



7th CanSat Leader Training Program (CLTP 7)

CLTP Office at UNISEC
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Outline

- Introduction of UNISEC, UNISEC-Global and Vision 2020-100
- CanSat Leader Training Program (CLTP)
- Proposal: Korea-Japan student CanSat information exchange event
- Other information
 - Tools for Hands-on training
 - UNISEC-Global Activities in 2016
 - Micro/Nano Satellite Mission Idea Contest
 - UNISEC-Global Meeting
 - De-orbit Devices Competition

Introduction - UNISEC (Japan)

- UNISEC: “University Space Engineering Consortium”
 - UNISON: UNISEC Student Organization
 - UNISAS: UNISEC Alumni Organization
- NPO/NGO to facilitate/promote university level students’ practical space development activities, such as designing, manufacturing and launching small satellites and hybrid rockets.
- Established in 2002
- 70 laboratories/groups from 50 universities
- 923 student members, 276 individual supporters and 21 corporate supporters
- 3 pillars: Human resource development, Technological development, Outreach



Achievement of UNISEC-Japan

37 university satellites launched in 12 years



From CanSat to CubeSat, Nano-Satellite
From Educational purpose to Practical application

What is UNISEC-Global?

- UNISEC-Global is a consortium of UNISEC Local Chapters
- A UNISEC Local Chapter is a consortium of university members which consist of professor and students in each country/region.



Vision 2020-100

- *“By the end of 2020, let’s create a world where university students can participate in practical space projects in more than 100 countries.”*



If people in more than 100 countries believe so, and help each other, it would be possible to realize it.

Status Quo of UNISEC-Global

POCs in 36 regions/countries, namely, **South Africa, Angola, Namibia, Egypt**, Ghana, Kenya, **Nigeria, Tunisia, Bangladesh**, Korea, Mongolia, the Philippines, Singapore, Taiwan, Thailand, **Turkey**, Australia, Indonesia, Saudi Arabia, Canada, USA, Guatemala, Costa Rica, **Mexico, Peru**, Brazil, Bulgaria, **Italy, Samara (Russia)**, Switzerland, **Germany**, Slovenia, New Zealand, **Lithuania** and **Japan**.



13 Local Chapters and 1 Association of Local Chapters have been acknowledged.

CanSat activities in the world

- ARLISS (CanSat launch experiment in Nevada, USA)
- AIAA CanSat Competition
- ESA CanSat Competition
- CanSat Leader Training Program (CLTP) – focusing on instructor's training
- Many domestic activities

What is CLTP?

CLTP was established in 2011 to contribute to capacity building in basic space technology. CLTP will enable participants to do the following:

- Experience the whole cycle of CanSat development including sub-orbital launch experiments through hands-on training.
- Conduct CanSat program in their countries for senior-high school and undergraduate university students.
- Join “international CanSat education network”



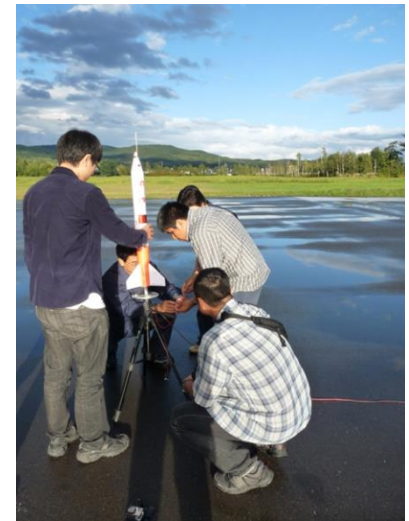
CanSat
Manufacturing



Vibration Test



Paper craft Rocket



Launch Experiment

CLTP History & Participants (56 participants from 28 countries)

CLTP1 (Wakayama Univ. in Feb-March, 2011)

12 from 10 countries, namely Algeria, Australia, Egypt, Guatemala, Mexico, Nigeria, Peru, Sri Lanka, Turkey (3), Vietnam.

CLTP2 (Nihon Univ. in Nov-Dec, 2011)

10 from 10 countries, namely Indonesia, Malaysia, Nigeria, Vietnam, Ghana, Peru, Singapore, Mongolia, Thailand, Turkey.

CLTP3 (Tokyo Metropolitan Univ. in July-August, 2012)

10 from 9 countries, namely Egypt (2), Nigeria, Namibia, Turkey, Lithuania, Mongolia, Israel, Philippines, Brazil.

CLTP4 (Keio Univ. in July-August, 2013)

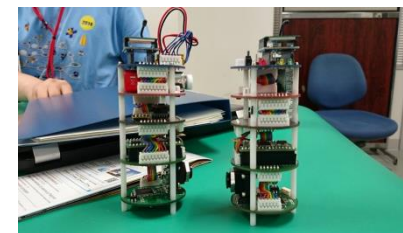
9 from 6 countries, namely Mexico(4), Angola, Mongolia, Philippines, Bangladesh, Japan.

CLTP5 (Hokkaido Univ. in Sept 8-19, 2014)

7 from 5 countries, namely Korea (2), Peru, Mongolia, Mexico (2), Egypt.

CLTP6 (Hokkaido Univ. in August 24-Sept 3, 2015)

8 from 8 countries, namely Bangladesh, Egypt, Mexico, New Zealand, Angola, Turkey, Tunisia, Austria



★ Short movie of CLTP6



Post- CLTP Activities – Local CLTP and CTP

- CLTP (teaching instructors) in Turkey and Mexico
- CTP (teaching students) in Egypt, Ghana, Peru, Mexico, Mongolia, Nigeria and the Philippines, etc.
- National CanSat Competitions in Lithuania, Mongolia, Turkey, Peru, the Philippines, etc...
- Participation in the international CanSat Competition from Egypt, Peru, Mongolia, Turkey, Guatemala, etc...

The 5th CanSat Training Program (CTP5)

Organized by
Space Systems Technology Laboratory (SSTLAB), Aerospace Engineering Department,
Faculty of Engineering, Cairo University
In Cooperation with
University Space Engineering Consortium – Egypt (UNISEC-Egypt)

What is CTP?
The CanSat Training Program (CTP) was launched in 2011 at the Space System Technology Laboratory (SSTLAB) to contribute to capacity building in space technology and improve teaching methods based on space engineering education. In the next 5 years, education using CanSat will be expected in about 100 nations in the world.

History
CTP1: July 20 – August 1, 2011
CTP2: January – February, 2012
CTP3: January – February, 2013
CTP4: February – March, 2014

What is CanSat?
The CanSat provides an affordable way to acquire the students with the basic knowledge to many challenges in building a satellite. Students will be able to design and build a small electronic payload that can fit inside a coke can. The CanSat is launched and ejected from a rocket or a balloon. By the use of a parachute, the CanSat slowly descends back to earth performing its mission while transmitting telemetry. Post launch and recovery data acquisition will allow the students to analyze the cause of success and/or failure.

What is SSTLAB?
Founded and operated by students, The Space Systems Technology Laboratory (SSTLAB) is a student based running laboratory, started in August 2011. The SSTLAB mission is to promote space science and engineering education at Cairo University.

What is UNISEC-Egypt?
University Space Engineering Consortium (UNISEC) is a non-profitable organization (NPO) to support practical space development activities in universities and colleges, such as small satellite and hybrid rockets. It was founded in Japan in April 2002. In November 2013, UNISEC Global was acknowledged and in November 2014 UNISEC-Egypt was acknowledged as the local chapter of UNISEC-Global in Egypt.

The following technical topics will be covered in CTP5

- Programming with Arduino microcontroller board.
- Using different types of sensors: mems IMUs, temperature, pressure and others.
- Design and implementation of ground stations.
- Design and fabrication of structure and recovery systems.
- Design and fabrication of PCB electronics.

Date and Time
CTP5 will be held from January 27 – February 9, 2015, From 9:00 AM until 7:00 PM.

Venue
Space System Technology Laboratory,
Department of Aerospace Engineering Building
40000, 3F, Faculty of Engineering, Giza, Egypt.

For further information
Email : info@sstlab-eg.org
Facebook: <https://www.facebook.com/SSTLAB>

Logos: SSTLAB, AE, UNISEC EGYPT, University Space Engineering Consortium

The 5th CanSat Training Program in Egypt

CanSat in Egypt

- A CLTP1 graduate (professor of Cairo Univ) started CTP (Cansat Training Program), and conducted 5 times.
- A CLTP5 graduate (young researcher, Egypt-Japan Univ) organized CanSat training program for 30 students.
- Participation in ARLISS from 2014



CanSat in Ghana

A CLTP2 graduate (young researcher) persuaded university management and organized CanSat project and event.



(May 15, 2013, All Nations University College Main Campus, Koforidua, Ghana)

CanSat in Turkey

Organized CLTP twice.

In 2016, a new program to teach 100 high school teachers will be held.

Participation in international competition.



UTEB
ULUSLARARASI UZAY TEKNİKLERİ VE EĞİTİM ENSTİTÜSÜ

CanSAT Tasarım ve İmalat Yaz Kursu

CANSAT Nedir?

CanSAT eğitimi, uzay sistemleri alanında kendini geliştirmek isteyen farklı disiplinlerden öğrencilere uydur tasarımı ve uzay teknolojileri geliştirme konusunda ileride karşılaşılabilecekleri sorunları önceden gözlemlemek, onlarda çözüme yönlendiren bir zihin yapısı ve tecrübe kazandırmayı amaçlayan uygulamalı bir model uydur tasarımı ve üretim yöntemidir. CanSAT Kulu kola büyüklüğünde ve üzerinde çeşitli sensörler, devreler, güneş panelleri ve mekanik aksam bulunduran minyatür yapıdaki uyduların en küçüğüdür.

Amaç

Dünyanın önde gelen uzay ajanslarında (JAXA, NASA veya EASA vb.) çalışan mühendislerin %90'a yakını lise veya üniversite yıllarında bir CanSat tasarımı ve imalatı yapmış mühendislerdir. Uzay teknolojileri ve uygulamalı uzay mühendisliği alanında en etkili eğitim yöntemi olan CANSAT katılımcılara ekip çalışması ile disiplinler arası sistem mühendisliği ile kendi uydularını tasarlama, imal etme ve fırlatma fırsatı sunmaktadır.

CanSAT Temelli Uzay Eğitimi:

- Etkili bir disiplinler arası eğitim aracıdır.
- Düşük maliyetle proje gerçekleştirilir.
- Görev analizi yapılarak proje süreçleri planlanır.
- Tasarım, imalat, test ve fırlatmaya kadar tüm süreç uygulamalı olarak tecrübe edilir.
- Risk analizleri yapılır.
- Görev sonu veri analizi yapılır ve görev başarı durumu değerlendirilir.

Eğitim Adımları:

- Görev Analizi ve sistem geliştirme.
- Donanım entegrasyonu.
- Yazılım geliştirme.
- Microdenetleyici programlama.
- GPS entegrasyonu.
- Güneş panelli entegrasyonu ve güç sistemi.
- Telemetri sistemi entegrasyonu.
- Alçalma ve iniş sistemleri tasarımı.
- Mekanik tasarım.
- Yer İstasyonu geliştirme.
- Test ve fırlatma.
- Görev sonrası veri analizi.

Kimler Katılmalı?

Uzay alanında çalışmak isteyen tüm mühendislik, temel bilimler ile Astronomi ve Uzay Bilimleri öğrencileri veya mezunları katılabilir.

Tarih : 16-29 Haziran 2014
Yer : İTÜ Ayazağa Kampüsü Maslak/İstanbul
Ücret : 1500 TL
İletişim : UTEB.org.tr@gmail.com

Kursa dahil olanlar:

- Kurs dokümanları ve uygulamalı dersler.
- Uydur yapımında kullanılan malzemeler.
- Fırlatma.



Launching
Landing with parachute

CLTP7

Date

- ✓ Online Lecture: August, 2016
- ✓ Hands-on Training: **Sep21-Oct1, 2016**
- ✓ Optional Training: Oct2, 2016

Venue


- ✓ **Hokkaido University (Sapporo)**
- ✓ **Uematsu Electric Co,Ltd (Akabira)**

Eligibility

- ✓ Academic researchers, instructors, and graduate students who belong to universities or research institutes. A Ph.D. holder is preferable.
- ✓ Company employees who wants to use CLTP as an education and training program.



The 7th CanSat Leader Training Program (CLTP7)

Second Announcement Organized by  **UNISEC**
University Space Engineering Consortium

September 2016, Hokkaido, Japan

What is CLTP?

The CanSat Leader Training Program (CLTP) was established in 2010 to contribute to capacity building in space technology and improve teaching methods-based space engineering education. Education using CanSat will be available in more than half of nations (about 100 nations) in the world by the year 2020.

History

1st CLTP : Feb 14-Mar 20, 2011, Wakayama Univ
2nd CLTP : Nov 14-Dec 14, 2011, Nihon Univ
3rd CLTP : Jul 17 -Aug 20, 2012, TMU
4th CLTP : July 22-Aug 16, 2013, Keio Univ
5th CLTP : Sep 8-19, 2014, Hokkaido Univ
6th CLTP : Aug 24-Sep 4, 2015, Hokkaido Univ

Expected Participants

Future leaders and instructors of CanSat training, belonging to Universities or Research Institutes



What is CanSat?

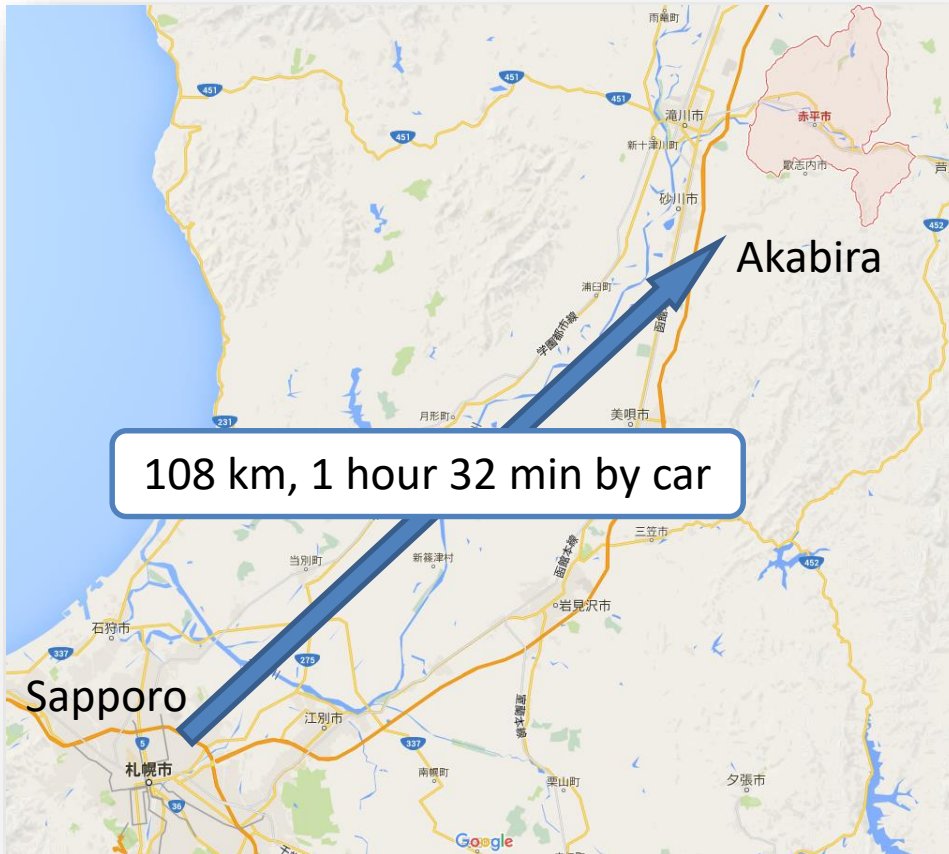
The CanSat provides an affordable way for students to acquire the skills and knowledge to make their own satellite, building a satellite, to design and build a payload that can be launched on a CanSat is a small satellite that can be launched on a rocket, parachute, or back to earth per its mission. teleme... allow the student... the cause of su... failure.

Join us!

2016 (TBC)
Oct 1, 2016
Final charge) : Oct 2, 2016
University (Sapporo) and
Uematsu Electric Co., Ltd (Akabira)
Registration Due: March 15, 2016
Participation fee:
- Academic Fee: 300,000 yen
- Corporate Fee: 500,000 yen

CLTP Office
c/o University Space Engineering Consortium (UNISEC)
E mail: secretariat@cltp.info
URL : www.cltp.info

CLTP7 Location - Hokkaido University and Uematsu Electric Co.,Ltd



CanSat Mapping=>Satellite Archive

Sharing and Archiving the results of CanSat projects on Google-Earth

<http://cansat.archiving.jp/>

(domain will be changed to <unisec.info> and real nano-satellites will be included by the end of March, 2016)



Proposal of Korea-Japan student CanSat Information Exchange Event

- Winners in CanSat competition in each country get together to show their projects and results. Firstly, we start it between Korea and Japan, and if it works well, we can extend it to other countries as well.
- Potential opportunity:
 - Oct 1-2, 2016
 - CLTP7 graduation
 - CanSat competition for high school students



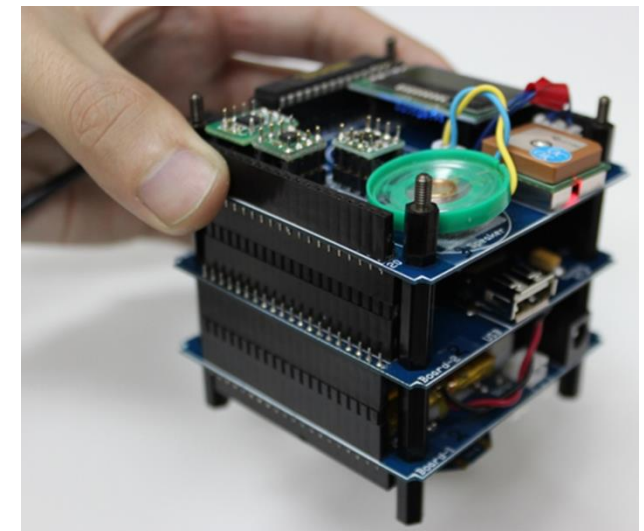
Tools for Hands-on training of satellite engineering

- iCanSat (ver.6)

The learner can acquire basic satellite engineering using i-CanSat which includes knowledge about system engineering, on-board computer (OBC), sensors, actuators, assembly, integration and testing (AI&T) and project management.

- HEPTA (7cm cubic model satellite)

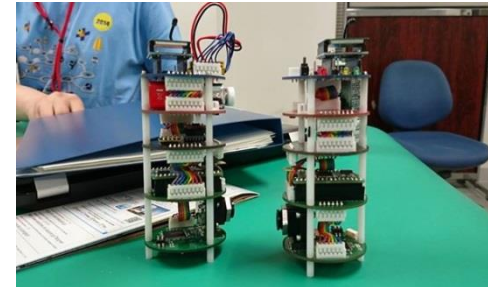
The HEPTA-sat is composed of 6 subsystems. You can learn **how each subsystem functions** and **how to integrate subsystems into a satellite** through experiencing the process of assembly, integration including programming & system implementation and test.



UNISEC-Global Activities in 2016

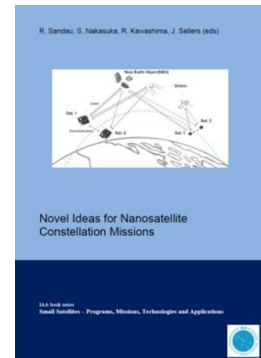
Global programs can be localized in each region, and a local program can become a global program.

- 7th CanSat Leader Training Program (CLTP)
- 4th Mission Idea Contest (MIC) for Micro/Nano Satellite Utilization
- 4th UNISEC Global Meeting
- 7th Nano-satellite Symposium



Mission Idea Contest (MIC) for Micro/nano satellite utilization - From Concept to Reality

- Objective: Encourage innovative exploitation of micro/nano-satellites
- Regional coordinators: 33 regions
- History
 - MIC1 in Tokyo, March 14, 2011
 - MIC2 in Nagoya, Oct. 10, 2012
 - PreMIC3 Workshop in Tokyo, Nov. 23, 2013
 - MIC3 in Kitakyushu, Nov 19, 2014
 - PreMIC4 Workshop in Tokyo, July 4, 2015



<http://www.spacemic.net>

Process and Timeline

Application Submission : Deadline April 4, 2016

Submitted abstracts will be evaluated by review team



Notification of Finalist: June 30, 2016

Title of paper and finalist(s)' name and affiliation will be published on the website.



Final Paper Submission: September 1, 2016

Submitted final paper will be distributed to review team for evaluation



**Final Presentation in Istanbul on October 21, 2016
at the 4th UNISEC-Global Meeting**

4th UNISEC-Global Meeting

- Date: Oct 21-23, 2016
- Venue: Istanbul Technical University, Turkey
- Program :
 - MIC4, Deorbit Device Competition
 - Activity Report
 - Group Discussion
 - Student Session (UNISON-Global)
 - Acknowledgement of new local chapters
- Applications Due Date: April 4, 2016



<http://www.unisec-global.org/>

7th Nano-Satellite Symposium

- Date: Oct 17-20, 2016
- Venue: Istanbul Technical University, Turkey
- Applications Due: April 30, 2016
- Various sessions on Nano-satellite



<http://nanosat7th.itu.edu.tr>

Deorbit device competition



- Contribution to long term sustainability of space activities
- Collecting the existing and future ideas on deorbit device which suits CubeSat. (1U, 2U, 3U)
- Call for paper including evaluation criteria is available at website.

Contact

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(UNISEC-Japan)

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