
MSS15, Luxembourg/Japan, ispace technologies inc Vice  
President of Global Sales and Strategy.



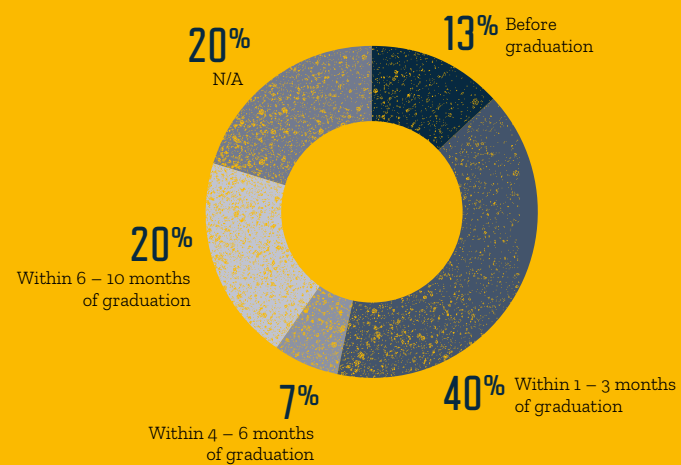
# AFTER GRADUATION

## ALUMNI OF MSS17

### WHERE ARE OUR ALUMNI NOW?



### WHAT IS THEIR EMPLOYMENT STATUS?



### WHEN DID THEY OBTAIN THIS POSITION?

*"The ISU MSS was by far the best year of my studies. I was ecstatic to get up every morning and enjoyed every second of the program. For the first time in my life, I was interested in everything I was learning and I was sharing the same passion as all of my classmates, wherever they came from. After ISU I easily found a job in the Space Sector. But after a few years I was missing the ISU "spirit" too much, so I came back to work for ISU."*

Nassim Bovet  
MSS01, France, ISU Head of Admissions and alumni affairs.



Designed to carry a crew of up to three, or a combination of crew and cargo, the Almaz RRV was also constructed for ground or water landing. Tests on the spacecraft included open water exercises from 19 March 1980 - 7 July 1982. At one of the stages of sea testing, a crew of three commanded by USSR Cosmonaut Gennady Sarafanov, remained inside the Almaz RRV for 72 hours post-landing. They were successfully removed from the crew compartment in heavy seas.

Almaz capsules were also used for supplying and returning equipment and samples to and from the Almaz Space Station and Earth. Durations on orbit ranged from 50 days to 175 days. The capsules were "human rated" and were designed to be used to the state-of-the-art on board.

WILSON  
AMSSP  
ACES  
STUDI  
PROGRAM  
SPACE  
TUDIT



## SPACE STUDIES PROGRAM

The Space Studies Program (SSP), an intense nine-week professional development course for postgraduate students and professionals of all disciplines, is a unique educational experience. The curriculum covers the principal space related fields, both non-technical and technical and ranges from policy and law, business and management and humanities to life sciences, engineering, physical sciences, space applications and human performance in space. The shared experience of an international, interactive working environment is an ideal networking forum

leading to the creation of an extensive, international, multidisciplinary professional network comprising the program's alumni, faculty members and visiting lecturers. Through the exchange of ideas and information, this network has been successful in advancing projects in such areas as disaster warning and mitigation systems, human health enhancement using space technologies, and has even significantly contributed to the creation of a national space agency. Each year the SSP is held in a different location across the globe. Moving to a new city and country adds an exciting dynamic as well as new resources and expertise to the program.



## SSP20 CHINA, 22 June > 21 Aug. 2020

The 33<sup>rd</sup> annual Space Studies Program of the International Space University (SSP) will be held in China, hosted by SPACenter Space Science and Technology Institute, Shenzhen University, Shenzhen Aviation Association and Shenzhen Talents Association for Aeronautics and Space.

SPACenter: Space Science and Technology Institute was set up by Shenzhen municipal government based on the strategic cooperation agreement with China Astronaut Research and Training Center.

That is why more than 400 graduate students, space industry professionals and ISU Staff from over 30 countries will converge in China to attend the intensive nine-week live-in program.

Executives and experts from international space agencies and major aerospace and technology companies will work in combination with up to two hundred ISU faculty and visiting lecturers from around the world to teach ISU's innovative space program

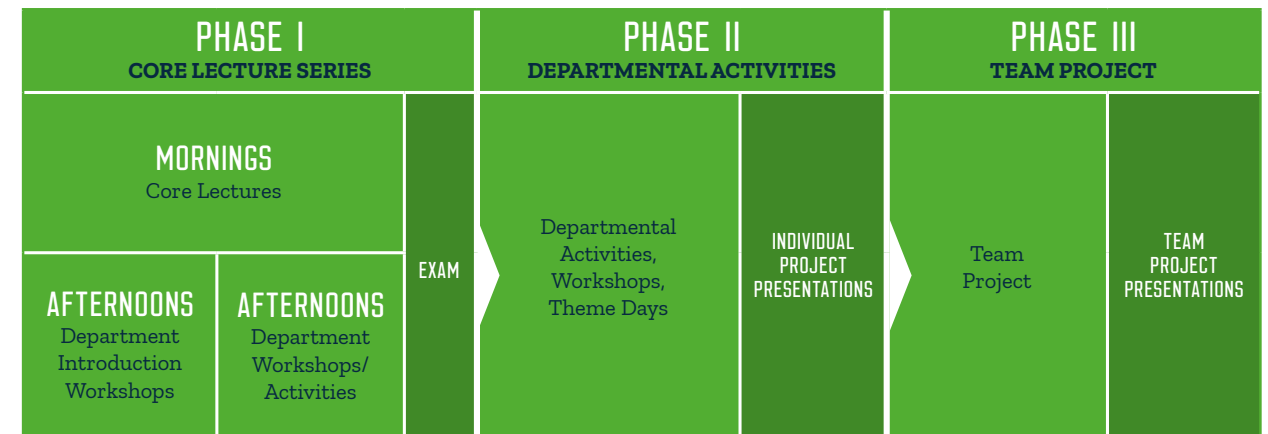
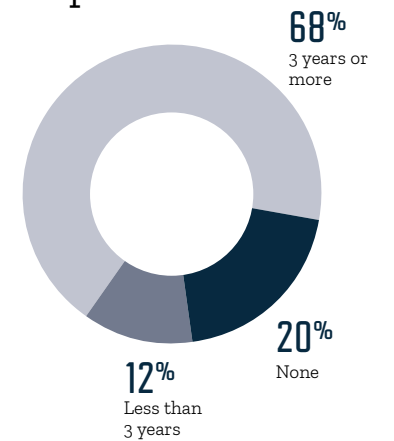
The interdisciplinary curriculum of the SSP, with its emphasis on international cooperation, exposes participants to broad new perspectives on the world's space activities - perspectives otherwise reserved for those with many years of diverse professional experience. The program is packed with a wide variety of activities, including lectures by renowned experts, hands-on activities and projects, team work and professional visits. The main elements of the SSP curriculum are the core lecture series, workshops, departments and team projects. All course work at ISU is conducted in English. Each year the program evolves to better meet the needs of the participants and their employers. Participants

are strongly encouraged to contribute their own knowledge, experience, ideas, culture and opinions as well as their energy and enthusiasm. Reflecting on ISU's pedagogical approach and vision, interest in and respect for different cultures and backgrounds is expected from participants.

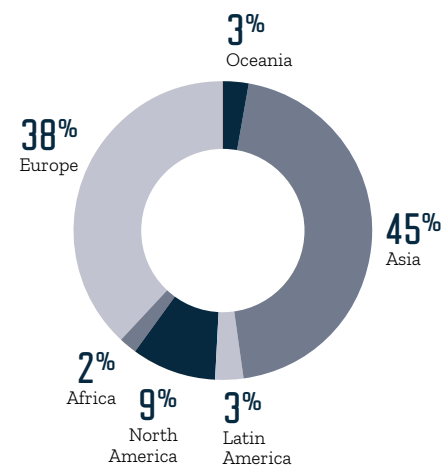
The layout of these and other elements is depicted graphically below and described in the following pages.

The SSP class of 2019 included 127 participants from 37 countries ranging from 22 to 57 years of age. Their professional experience, geographical regions and educational backgrounds are shown in the charts below:

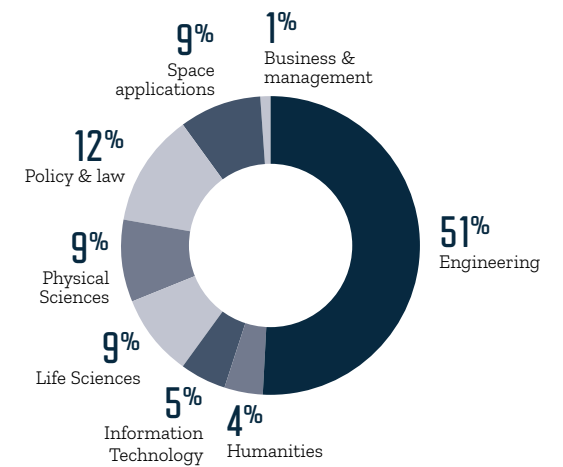
## SSP19 Participants' Professional Experience



## SSP19 Participants' Geographical Regions



## SSP19 Participants' Educational Backgrounds





# SSP PHASE 1

## CORE LECTURE SERIES

Phase I of the SSP curriculum ensures participants have a basic grounding in the fundamentals of all the disciplines that are relevant to space programs — and that they understand the relationships between these disciplines in any space-related activity. All participants attend the core lecture series, which creates a basic framework of knowledge to prepare participants for informed and balanced judgment.

A series of lectures in each field of study that is designed primarily for non-experts is presented. Thus, medical specialists can understand the lectures on propulsion and engineers and lawyers can understand the lectures on the effects of weightlessness on the human body.

Core lectures are often grouped in clusters. Questions from participants and group discussions with the lecturers are encouraged.

Knowledge gained from the core lectures allows participants to:

- understand the very large range of factors, both technical and non-technical, involved in space activity
- apply good decision-making and management skills to projects
- appreciate the relevance of all disciplines during the development and exploitation of space activities

## WORKSHOPS

SSP Workshops are activities designed to enhance and complement the knowledge acquired during core lectures through more active learning in smaller groups. Participants choose activities based on their interests. A number of activities are conducted in parallel and participants must sign up in advance. Topics may be offered more than once so as many people as possible are able to benefit.

Workshops activities offered in SSP19 included:

- Advanced communication skills
- Design thinking
- Space debris
- Spacecraft sensing and instrumentation
- Space, a new frontier for ethical interrogation
- Media training and crisis communication
- Robotics
- Artificial gravity
- Astronomy and Civilization : a look through time and space
- Visit to l'Observatoire de Strasbourg
- Business model canvas
- Space business coo-petition
- Stimulation and perturbation
- Radar image processing
- Startup pitching



Phase II of the SSP is structured around ISU's seven academic departments, which provide (see p. 9) a focus for smaller groups of participants to hone in on a particular discipline of interest. Each participant chooses one of the seven discipline of ISU.

## DEPARTMENT ACTIVITIES

Department activities encourage exchange of knowledge, ideas and opinions through debate and discussion, as well as hands-on activities. Departments have more time to go into greater depth with activities such as:

- A seminar and discussion that go into greater depth following a core lecture
- Visiting a space-related facility in the area
- Building and operating very low frequency radio receivers
- Remote sensing projects using local imagery and involving ground truthing
- Examining barriers to technology transfer

# SSP PHASE 2

Presentations by participants on their own work or interests

- Building and launching a small rocket and payload
- Hands-on experience with data systems or experimental hardware
- Debates on space exploration's impact on society

Department activities provide an important opportunity for participants to interact with faculty members and lecturers and build their professional network. They also provide a means for participants to become sensitive to the cultural differences that govern personal interactions in a group setting and to adapt and develop presentation and negotiation skills in light of this cultural diversity.

## INDIVIDUAL OR SMALL TEAM ASSIGNMENTS

The department chair will work with each participant to define a short exercise or project as part of the departmental activities. These projects may be done individually or in small teams and include an oral presentation of professional research or a professional paper and presentation on current issues for a conference:

## PROFESSIONAL VISITS

During the SSP, departments conduct professional visits to space agencies, companies, and space-related research institutes/universities. The activity varies based on the available local resources.

Some examples of SSP19 professional visits and activities are:

- CERN, Switzerland
- European Astronaut Center (ESA-EAC), Germany
- Institute of Space Systems of the University of Stuttgart, Germany
- SES (Luxembourg)
- European Space Operations Center (ESOC), Germany
- iSpace, Luxembourg
- Spire, Luxembourg
- SEMIA incubator, France

# SSP PHASE 3

## TEAM PROJECTS

In Phase III of the SSP, participants work in international, interdisciplinary and intercultural teams to produce a comprehensive analysis and proposals for an international space project or on a topic of relevance to the professional space sector. Participants choose one from multiple team project topics and work on that topic for the duration of the SSP. This element of the program has three main objectives:

- ☛ To encourage participants to put into practice what they have brought from their own educational and/or professional background, plus knowledge and skills they learn from lectures, workshops and other presentations during the SSP.

- ☛ To experience decision-making and organizing work in sub teams. Also, to learn how to converge on solutions and recommendations while working in multidisciplinary and intercultural teams- where conflicting requirements emerge and compromises must be made.

- ☛ To produce a comprehensive report of professional level and present it in a public session at the end product of the team project. The report covers all aspects - technical, financial, organizational, political, schedule and risk

Many ISU reports have served as resources for the world space community (see [www.isunet.edu](http://www.isunet.edu) for Team Project reports). The structure of team projects depends to some extent on their subject matter, but certain aspects are common to all team projects:

- ☛ An early phase of exploratory or brainstorming discussion of the project

- ☛ A series of factual lectures specific to the team project topics Research and an intensive fact finding period

- ☛ A challenging period of wrestling with different ways of organizing the study effort

- ☛ Extensive opportunities to engage departmental faculty members and lecturers in discussion of team project issues

- ☛ An interim presentation and review where expert advice and comments will be given

- ☛ A period of very intense work to complete the final report.



## TEAM PROJECT TOPICS FOR SSP20

### On-Orbit Mobility and Manipulation

Chair: Pete Worden

The goals of this team project are to assess the present situation and document practical ways for the world to continue enjoying the benefits of maneuvering technology (including new uses such as debris removal, clean-up, and planetary defense) as well as to examine servicing opportunities brought about with the development of robotic technologies for in-orbit servicing while reducing the chance of these technologies being misused.

### International Cooperation on the Use of the China Space Station

Co-Chairs: Gary Martin, Yang Yang

The Chinese space station is scheduled to be completed and put into operation around 2022. The Permanent Mission of China to the United Nations and other international organizations in Vienna and the United Nations Department for Outer Space Affairs jointly issued a bulletin on opportunities



for international cooperation on the Chinese Space Station, inviting countries and institutions from all over the world to cooperate in space science experiments on the Chinese Space Station.

### The Space Medical Centre

Chair : Farhan Asrar

Many medical questions are still opened when planning crewed missions in outer space, especially beyond Low-Earth-Orbit. Long-term human body adaptation might lead to severe medical conditions with the potential of a dramatic impact on the mission success. In addition, there is a risk of unseen medical conditions as the humans would be exposed to extra-planetary environments for the first time. The use of advanced technology and autonomous systems can help but it, up to now, is not comprehensive yet. Then, re-entry is always a rule, not feasible for missions beyond LEO.

## PANELS AND DISTINGUISHED LECTURES

### ☛ Once We Went to the Moon

John M. Logsdon

### ☛ How to Become an Idea DJ? Insights on cross-industry innovation

Ramon Vullings

### ☛ Kosmica

Nahum

### ☛ Starships

Pete Worden

### ☛ International Astronaut Panel

Buzz Aldrin, Paolo Nespoli, Jean-François Clervoy

### ☛ Space in Africa

Tidiane Ouattara

## ALUMNI CONFERENCE

During each SSP, ISU and Alumni Associations organize a three day Alumni Conference and Reunion event. The Conference gathers distinguished speakers from space industries and agencies and includes a poster session, in addition to a number of educational, networking and social events. These activities are open for active participation to alumni, faculty and staff from all ISU programs. For more information on the Alumni conference, please visit the ISU website at: [www.isunet.edu/portfolio/alumni/alumni-conference](http://www.isunet.edu/portfolio/alumni/alumni-conference).

## EVALUATION

Each participant's academic performance is evaluated on the basis of:

- ☛ Performance on the examination of the fundamental concepts of the core lecture series
- ☛ Participation in departmental activities and the individual or team assignment
- ☛ Contribution to the team project

Participants are required to obtain a satisfactory evaluation in each of these three elements in order to obtain a Certificate of Completion for the program.



**Arif Göktuğ  
Karacalıoğlu**

**Director, Space Studies Programs**

Holding a BS degree in Mechanical Engineering and two cum laude MS degrees in Engineering Management and Space Sciences, Göktuğ worked as a launch system and center design engineer for six years before he joined the mission design team at NASA Ames Research Center where he specialized in small spacecraft and space debris mitigation projects. His personal interest in launchers and launch sites has dragged him to many remote locations from Kourou in French Guiana to Cape Canaveral and Vandenberg in US, from Alcantara in Brazil to Baikonur Cosmodrome in Kazakhstan, from Wenchang in China to Kodiak in Alaska.

His first encounter with ISU was in 2010 as a participant and since then, he has been involved in eight SSP and SHSSP sessions in various capacities, including Academic Coordinator and Deputy Director. Currently, he is the Director of both programs.

*"ISU was an invaluable, truly enriching, experience that broadened my horizons on both professional and personal levels. It offered a holistic 360 degrees industry view in an inspiring environment of talented and passionate people determined to make a positive and lasting impact in the Space Industry."*

Violetta Kuvaveva  
SSPo6/MSM07, Russia,  
Senior manager Fleet Development at SESw

MILITARY  
SPACE PROGRAMS  
COMMERCIAL  
SPACE PROGRAMS  
COMMERCIAL



## COMMERCIAL SPACE PROGRAM

The objective of the Commercial Space Programs graduate certificate is to provide students an intensive series of courses focused on commercial space intended to supplement traditional engineering, entrepreneurial, and business, and education curricula with an emphasis in commercial space, technical and entrepreneurial management, and public-private partnerships.

According to Dr. Greg Autry, Director at Southern California Commercial Spaceflight Initiative (SCCSI) and Faculty of the CSP graduate certificate: «Commercial space startups are now far and away the fastest growing sector of the aerospace industry. According to Bryce Technologies, the five year

period from 2013-2018 witnessed an order of magnitude increase in seed and venture capital investment. Space Angels Network reports that over \$3 billion was invested in 2018 alone and cumulative commercial space investment is now at \$18 billion. Morgan Stanley, Goldman Sachs, Deloitte and Bank of America all project a space economy in the trillions.»

Upon completion of all four courses, students will earn a graduate certificate in Florida Tech's Commercial Space Programs graduate certificate course. All courses are accredited with fully transferable credit to partner institutions.

## FACULTY

Learn from the best faculty from leading universities across the globe in space entrepreneurship, technology and law.

Under the leadership of proven industry and academic figures, including NASA experts and private-sector pioneers alike, students will receive a balance of valuable academic and real-world insight for the economy of tomorrow.

## FACILITIES

Students enrolled in the International Space University – Center for Space Entrepreneurship ISU-CSE at Florida Tech will learn on-site at the Kennedy Space Center Visitor Complex, the home of historic NASA vehicles and educational resources designed to engage the general public with space. KSC-VC boasts an array of fully equipped classroom and learning spaces in its NASA education facilities.

Florida Tech's proximity to established commercial space ventures and NASA's Kennedy Space Center offers students a combination of practical training, networking opportunities at popular launch viewing events and hands-on industry experience.



***"This intensive program was developed by the International Space University and Aldrin Space Institute for students passionate about shaping the future of commercial space. Upon completion of all four courses, students earn a 12 credit Commercial Space Programs graduate certificate"***

Andrew Aldrin  
Aldrin Space Institute



GLOBAL  
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## SOUTHERN HEMISPHERE SPACE STUDIES PROGRAM

Adelaide, Australia  
13 Jan. – 14 Feb. 2020

The Southern Hemisphere Space Studies Program (SHSSP) has been running for 9 years now, provided in partnership by ISU and the University of South Australia since 2011. The program is designed with a particular eye to the southern hemisphere space environment and is built around the themes of space exploration, space policy and space services, while giving a well rounded exposure to the principles and concepts involved in space science, space systems engineering and technology, space business, project leadership and space legal and regulatory issues. The program is de-

signed to be a catalyst to boost the role of space for countries in the southern hemisphere and those cooperating with them, and to build human capability and capacity.

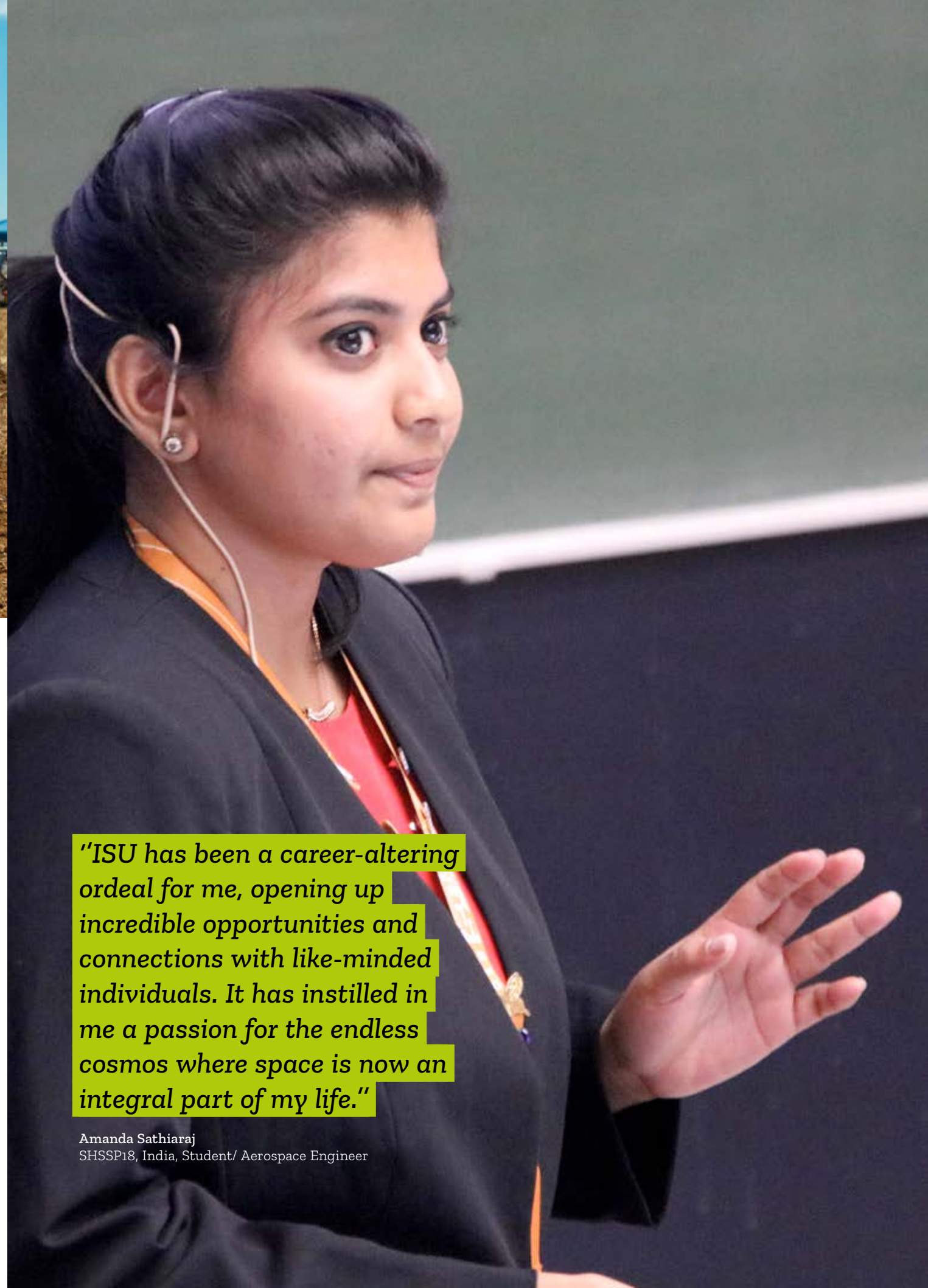
### Program Structure

The program uses the interdisciplinary educational method for which ISU is renowned, and includes core lectures from international and Australian experts, workshops and 'white paper' team projects lead by faculty and invited experts. It will take the form of an intensive five week program, providing the International, Intercultural, and Interdisciplinary ISU experience in a format and schedule suited to the Southern Hemisphere. As in other ISU programs, participants will benefit from the shared experience of an international, interactive working environment with other professionals, graduate researchers and senior undergraduate students. Successful completion of the program can lead to a graduate qualification or credit towards undergraduate programs in

Australia and internationally. Program graduates will become part of the professional networking forum of ISU alumni (4800), faculty members and visiting lecturers.

The SHSSP's interdisciplinary program delivers an expertly designed curriculum suited to the space education needs of professionals seeking additional knowledge of international space systems and services, graduate researchers in all fields seeking a broader understanding of the context of their work, and undergraduate students seeking exposure to the International, Intercultural, and Interdisciplinary aspects of space that are not available in their home institution studies.

The program forms part of an accredited Australian Graduate Certificate (through UniSA) for local and international students who desire it. An Executive Certificate will be awarded to all



participants on successful completion of the program. Holders of the Executive Certificate will receive a 50% credit in the UniSA Graduate Certificate in Space Studies. Holders of the UniSA Graduate Certificate in Space Studies may receive credit for the first module of the ISU Master of Space Studies program held in Strasbourg, France.

Nine units (or the equivalent of one quarter of one academic year) of elective credit in a UniSA undergraduate program may be granted by UniSA for successful completion of the SHSSP. The obtaining of equivalent credit in graduate and undergraduate programs in other Australian and overseas universities will be the responsibility of the individual participant.

### Core Lecture Series

The SHSSP's core lecture series will comprise one third of the program, presenting 40 lectures covering the world's space activities with a focus on space applications, services and policy. A broad understanding of the role of space, the current status of our capacity to use it and future directions, opportunities, and challenges for the space sector will be presented in a manner clearly understandable to participants from a broad range of backgrounds.

### Hands-On Workshops

Another one third of the program will be allocated to hands-on workshops, public space events, and professional visits in the area. Workshops will often be linked with lectures, with hands-on activities using local remote sensing

data, GPS field exercises, collecting satellite data, and other topics. There will be several public events with invited speakers and we will make several professional visits to space-related facilities in the local region.

### Team Project

The final one third will be the group White Paper Team Project assignments to be completed in week 5. Each year the assignments will focus on selected themes or application areas. The participants will, in groups, research an issue of interest to the Southern Hemisphere nations and then jointly author a Team Project report on the subject which will be suitable for sharing with interested organizations and agencies or for submission to international professional conferences.

***"ISU has been a career-altering ordeal for me, opening up incredible opportunities and connections with like-minded individuals. It has instilled in me a passion for the endless cosmos where space is now an integral part of my life."***

Amanda Sathiaraj  
SHSSP18, India, Student/ Aerospace Engineer

COURSE  
 EXECUTIVE  
 SPACE COURSE  
 COURSE  
 EXECUTIVE  
 COURSE



## EXECUTIVE SPACE COURSE

ESC Canberra, Australia,  
 18-22 November 2019

ESC ISU Central Campus,  
 20-24 April 2020

ESC Seattle, USA,  
 26-30 October 2020

The Executive Space Course looks at current space and space-related activities and explains the technology, science, business and policies upon which each phase of a space program or mission is based.

Taught from an international perspective, the course allows participants to gain an understanding of the differences as well as the common approaches to space strategy across the globe. The course explains core

engineering and technical concepts in a simple, understandable manner, allowing participants to develop their knowledge of space-related activities and terminology.

The Course is intended for two broad categories of professionals, those working in the space sector but who do not have a broad space background (e.g., those with expertise in finance, law, marketing, human resources, etc. or even engineering and science) or those currently working outside the space sector but who have an interest in developing a better understanding of it (e.g., entrepreneurs, government employees and politicians, etc.).

### Objectives

The course, taught in English, aims to:

- Provide a neutral and global overview of space and space related subjects
- Explain core engineering and technical concepts in a simple manner

- Deliver a greater understanding of the challenges and opportunities of the space sector

- Give an insight into the traditional space markets (telecom, navigation, earth observation...) as well as new space economy

### Short Courses

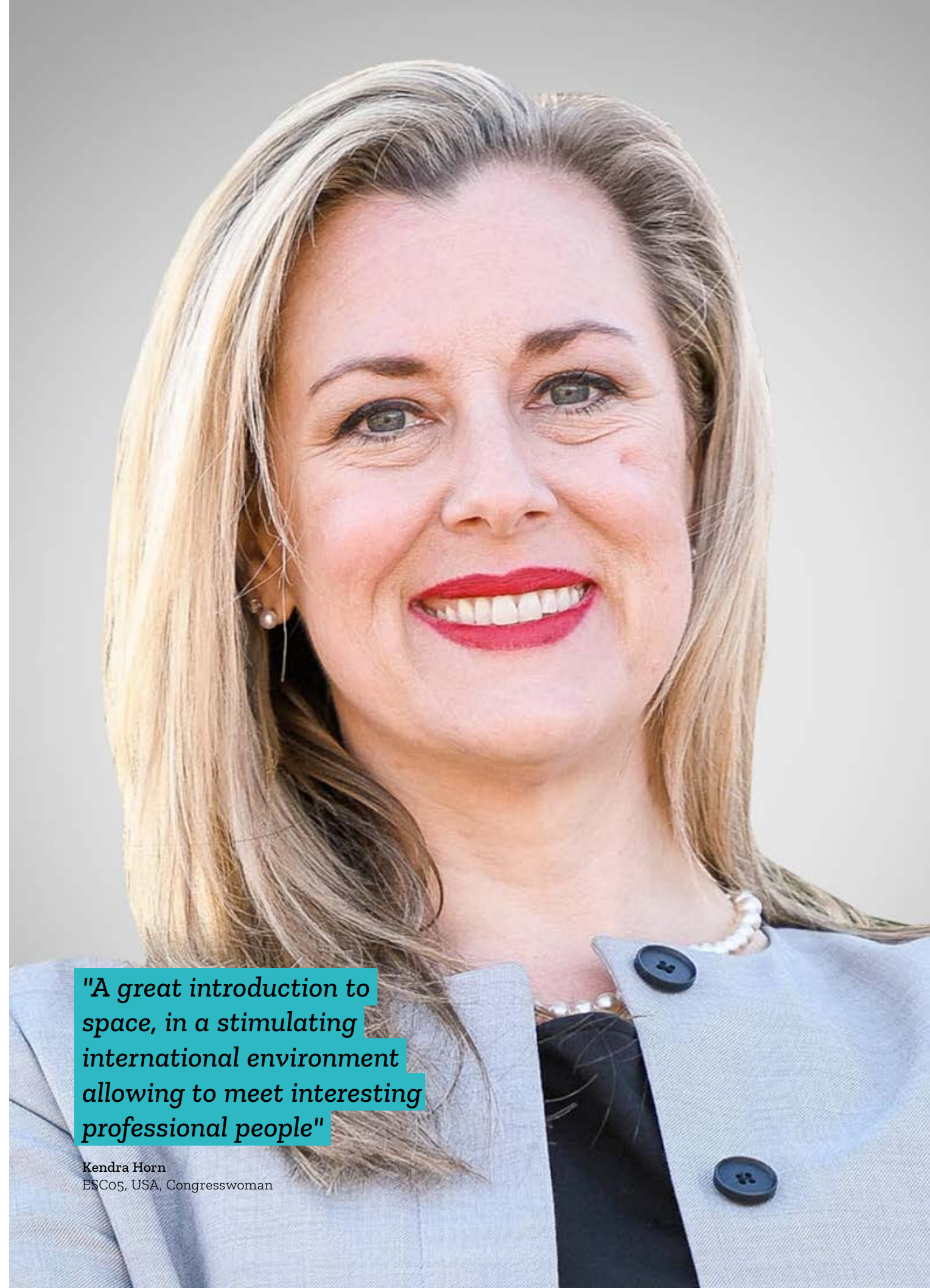
ISU organizes a number of short courses on request that are tailored to the specifications of the company or organization needing a course. These courses may be prepared in cooperation with partner organizations and delivered at locations chosen by the customer.

Workshops, seminars and courses have been organized on topics such as Telemedicine, Space Propulsion, Communications Satellites, Management of International Space Programs and Projects, and International Strategy and Cooperation in Space.



# ESC ISU CENTRAL CAMPUS 2020 : PROGRAM

	MONDAY 20 APRIL	TUESDAY 21 APRIL	WEDNESDAY 22 APRIL	THURSDAY 23 APRIL	FRIDAY 24 APRIL
9:00 to 10:00	Welcome and Overview of the Executive Space Course	Leaving the Planet: Propulsion and Space Transportation	Space Navigation & Applications	Space Telecommunication & Applications	New Space Overview
10:15 to 11:15	Why Space?	Space Markets & Future Trends	Tech Transfer & Export Control	Space Telecommunication and Navigation Law	Legal Implication of New Space
11:30 to 12:30	Organisation of the Space Sector and Outlook	Space Systems Design	Space - General Legal Framework	The Telecommunication Market	11:30 - 12:00 Closing Ceremony
12:30 to 14:00	Lunch	Lunch	Lunch	Lunch	Lunch (optional)
14:00 to 15:00	The Space Environment	Remote Sensing & Applications	Risk Management & Case Study	Introduction to the ISU Concurrent Design	
15:15 to 16:15	International Cooperation in Space	Microgravity Application / EYAS Sat Workshop	Space Mission Design	Concurrent Design Workshop	
16:30 to 17:30	Orbits	Microgravity Application / EYAS Sat Workshop	Intellectual Property	Concurrent Design Workshop (continued)	
17:30 to 18:30	Welcome Reception			Presentation of Workshop Results	
		Boat tour of Strasbourg 18:00 - 19:15	Distinguished lecture: 18:30 - 19:00		
		Dinner: 20:00 - 22:30	Dinner: 19:30 - 22:30		



*"A great introduction to space, in a stimulating international environment allowing to meet interesting professional people"*

Kendra Horn  
ESCOS, USA, Congresswoman

# ISU RESEARCH & FACILITIES

## ISU RESEARCH

As a neutral forum with its international network of experts on call, ISU is ideally positioned to conduct research studies to provide agencies, industry and public organizations with the impartial global perspective and advanced analysis needed to stay on the cutting edge of the space sector and respond resourcefully to future challenges.

One particular research project is an innovative cooperation between ISU, the Eurometropole of Strasbourg, the University of Strasbourg and Airbus Defence and Space.

This research project is closely linked to the thesis year ISU is proposing, which is considered as an extension to its highly successful one-year MSc in Space Studies (MSS).

One particular set of research projects are ISU's three Hydra payloads which were launched to the International Space Station in 2018 where they were installed in the European Space Agency Columbus module via the new ICE-Cubes service developed by Space Applications Services. These

three small payloads (each around 10 cm cubed with a mass of approximately 1 kg) were funded by ISU, the Eurometropole of Strasbourg and Groupama and involved a wide range of partners (Stanford University/Utah University, University of Strasbourg/CNRS, University of New South Wales, DLR, Studio Nahum, MacQuairie University).

✦ Hydra-1/PGE: Experiment investigating effects of microgravity environment on genetically-modified plants growth in microgravity environment.

✦ Hydra-2/MMARS2: Experiments investigating effects of space environment on growth of methane-producing micro-organisms and on microbial DNA, plus measurement of radiation environment. + PHOTO HYDRA-2MMARS

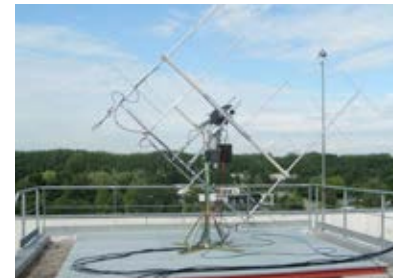
✦ Hydra-3/Pulse: Interactive space art payload and technology demonstration of radiation tolerant electronics.

The Hydra payloads have had a number of benefits for ISU, but one of the most significant is the direct engagement of MSc in Space Studies (MSS) students with space hardware. Sig-

nificant amounts of each of three payloads were designed and built by MSS students as part of their studies, either as Year A Individual Projects or Year B Thesis projects.

While doing this, the students have had to interact with scientists, respond to engineering requirements, solve design and manufacture problems, conceive and implement electronics and software and carry out assembly and testing. Addressing all these issues has given the students a very clear understanding of all the complexities that must be addressed into order to launch and fly space hardware. It has also proved to be a very significant motivational tool, maintaining interest and engagement during the MSS programme.

Looking forward, the next ISU space payload is Hydra-4, a multi-purpose experiment which is planned to fly to the lunar surface in 2021 while other spaceflight opportunities are under consideration.



## SATELLITE GROUND STATION

The ISU Satellite Ground Station is a fully automated satellite tracking station operating in the amateur radio frequencies. It is an endeavor to unite individual ground stations developed for local educational satellite projects into a global network, thus allowing educational institutions to download telemetry from their student-built satellites regardless of where the satellite was in its orbit



## RADIO TELESCOPE OBSERVATORY

The discovery of radio emissions from the sky has led to the development of Radio Astronomy. Observations in this frequency domain provide a substantial complement to optical observations, as is exemplified by the discovery of new classes of objects such as radio galaxies, and the discovery of the cosmological microwave background, one of the evidences for the 'Big Bang' model of the Universe.



## CONCURRENT DESIGN FACILITY

Concurrent Design Engineering has been a leading method for conducting Phase 0 and Phase A studies in the Space Industry for decades. The European Space Agency first established a Concurrent Design Facility at the European Space Research and Technology Center (ESTEC) in 1998. In 2008 this CDF facility was generously donated by ESA to the ISU.



## PHYSICAL SCIENCES LABORATORY

The ISU Physical Sciences Laboratory is the largest dedicated laboratory space at the ISU Central Campus. Here students carry out hands-on workshops and activities involving the space physical sciences. They also have the opportunity to perform individual projects using an environmental vacuum chamber a Reddy shock tube.



## "MAKE-IT-SPACE" WORKSHOP

The ISU Make-It-Space is a place where students used a range of mechanical and electronics tools, 3D printers and a laser cutter to support projects ranging from bike repair to building payloads.



## HIGH BAY

With a ceiling height of over six meters, the ISU High Bay can accommodate technical hardware of significant size projects of any size. At present the High Bay is host to two space related projects. Seen above is SHEE - the Self-Deployable Habitat for Extreme Environments. The High Bay home is available to ISU partner institutions for collaborative projects.

# ISU LECTURERS

## FACULTY

**Philippe Achilleas**, IDEST, Université Paris Sud & ISU, France  
**Alberto Behar** (+), NASA Jet Propulsion Laboratory, USA  
**Phillipe Berthe**, ESA-ESTEC, The Netherlands  
**Steve Brody**, International Space University, USA  
**Angie Bukley**, The Aerospace Corporation, USA  
**Carol Carnett**, Legal Aid Bureau Inc., USA  
**Milan Cermack**, Applied Space Technologies Network Ltd., Switzerland  
**Ed Chester**, Catena Space Ltd. / Systemlevel Ltd., UK  
**Patrick Cohendet**, Université de Strasbourg/HEC Montreal, Canada  
**John Connolly**, NASA Johnson Space Center, USA  
**Bill Cowley**, Institute for Telecommunications Research, Australia  
**Eric Dahlstrom**, International Space Consultants, USA  
**Juan de Dalmau**, ISU, France  
**Volker Damann**, International Space University, France  
**Michael Davis**, Australia  
**Kerrie Dougherty**, Powerhouse Museum, Australia  
**George Dyke**, Symbios Communications, Australia  
**Reinhold Ewald**, ESA-EAC, Germany  
**Stacey Falzarano**, USA  
**Stefano Fiorilli**, ESA-ESTEC, The Netherlands  
**Daniel Garcia Yarnoz**, Spain  
**Daniel Glover**, NASA Goddard Space Flight Center (retired), USA  
**James Green**, NASA Headquarters, USA  
**Arthur Guest**, TreoScope Technologies, USA

**Ozgur Gurtuna**, Turquoise Technology Solutions Inc., Canada  
**Douglas Hamilton**, KRUG Life Sciences, USA  
**Omar Hatamleh**, NASA, USA  
**Hugh Hill**, International Space University, France  
**Jeffrey Hoffmann**, Massachusetts Institute of Technology, USA  
**Dennis Irwin**, Ohio University, USA  
**Adil Rahim Jafry**, Chandah Space Technologies, USA  
**Rüdiger Jehn**, ESA-ESOC, Germany  
**Joan Johnson-Freese**, Naval War College, USA  
**Tarik Kaya**, Carleton University, Canada  
**David Kendall**, Canadian Space Agency, Canada  
**Siamak Khorram**, Berkeley University, USA  
**Otto Koudelka**, Technical University Graz, Austria  
**Wiley Larson**, Stevens Institute of Technology, USA  
**Rene Laufer**, Baylor University, USA  
**John Logsdon**, Space Policy Institute, George Washington University, USA  
**Ruth McAvinia**, ATG Europe, The Netherlands  
**Christopher McKay**, NASA Ames Research Center, USA  
**Bernd Madauss**, Project Management Team MADAUSS, Germany  
**Scott Madry**, Informatics International Inc./University of North Carolina, USA  
**Gary Martin**, NASA Ames Research Center, USA  
**Chiaki Mukai**, JAXA, Japan  
**Joshua V. Nelson**, USA  
**Barnaby Osborne**, Australia  
**Norah Patten**, Irish Centre for Composites Research, Ireland

**Walter Peeters**, International Space University, France  
**Joseph Pellegrino**, ATK Spacecraft Systems, USA  
**Maria Antonietta Perino**, Thales Alenia Space, Italy  
**Christian Sallaberger**, Canadensys Aerospace, Canada  
**Annelie Schoenmaker**, Zero2Infinity, Spain  
**Alexandra Seneta**, Department of Industry & Science, Australian Government, Australia  
**Michael Simpson**, Secure World Foundation, USA  
**Noel Siemon**, Australia  
**Vern Singhroy**, Canadian Center for Remote Sensing, Canada  
**Geoffrey Steeves**, University of Victoria, Canada  
**Lucy Stojak**, HEC Montreal, Canada  
**Chris Stott**, ManSat LLC, Isle of Man  
**Danijela Stupar**, International Space University, France  
**Su-Yin Tan**, University of Waterloo, Canada  
**Alain Wagner**, Airbus Defence and Space, France  
**Chris Welch**, International Space University, France  
**Ray Williamson**, Secure World Foundation, USA  
**Pete S Worden**, Breakthrough Foundation, USA  
**Soyeon Yi**, Korean Astronaut, Republic of Korea  
**Kazuya Yoshida**, Tohoku University, Japan  
**Vasilis Zervos**, International Space University, France  
**Olga Zhdanovich**, MODIS, Netherlands

## ASSOCIATE FACULTY

**Oleg Atkov**, Joint Stock Company Russian Railways, Russia  
**Sheila Bailey**, NASA Glenn Research Center, USA  
**Isabelle Bouvet**, EADS, France  
**Ben Finney** (+), University of Hawaii at Manoa, USA  
**Hansjörg Dittus**, DLR, Germany  
**Yoshinori Fujimori**, JAXA, Japan  
**Gerhard Haerendel**, Max-Planck-Institut für Extraterrestrische Physik, Germany  
**Vladimir Lytkin**, Kaluga State University, Russia  
**William Marshall**, Cosmogia Inc., USA  
**David Miller**, University of Oklahoma, USA  
**Yoshiki Morino**, Waseda University, Japan  
**Todd Mosher**, Sierra Nevada Corp, USA  
**Didier Schmitt**, ESA-ESTEC, The Netherlands  
**Isabelle Scholl**, Intitute for Astronomy - University of Hawaii, USA  
**Paul Henry Tuinder**, European Commission, Belgium

## ADJUNCT FACULTY

**Andrew Aldrin**, United Launch Alliance, USA  
**Heather Allaway**, Texas A&M University, USA  
**Audrey Allison**, The Boeing Company, USA  
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**Joseph Pelton**, Dean Emeritus, International Association for the Advancement of Space Safety (IAASS), USA

(+): Deceased

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**Soyeon Yi**, Astronaut, South Korea.  
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## ISU POINTS OF CONTACT

### USA

**Mr. Steven Brody**  
 ISU North American Office  
 PO Box 7470  
 Arlington, VA 22207-0470  
 Tel: +1 202 997 4910  
 E-mail: nao@isunet.edu

### CANADA

**Ms. Lucy Stojak**  
 HEC Montreal  
 3000, Chemin de la Côte-Sainte-Catherine  
 Montreal, Quebec H3T2A7 Canada  
 Tel: +514 939 1861  
 Email: lucy.stojak@hec.ca

### AUSTRALIA

**Mr. Michael Davis**  
 ISU Board Member  
 76 Hill Street  
 Adelaide SA 5000  
 mdavis@spacelaw.com.au  
 Tel: +61 882675216

## ISU LIAISONS

### AUSTRIA

**Ms. Michaela Gitsch**  
 FFG - Aeronautics & Space Agency  
 Sensengasse 1 - A-1090 Wien  
 Email: michaela.gitsch@ffg.at  
 Tel: +43 (0)5 77 55 3302  
 Fax: +43 (0)57755-93302

### PEOPLE'S REPUBLIC OF CHINA

**Mr. Junting Dong**  
 Human Resources Department  
 China Aerospace Science and Technology Corporation  
 No. 16, Fucheng Road  
 Haidian District  
 Beijing, 100048  
 Email: aford@vip.qq.com

Tel: +86 10 6837 0424  
 Mobile: +86 13 31137 9882

### GERMANY

**Mr. Daniel Voigt**  
 German Aerospace Center (DLR)  
 International Relations  
 Linder Hoehe, 51147 Koeln  
 Email: daniel.voigt@lr.de  
 Tel: +49 2203 601 2087  
 Fax: +49 2203 601 3907

### INDIA

**Ms. Niveditha B K**  
 ISRO Headquarters  
 New bel Road  
 Bangalore - 560 231  
 Email: nivedabk@isro.gov.in  
 Tel: 080-22172441

### ITALY

**Ms. Sabrina Ricci**  
 Agenzia Spaziale Italiana  
 Unità Alta Formazione (UAF)  
 Via del Politecnico s. n. c.  
 00133 Roma  
 Email: sabrina.ricci@asi.it  
 Tel: +39 6 8567 855

### NORWAY

**Ms. Marianne Moen**  
 Norwegian Space Centre  
 P.O. Box 113 Skøyen  
 0212 Oslo  
 Email: marianne.moen@spacecentre.no  
 Tel: +47 22 51 18 18  
 Fax: +47 22 51 18 01

### SLOVENIA

**Mr. Milos Krmelj**  
 Moskriceva 2  
 1000 Ljubljana  
 Email: milos.krmelj@guest.arnes.si  
 Tel: + 34 328 02088  
 Fax: + 34 932 806 395

### UNITED KINGDOM

**Mr. Jeremy Curtis**  
 Head of Education and Skills  
 UK SPACE AGENCY  
 Polaris House, North Star Avenue,  
 Swindon SN2 1SZ  
 Tel 01235 446460 (Harwell),  
 01793 41 8070 (Swindon)  
 Email: jeremy.curtis@ukspaceagency.bis.gsi.gov.uk  
 www.ukspaceagency.bis.gov.uk

## ISU ALUMNI ASSOCIATIONS

### AFRICA ISU

African Alumni Association  
<http://www.isu-aaa.org>  
<https://www.facebook.com/groups/41160815723/?fref=ts> contact@isu-aaa.org

### USTRALASIA

<https://www.facebook.com/groups/ozisualumni/?fref=ts>

### CANADA CAISU

**(Canadian Alumni of ISU)**  
<http://www.caisu.org> <https://www.facebook.com/groups/caisu/?fref=ts>

### FRANCE

ISU-France Alumni Association  
<https://www.facebook.com/groups/ISU.France/>

### GREECE

ISU Greek Alumni Network  
 On linkedin.com  
<https://www.facebook.com/groups/561814420533121/?fref=ts>

### ISRAEL

ISU-Israel General point of contact:  
 Mr Ofer Lapid  
 ofer.lapid@community.isunet.edu  
 Scholarship champion:  
 Mr Daniel Rockberger  
 daniel.rockberger@community.isunet.edu  
<https://www.facebook.com/groups/ISU.Israel/>

### JAPAN

Japanese Alumni Society for the ISU (JASI)  
<http://www.jasi.jp>  
 kidachi@kazuhi.to

### THE NETHERLANDS

Remco Timmermans  
<https://www.facebook.com/groups/139968992705753/>

### NORDIC

<https://www.facebook.com/groups/ISU.Nordic.Alumni/>

### RUSSIA

<https://www.facebook.com/groups/383259485072653/>

### TURKEY

Turkish Alumni network (ISUTR)  
<http://www.isutr.org> info@isutr.org

### UNITED KINGDOM

<https://www.facebook.com/groups/ISU.UK.Alumni/>

### USA

ISU\*USA Alumni Association  
<http://isu-usa.org>  
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# ISU COMMUNITY

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## INTERNATIONAL ORGANIZATIONS
























-  EUMETSAT
-  European Commission
-  European GNSS Agency (GSA)
-  European Space Agency (ESA)














## GOVERNMENT ORGANIZATIONS

-  Agenzia Spaziale Italiana (ASI)
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-  Canadian Armed Forces
-  Canadian Space Agency (CSA)
-  Centre National d'Etudes Spatiales (CNES)
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-  Direction Générale de la Recherche et de l'Innovation (DGRI)
-  Eurometropolis of Strasbourg
-  European GNSS Agency
-  European Parliament
-  European Space Agency (ESA)
-  Government of South Australia
-  Indian Space Research Organization (ISRO)
-  Isle of Man
-  Israeli Space Agency (ISA)
-  Japan Aerospace Exploration Agency (JAXA)
-  National Aeronautics and Space Administration (NASA)
-  Netherlands Space Office
-  Norwegian Space Agency
-  Port Autonome de Strasbourg
-  Région Grand Est
-  Salisbury Council, Australia
-  The Sir Ross and Sir Keith Smith Fund
-  UK Space Agency
-  United Arab Emirates Space Agency









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-  Airbus Defence and Space
-  Arianespace
-  ASTROCALE
-  ATG Europe
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-  Boeing
-  Canadensis Aerospace Corporation
-  China Academy of Science
-  China Aerospace Science and Industry Corporation (CASIC)
-  China Great Wall Corporation
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-  Design & Data
-  EUROCONSULT
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-  Manx Precision Optics














-  NanoRacks
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-  NOVA SYSTEMS
-  Odyssey Space Research
-  Office Depot
-  OHB - System AG
-  OMANTEL
-  Pitney Bowes
-  Rocketsan Missiles
-  SES
-  SODERN
-  SPIRE
-  VIRGIN ORBIT








































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-  Aerospace Corporation
-  Altenklingen Foundation
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-  Arthur C. Clarke Foundation
-  Asia-Pacific Satellite Communications Council (ASPCC Korea)
-  Association of Space Explorers (ASE)
-  Canadian Foundation for the International Space University (CFISU)
-  Commonwealth Scientific and Industrial Research Organisation (CSIRO)
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-  Heinlein Prize Trust Foundation
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-  Secure World Foundation
-  Stichting Space Professionals Foundation (SSPF)
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-  The Planetary Society (Jim Burke)
-  Tohoku University
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-  Tom Willems
-  Barbara Wood

PROGRAMS	ADMISSION REQUIREMENTS	FEES	DEADLINES
<b>MSS</b>	<p>Applicants must have a Bachelor's Degree or the equivalent, including 3 years of studies as a minimum, awarded by an accredited university.</p> <p>Preference is given to applicants holding higher academic degrees and to applicants with professional experience in industry, government agencies or academic institutions</p>	<p>The tuition fees for MSS 2020-2021 are <b>EUR 25,000</b>.</p> <p>A registration fee of EUR 400 will be charged each time the student registers for a subsequent module or series of modules during an additional academic year. Students who choose this option must complete their degree within seven years. The tuition fees for each module are as follows:</p> <ul style="list-style-type: none"> <li>☛ Module 1: EUR 5,500</li> <li>☛ Module 2: EUR 7,500</li> <li>☛ Module 3: EUR 3,500</li> <li>☛ Module 4: EUR 3,500</li> <li>☛ Electives: EUR 2,000</li> <li>☛ Module 5: EUR 3,000</li> <li>☛ MSS Year B (optional): EUR 7,500</li> </ul>	<p><b>Application deadline: 15 March</b></p> <p>MSS 2020-2021 applicants who do not require funding through ISU may apply until <b>30 June</b>.</p>
<b>SSP</b>	<p>Applicants must have 3 years of studies as a minimum, awarded by an accredited university. Under exceptional circumstances, appropriate professional experience in fields relevant to the main academic content of SSP could be considered by the Admissions Committee as contributing to achieving the equivalence of the required academic qualification.</p> <p>Preference is given to applicants holding higher academic degrees and to applicants with professional experience in industry, government agencies or academic institutions.</p>	<p>The fees for the SSP20 are <b>EUR 18,500</b>. Payment may also be made in US dollars at the inter-bank exchange rate on the date of payment.</p> <p>This fee includes tuition, accommodation and meals. Travel to and from the host site and medical insurance are not included.</p> <p>Participants who attend both SSP20 and the MSS 2020-2021 pay for the two programs total fees of 37,000 Euros. Participants who are admitted to the MSS and have previously completed the ISU SSP or the Southern Hemisphere Space Studies Program (SHSSP) pay reduced MSS tuition fees of 22,000 Euros.</p>	<p><b>Application deadline: 31 January</b></p> <p>SSP19 applicants who do not require funding through ISU may apply until 31 March.</p>

# ADMISSION

PROGRAMS	ADMISSION REQUIREMENTS	FEES	DEADLINES
<b>CSP</b>	Open to all graduate-level students	<p>Fee: <b>14,892USD</b>. Registration will be complete through the payment of a 1,000USD deposit to the Finance Unit. There is a \$20 application fee.</p>	Applications are due by <b>31 April</b>
<b>SHSSP</b>	<p>Open to participants from all disciplines, the Southern Hemisphere Space Studies Program is designed to meet the needs of:</p> <ul style="list-style-type: none"> <li>☛ Professionals in industry, government and the defense services</li> <li>☛ Graduate researchers</li> <li>☛ Undergraduate students in the final two years of their studies.</li> </ul>	The 2020 program fee is <b>14,000AUD</b> . The program fee includes all tuition, accommodation, meals and airport transfers.	Application deadline: <b>31 October</b>
<b>ESC</b>	The course provided an overview of space and of space-related subjects for professionals of diverse backgrounds, including marketing finance, law and contracts management.	<b>3750€</b> , which includes the course fee, all course materials, all lunches, a reception and two evening meals. Registration will be complete through the payment of a 500€.	The payment of the remaining fees is due no later than 2 weeks before the start of the course.



*"Being a Heinlein Prize Trust scholarship recipient gave me the opportunity to travel to the other side of the world to reach my full potential as a master's student in the space community. Thanks to this scholarship, I worked at the prestigious Tohoku Space Robotics Lab in Japan in the Summer 2019, where I had the opportunity to experience a new culture as well as to apply everything ISU has taught me in a real life setting."*

Stephanie Rocha  
MSS19, USA.

# FUNDING

The International Space University receives support from industry, agencies and international organizations to assist applicants who are unable to pay the full amount of the fees and are seeking funding assistance through the institution.

Funding is provided to selected applicants, covers part of the tuition fees, and is paid directly to ISU by the sponsoring organization.

Financial support is granted on the basis of:

- ☛ Academic and professional merit
- ☛ Demonstrated efforts in personal fundraising
- ☛ Demonstrated financial need
- ☛ For financial support no extra document is required other than the application form.

To be eligible for such funding, students should send their applications to the ISU Admissions Office no later than the following deadlines:

## MASTER OF SPACE STUDIES PROGRAM

Application deadline: 31 March  
MSS 2020-2021 applicants who do not require funding through ISU may apply until 30 June. .

## SPACE STUDIES PROGRAM

Application deadline: 31 January  
SSP20 applicants who do not require funding through ISU may apply until 31 March.

## SPECIFIC SCHOLARSHIP OPPORTUNITIES

Specific scholarship opportunities are available through:

- ☛ ASI (Italy)
- ☛ American Astronautical Society
- ☛ Centre National d'Études Spatiales (CNES)
- ☛ EUMETSAT European Space Agency (ESA)
- ☛ Ilan Ramon Scholarship Fund
- ☛ UK Space Agency
- ☛ Norwegian Space Center
- ☛ Eurometropolis of Strasbourg
- ☛ Région Grand Est
- ☛ SSPF
- ☛ South Australian Government

For more information, please visit the ISU website:  
<http://www.isunet.edu>

## POINT OF CONTACT

### For further information:

Admissions Office  
International Space University  
Parc d'Innovation  
1 rue Jean-Dominique Cassini  
67400 Illkirch-Graffenstaden  
France  
Tel: +33 (0)3 88 65 54 30  
Fax: +33 (0)3 88 65 54 47  
E-mail: [admissions@isunet.edu](mailto:admissions@isunet.edu)

### For further information about ISU programs in Australia:

Mr. Michael Davis  
76 Hill Street  
North Adelaide SA 5006  
Email: [mdavis@spacelaw.com.au](mailto:mdavis@spacelaw.com.au)  
Tel: +61 419 170251



## INTERNATIONAL SPACE UNIVERSITY

Central Campus  
1, rue Jean-Dominique Cassini  
Parc d'innovation  
67400 Illkirch-Graffenstaden  
France

Tel: +33 (0)3 88 65 54 30

Fax: +33 (0)3 88 65 54 47

[admissions@isunet.edu](mailto:admissions@isunet.edu)

[www.isunet.edu](http://www.isunet.edu)