

TOHOKU UNIVERSITY SCIENCE SUMMER PROGRAM -University of Washington 2017

2017.6.19-7.14

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Tohoku University Science Summer Programs–University of Washington 2017 List of Paticipants

Number	Name of Student		College	Grade	Gender	Number of the UW study abroad insurance	Notes
	Family name	First name					
1	Bun	Vipech	Arts & Sciences	Freshman	M	IT20010673	
2	Chu	Marcus	Engineering	Sophomore	M	IT20009335	
3	Ding	Qilang (Damon)	Arts & Sciences	Freshman	M	IT20010370	
4	Escalona	Zoe	Engineering	Sophomore	F	IT20010748	
5	Hejazi	Yasmine	Arts & Sciences	Sophomore	F	IT20011052	
6	Kane	Reva	Arts & Sciences	Sophomore	F	IT20010579	
7	Lian	Chuanyu (Sheron)	Engineering	Sophomore	F	IT20010802	
8	Lockwood	Matthew	Engineering	Freshman	M	IT20011017	
9	Shah	Helly	Arts & Sciences	Freshman	F	IT20010275	
10	Tiotuico	Camille	Engineering	Sophomore	F	IT20010579	
11	Truong	Cindy	Engineering	Sophomore	F	IT20010687	
12	Waddell	Sarah	Engineering	Freshman	F	IT20010027	
13	Wang	Yiren (Ethan)	Arts & Sciences	Sophomore	M	IT20010322	
14	Yamagata	Nana	Engineering	Sophomore	F	IT20010688	
15	Yeager	Huatsern	Engineering	Sophomore	M	IT20010319	
16	Yeung	Alex	Engineering	Sophomore	M	IT20010240	

2 Tohoku University Science Summer Program (TSSP)_UW2017 Daily Schedule

Tohoku University Science Summer Program (TSSP)_UW 2017 Daily Schedule							
WEEK 1							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	18-Jun	19-Jun	20-Jun	21-Jun	22-Jun	23-Jun	24-Jun
AM	Arrive in Sendai	9:00-12:00 <u>Opening Ceremony & Orientation</u> Introduction to Tohoku University (Prof. Kasukabe) Introduction to UW Summer Program for Creative Science and Engineering (UW-SPCSE) at the Tohoku University (Prof. Ohuchi) <u>Self-introduction (3 min PPT x 16=48 min)</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	9:00-12:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Takahashi</u> <u>Self-introduction in Japanese</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	9:30-10:00 <u>Introduction to exciting and stimulating Experiments</u> Prof. Ohuchi 10:00-10:30 <u>Introduction to Quntum Theory</u> Prof. Kasukabe 10:30-12:00 <u>Challenging Experiments for Quantum Theory (1)</u> Prof. Kasukabe Student Laborarories (A06) Kawauchi Campus	8:50-11:30 Lecture and Lab Visit 2 <u>Introduction to aircraft design</u> Prof. NAKAMURA Conference Room, 2nd Floor, 1st Building (C09) Institute of Fluid Science (流体科学研究所、第1棟2階会議室) Katahira Campus (片平キャンパス)	9:00-12:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Takahashi</u> <u>Preparation of super global cafe</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	9:00-18:00 Field Trip (Yamadera) Prof. Ohuchi & Prof. Kasukabe
		Lunch (with TU students)	<u>Japanese talk lunch (with TU students)</u>	Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	
PM		13:00-16:00 <u>Japanese Culture 1 Ikebana (Flower arrangement)</u> Prof. Chen Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	13:30-15:30 Lecture and Lab Visit 1 <u>Searching for a clue to a mystery of the universe with neutrinos</u> Associate Prof. Shimizu Research Center for Neutrino Science (I04) Main Seminar Room (ニュートリノ科学研究センター 大会議室) Graduate School of Science Aobayama Campus	13:00-16:00 <u>Challenging Experiments for Quantum Theory (2)</u> Prof. Kasukabe Student Laborarories (A06) Kawauchi Campus	13:00-16:00 <u>Paper Aircraft Competition 1</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	13:00-16:00 <u>Paper Aircraft Competition 2</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	09:04仙台台発 10:01山寺着 16:16山寺発 17:13仙台着 (842円 x2=1684円)

WEEK 2							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	25-Jun	26-Jun	27-Jun	28-Jun	29-Jun	30-Jun	1-Jul
AM		9:00-12:00 <u>Paper Aircraft Competition 3</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	9:30-11:30 Lecture and Lab Visit 3 <u>Biomolecular Design and Robotics</u> Prof. Murata Mechanical Engineering Bldg.2 (A03), 203 (青葉山キャンパス、機械系2号館 203会議室) Aobayama Campus	9:00-11:30 <u>Japanese Culture 2 Rinnouji Temple and Experience in Zen Meditation</u> Prof. Ohuchi & Prof. Kasukabe Rinnouji Temple (輪王寺)	9:30-11:30 Lecture 4 <u>The 2011 Tohoku Earthquake</u> Prof. Matsuzawa Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	9:00-12:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Takahashi</u> <u>Interview preparation</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	6:50-19:00 Field Work (Ishinomaki City)
		Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	
PM		13:00-14:30 <u>Interactive Japanese Language</u> <u>Instructor: Prof. Shimasaki</u> <u>Super global cafe</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	13:00-16:00 <u>Fastest Clip Motor Competition 1</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	13:00-16:00 <u>Fastest Clip Motor Competition 2</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	13:30-15:30 Lecture and Lab Visit 5 <u>Disaster Science and Japanese Disaster Culture</u> Prof. Ebina International Research Institute of Disaster Science (J31) Seminar room S100 (災害科学国際研究所セミナー室、S100、青葉山キャンパス) Aobayama Campus	13:00-14:00 <u>Interactive Japanese Language</u> <u>Instructor: Prof. Shimasaki</u> <u>Interview at cafeteria</u> Cafeteria (C01) Aobayama Campus 14:30-16:30 <u>Preparatory class for Field Work</u> <u>Prof. Shidara</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	



Tohoku University Science Summer Program (TSSP)_UW 2017 Daily Schedule

WEEK 3							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	2-Jul	3-Jul	4-Jul	5-Jul	6-Jul	7-Jul	8-Jul
AM		9:30-11:30 Lecture and Lab Visit 6 <u>Introduction to Spintronics</u> Prof. Ohno Laboratory for Nanoelectronics and Spintronics (E04) (ナノ・スピン実験施設) A401 Katahira Campus	9:30-11:30 Lecture and Lab Visit 7 <u>Robotics for Space Exploration and Disaster Response</u> Prof. Yoshida Research Building-M.A.E (A15) in Aobayama campus, Room 611 (機械・知能系共同棟(青葉山キャンパス A15)611室) Aobayama Campus	9:00-12:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Takahasi Restaurant</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	7:45-18:00 <u>Field Trip</u> (Toyota and Hiraizumi)	9:30-11:30 Lecture and Lab Visit 8 <u>Structural Metallic Materials for Industry Innovation</u> Prof. Yoshimi Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	
		Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)		Lunch (with TU students)	
PM		13:00-16:00 <u>Telecommunications and Radio Engineering</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	13:00-16:00 <u>Germanium Radio Building Competition 1</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus	13:00-16:00 <u>Germanium Radio Building Competition 2</u> Prof. Moriya Creative Engineering Center (D02) Aobayama Campus		13:00-16:00 <u>Japanese Culture3 Calligraphy</u> Prof. Watanabe Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	

WEEK 4							
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	9-Jul	10-Jul	11-Jul	12-Jul	13-Jul	14-Jul	15-Jul
AM		9:30-11:30 Lecture 9 <u>Welcome to Carbon Nanotube and Graphene</u> Prof. Saito Science Complex B (H03) 721 理学研究科合同B棟) 721 Aobayama Campus	9:30-11:30 Lectures 10 <u>1. Soft matter physics as a new frontier of condensed matter research</u> Prof. Kawakatsu <u>2. The protocell bridging between soft matter and cellular life</u> Prof. Imai Science Complex B (H03) 745, Aobayama Campus, Graduate School of Science (理学研究科合同B棟745室、北青葉山キャンパス) Aobayama Campus	9:30-11:30 Lecture and Lab Visit 11 <u>Human Information Systems and Information Contents</u> Prof. Kitamura M531, RIEC Main building (G10), Katahira Campus (電気通信研究所本館5階 M531 セミナー室、片平キャンパス) Katahira Campus	9:30-11:30 <u>Group Work Session</u> (Preparation for Experimental Reports and/or Wrap-up Presentation) Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	9:30-11:30 <u>Wrap-up Presentation of TSSP UW 2017</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	Depart from Sendai
		Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	Lunch (with TU students)	
PM		13:00-16:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Usui Town</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	13:00-16:00 <u>Interactive Japanese Language</u> <u>Instructor: Ms. Takahashi Speech in Japanese</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	13:00-16:00 <u>Japanese Culture 4 Aikido</u> Prof. Fujino Kawauchi Sub Arena, 3rd Floor (B05) (川内サブアリーナ棟3F) Kawauchi Campus	13:00-16:00 <u>Group Work Session</u> (Preparation for Experimental Reports and/or Wrap-up Presentation) Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	13:30-15:30 <u>Wrap-up Presentation of TSSP UW 2017</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus 16:00-16:45 <u>Closing Ceremony</u> 17:00-18:30 <u>Farewell Party</u> Aoba Memorial Hall (C03) Room No. 702, School of Engineering (工学研究科青葉記念会館 702室) Aobayama Campus	

3. Lecturer profile and outline of lectures

TOHOKU UNIVERSITY SCIENCE SUMMER PROGRAM_UW 2017

Lecture and Lab Visit #1

Searching for a clue to a mystery of the universe with neutrinos

Associate Professor Itaru SHIMIZU

Research Center for Neutrino Science

Research fields

- Elementary particle
- Atomic nucleus
- Cosmic ray
- Space physics

Room: Research Center for Neutrino Science (I04), Main Seminar Room

Graduate School of Science

(ニュートリノ科学研究センター 大会議室)

Outline of the lecture

There exists antimatter partner for all matter. However, our world is composed of matter only and there is no world of antimatter. Huge amounts of energy in the Big Bang produced matter and antimatter equally, so there must be a cause making an imbalance between matter and antimatter at some point in time. Its mechanism is an unsolved puzzle.

Neutrino, an elementary particle attracting physicists' attention, can be a clue to solve this big problem. Unlike other elementary particles, neutrinos are neutral without any charges, so matter and antimatter might be identical. It is a key to generate matter through a slight imbalance between matter and antimatter in the early universe. The only viable experimental probe for this neutrino nature is the "neutrinoless double-beta decay", which is a special type of undiscovered rare nucleus decay. Many physicists in the world are competitive in the double beta decay search using various types of detectors, aiming at the first discovery of this undiscovered phenomenon.

In this lecture, I will present a brief introduction of neutrinos and an overview of KamLAND-Zen, a world-leading double-beta decay experiment promoted by Tohoku University, using the neutrino detector operated in 1,000 m deep

underground.

Lecture and Lab Visit #2

Introduction to aircraft design

Associate Professor, Hisashi NAKAMURA

Institute of Fluid Science, Tohoku University

Research fields

Combustion engineering

Industrial furnaces and engines (reciprocating, gas turbine, rocket, etc.)

Quantum chemistry

Analytical chemistry

Lecture room:

Conference Room, 2nd Floor, 1st Building (C09), Institute of Fluid Science, Katahira Campus (片平キャンパス 流体科学研究所、第1棟2階会議室)

Outline of the lecture

Fundamental knowledge on aerodynamics and structural mechanics required for aircraft design will be introduced. Practical learning will be given through the observation of flight of paper planes.

Lecture and Lab Visit #3

Biomolecular Design and Robotics

Professor Satoshi MURATA

Department of Robotics,

Graduate School of Engineering

Research fields

- Structural DNA nanotechnology
- DNA computing
- Molecular Robotics

Room: Mechanical Engineering Bldg.2 (A03), 203, Aobayama campus
(青葉山キャンパス, 機械系2号館 203 会議室)

Outline of the lecture

We are now able to design nanostructures and computing systems based on rigorous design of DNA sequences.

The number of designable bases are now reaching the order of 100,000 bases and growing further. In this lecture, I will discuss what is going on in this research field, and will introduce molecular robot which is a molecular system made of designed molecular sensors, computers, and actuators.

Lecture #4

The 2011 Tohoku earthquake -Why did we fail to anticipate the M9 earthquake?-

Professor Toru MATSUZAWA

Graduate School of Science

Research Center for Prediction of Earthquakes and Volcanic Eruptions

Research fields

- Natural disaster science
- Solid earth planet physics

Room: Aoba Memorial Hall (C03) Room No. 702, School of Engineering
(工学研究科青葉記念会館 702 室)

Outline of the lecture

The M9 Tohoku earthquake on 11 March 2011 had a great impact on the seismologists all over the world. This is because Tohoku (northeastern Honshu, Japan) is located in one of the most investigated plate subduction zones and the interplate coupling was thought to be too weak to generate M9 earthquakes there. In the lecture, I explain an elementary seismology, what happened in the source region of the M9 earthquake, and reasons why we failed to anticipate the event.

Lecture #5

Disaster Science and Japanese Disaster Culture

Associate Professor Yuichi EBINA

Human and Social Response Research Division
Japanese Disaster Culture
International Research Institute of Disaster Science (IRIDeS)

Research fields

- Research of historical disasters.
- preservation activities of historical records.

Room: Seminar room S100, International Research Institute of Disaster Science (IRIDeS) (J31), Aobayama Campus (災害科学国際研究所セミナー室、S100、青葉山キャンパス)

Outline of the lecture

The lecture about rescue and preservation of historical records in the Great East Japan Earthquake, and historical disasters research which united history and science in IRIDeS.

Demonstration of historical-records preservation. *The dress which works easily is required.

Lecture and Lab Visit #6
Introduction to Spintronics

Professor Hideo OHNO

Research Institute of Electrical Communication
Laboratory for Nanoelectronics and Spintronics

Research fields

- Electron/electric material engineering(Properties of Semiconductors)
- Electronic device/electronic equipment(Semiconductor Devices)
- Applied physical properties/crystal engineering(Semiconductor Crystal Growth)

Room: Laboratory for Nanoelectronics and Spintronics (E04)
(ナノ・スピン実験施設) A401

Outline of the lecture

Spintronics is an emerging field that utilizes both spin and charge to realize new functions. I will discuss about the nonvolatile spintronic memory as an example; its basic operating principle and how it can make next generation VLSI's "greener".

Lecture and Lab Visit #7

Robotics for Space Exploration and Disaster Response

Professor Kazuya YOSHIDA

Graduate School of Engineering

Department of Aerospace Engineering

Space Robotics Laboratory

Research fields

- Space Robotics
- Dynamics and control of orbital free-flying robots
- Mobility/traction mechanics, sensing and navigation of mobile robots
- Development and operation of space flight models of university-based micro-satellites
- Challenge to Google Lunar XPRIZE

Room

Research Building-M.A.E (A15) in Aobayama campus, Room 611

(機械・知能系共同棟 (青葉山キャンパス A15) 611 室)

Outline of the lecture

Robotics is crucial technology for investigation/exploration of remote and difficult-to-access places, such as outer space, remote planets or disaster sites. This lecture will provide an introduction to robotics for space exploration and disaster response from the aspects of hardware design, motion mechanics, sensing and navigation control.

Lecture and Lab Visit #8

Structural Metallic Materials for Industry Innovation

Professor Kyosuke Yoshimi, Ph.D.

Graduate School of Engineering

Department of Materials Science

Research fields

- Structural Materials

- Ultra-High Temperature Materials
- Mechanical Properties and Crystal Defects micro-satellites

Room: Aoba Memorial Hall (C03) Room No. 702, School of Engineering
(工学研究科青葉記念会館 702 室)

Outline of the lecture

Robotics is crucial technology for investigation/exploration of remote and difficult-to-access places, such as outer space, remote planets or disaster sites. This lecture will provide an introduction to robotics for space exploration and disaster response from the aspects of hardware design, motion mechanics, sensing and navigation control.

Lecture #9

Welcome to Carbon Nanotube and Graphene

Professor Riichiro SAITO

Graduate School of Science
Physics

Research fields

- Physical properties I

Room: Science Complex B (H03) 721 (理学研究科合同 B 棟) 721

Outline of the lecture

Graphene is one atomic layer of graphite. Carbon nanotube is a roll-up graphite atomic sheet into a cylinder. Since the diameter of nanotube is in nano-meter size, many scientists investigate nanotube for 25 years since 1992 to now for many applications and physics. Since 2004, graphene and two dimensional materials appear as a new field of physics. Let us introduce how the world is exciting for investigating the new science and engineering.

Lecture and Lab Visit #10-1

Soft matter physics as a new frontier of condensed matter research

Professor Toshihiro KAWAKATSU

Theoretical Condensed Matter and Statistical Physics Group, Department of Physics

Research Field

Phase Transition of Soft Matter

Field Theory on Polymer Dynamics

Room: Room 745, Science Complex B (H03), Aobayama Campus,

School of Science

(理学研究科合同B棟 745 室、北青葉山キャンパス)

Outline of the lecture

Soft matter physics is one of the new frontiers of the condensed matter research. The key properties of the target materials of the soft matter physics, such as polymers, emulsions, and liquid crystals, is the entropy associated with their mesoscopic flexible structures. We review how to understand these materials using simple theoretical arguments and numerical simulations. This study can be a basis for the physical approaches towards life science, which will be discussed by Prof. IMAI in his lecture.

Lecture and Lab Visit #10-2

The protocell bridging between soft matter and cellular life

Professor Masayuki IMAI

Soft Matter and Biophysics Laboratory, Department of Physics

Research Field

Phase Transition of Soft Matter

Membrane Dynamics

Protocell

Room: Room 745, Science Complex B (H03), Aobayama Campus,

School of Science

(理学研究科合同B棟 745 室、北青葉山キャンパス)

Outline of the lecture

It is believed that the cellular life is developed from simple molecular assemblies. In this lecture I will overview the synthetic biology approach toward the cellular life and physical background the protocell.

Lecture and Lab Visit #11

Interactive Content Design and Dynamic Aware Interiors

Professor Yoshifumi KITAMURA

Research Institute of Electrical Communication (RIEC)

Room: M531, RIEC Main building (G10), Katahira Campus

(電気通信研究所本館 5 階 M531 セミナー室、片平キャンパス)

Outline of the lecture

My research lab is pursuing a vision of reactive interior spaces which are aware of people's actions and transform according to changing needs. We envision furniture and walls that act as interactive displays and that shapeshift to the correct physical form, and the appropriate interactive visual content and modality. I will describe and demonstrate our recent efforts on realizing this vision.

4. Field work and field trip

Field work in Ishinomaki

July 1, Saturday 6:40-19:00

- 6:40 Meet outside of the hotel entrance
- 08:10~08:50 Visit to Kadonowaki-cho area of Ishinomaki, area severely affected by the 2011 Tohoku Earthquake
- 09:10~09:50 Ishinomaki-Higashi nursery school
- 10:10~11:30 The Sant Juan Bautista, a fully-restored 17th century galleon ship
- 11:40~12:20 Visit Sasuhama and Sodenohama to see rebuilding effort
- 12:30~13:50 Lunch at Dogenin Temple, strolling temple yard
- 14:00~17:00 Meet oyster business owner
Presentation by Rev. Onosaki of Dogenin Temple
Meet Mrs. Miki Onosaki, author of *Warm Hands*
Temple prayer service
- 19:00 Back at hotel

Koji Shidara, a lecturer at Tohoku University for Japanese Culture A/B/C/D classes which are offered for international students, was involved with the translation projects for two books related with the earthquake and tsunami of 2011, *Warm Hands* and *Surviving the 2011 Tsunami: 100 Testimonies of Ishinomaki Area Survivors of the Great East Japan Earthquake*. With this background, he will guide the students participating in the university's summer science program on a field trip to Ishinomaki on Saturday, July 1. He will also give a lecture in the afternoon of Friday, June 30, to help the students prepare for the trip.

Warm Hands, a personal account of what the 2011 disaster had meant to various people, was written by Miki Onosaki, wife of the head priest of a Buddhist temple in a seaside community in Ishinomaki City. Mr. Shidara has known this temple since 2008 when the Rev. and Mrs. Onosaki kindly agreed to host his Japanese Culture class for a seminar to learn about the strong bond the temple enjoys with the people of the community. In fact this was one of the important factors that enabled the temple to function as an emergency shelter for over four hundred evacuees. The students will meet Rev. and Mrs. Onosaki at their temple to find out about what this temple means to the community. The students will also get a chance to meet an oyster business owner, a member of the temple, who is proud to have recovered from the damage caused by the disaster and to be continuing the trade which was started by one of his ancestors who was called "the king of oyster farming in the world."

In connection with the temple, the students will pay a visit to a nursery school for a special bonding time with the preschoolers there. The nursery school was opened by Rev. Onosaki in April of 2014 as part of his contribution to the recovery effort for the city. This visit will allow the students to come to know the recovery status of the area firsthand.

The field trip will also cover a visit to the Sant Juan Bautista, a fully-replicated 17th century galleon ship that took Sendai's *samurai* mission part of the way to the Vatican 400 years ago. By viewing the moored ship, the students will be able to give thought to what kind of ambition Date Masamune, the feudal lord of Sendai, must have entertained.

Field Trip to Hiraizumi

July 6, Thursday 7:45-18:00

7:40 Meet outside of the hotel entrance

10:00~11:00 Hiraizumi (Chuson-ji) TOUR

11:15~12:15 Lunch: Hiraizumi Restaurant and souvenirs

13:00~15:00 Visit to TOYOTA IWATE FACTORY

15:00~18:00 Back to Hotel

Chuson-ji Temple

Hiraizumi's most famous attraction, Chusonji (中尊寺, Chūsonji) was established in 850 as a temple of the Tendai sect of Buddhism. The temple came to prominence when the northern branch of the Fujiwara clan moved their base to Hiraizumi. At its peak, the temple consisted of a large network of dozens of buildings.

With the fall of the Fujiwara at the end of the 12th century, Chusonji suffered likewise so that now only two buildings from that era remain intact. Luckily, among these is the most spectacular, the Konjikido. Similar to Kyoto's famous Kinkakuji (Golden Pavilion), Konjikido is a hall completely covered in gold. It dates back to 1124 and stands inside another building for protection. Photographing is prohibited.

The other building that survives from the period of prosperity under the Fujiwara is the Kyozo Hall, which served as a repository for sutra (Buddhist scripture). While not nearly as impressive as the gilded Konjikido, it nonetheless even predates that building by 16 years.

Chusonji has a number of interesting buildings apart from those dating back to the Fujiwara period. The main rituals and rites of the temple are performed at the Hondo (main hall), and there is a Treasure Hall that houses some impressive artifacts. There is also a beautiful noh theater stage. Chusonji's attractions are located along a network of paths that extend about one kilometer into the forest.

<http://www.japan-guide.com/e/e5001.html> Japan-guide.com(1996-2015).

Chuson-ji Temple



5. Accommodation

Ark Hotel Sendai Aoba-dori

Address

2-2-10 Omachi, Aoba-ku, Sendai, Miyagi, JAPAN

TEL : 022-222-2111 FAX : 022-222-2797

The hotel is giving a discounted rate for TSSP_UW 2017. The breakfast will be provided by the hotel, and cleaning and new towels will also be provided every day. English-speaking hotel staff may be available at the front desk.

Check-In / Check-Out

A single room at Ark Hotel Sendai Aoba-dori is reserved for each participant during the period of TSSP_UW 2017 (check in: June 18, check out: July15). You can check in from 3:00 pm and must check out by 10:00 am.

Laundry and Internet Access

There will be free internet access in your room and coin-operated laundry machines (200 JPY) and driers (100JPY/ 30 min.) on the first floor.

Access

Walk about 5 minutes from the subway station of Omachinishi Park (Subway Tozai Line) and find out the **Ark Hotel Sendai Aoba-dori**.

From Sendai Station to Omachinishi Park station



4 minutes by the Subway (Subway Tozai Line), subway fare: 200 JPY

From Omachinishi Park station to Aobayama Station (Aobayama Campus)



5 minutes by the Subway (Subway Tozai Line) , subway fare: 200 JPY

How to Ride the Subway

1. Entry via the Automatic Ticket Gate

All tickets on the subway are read via the automatic ticket gate. Please enter using the ticket, pass, icsca or SUICA you have purchased.



Touch IC Reader in SUICA

乗車券投入口
(磁気乗車券・
普通券)

《磁気乗車券・普通券》
投入口に乗車券をお入れ
ください。

2. When Waiting for a Train

- (1) Please make sure there is plenty of space between you and the opening of the Automatic Platform Gate.
- (2) Do not lean on the Automatic Platform Gate.
- (3) Do not lean over the Automatic Platform Gate or stand objects against the gate.
- (4) Please don't run to catch your train because it is very dangerous.

On the Tozai Line, trains heading for Arai stop at Platform 1, while trains heading for Yagiyama Zoological Park stop at Platform 2. At the transfer hub in Sendai Station, trains heading for Arai stop at Platform 3, while trains heading for Yagiyama Zoological Park stop at Platform 4.

3. Exiting via the Automatic Ticket Gate

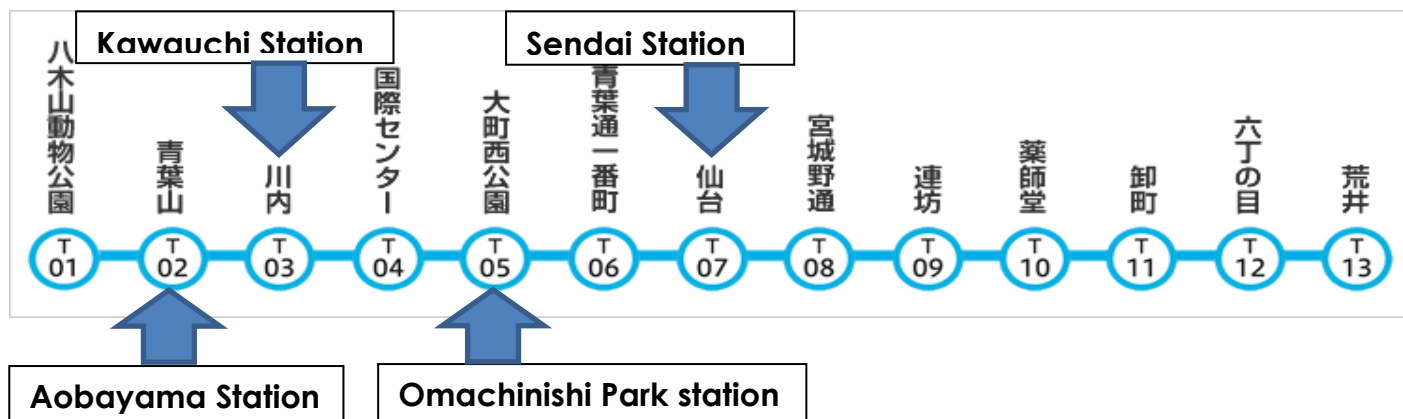


Touch IC Reader in SUICA

乗車券投入口
(磁気乗車券・
普通券)

《磁気乗車券・普通券》
投入口に乗車券をお入れ
ください。

東西線 TOZAI LINE





6. Tohoku University and its campuses

Established in 1907 as Tohoku Imperial University by consolidating an agricultural college and a science college, Tohoku University is the third oldest former Imperial University after Tokyo and Kyoto.

Tohoku University is well known for its open and progressive policies. It was the first Imperial University to admit women and international students, and also pioneered in opening a university by offering public lectures. Already in 1911, Tohoku University graduated its first international students, thus becoming the Japanese university with the longest history of international graduates. All of these were epoch-making events in the history of Japanese higher education. The "Spirit of Open Doors" remains alive within the tradition of Tohoku University. Along with this spirit, the University has placed a high value on the "Spirit of Search for Truth" and emphasized original and creative research. Thus Tohoku University is known for its strong orientation toward academic research.

In the years following its establishment, Tohoku University has grown into an institution that includes the fields of medicine, science, and engineering among others. Currently the University has ten undergraduate and fifteen graduate schools, and five research institutes. The current student body consists of over 18,000 students, including roughly 2,200 international students from 90 countries. All these students are studying and enjoying their campus life at five campuses spread in Sendai: Katahira, Kawauchi, Aobayama, Seiryō and New Aobayama campuses.

Katahira Campus

- Administrative Units
- Research Institutes

Kawauchi Campuses

- Center for International Exchange
- Humanities and Social Sciences
- First Two-Year Undergraduate Education

Aobayama Campuses

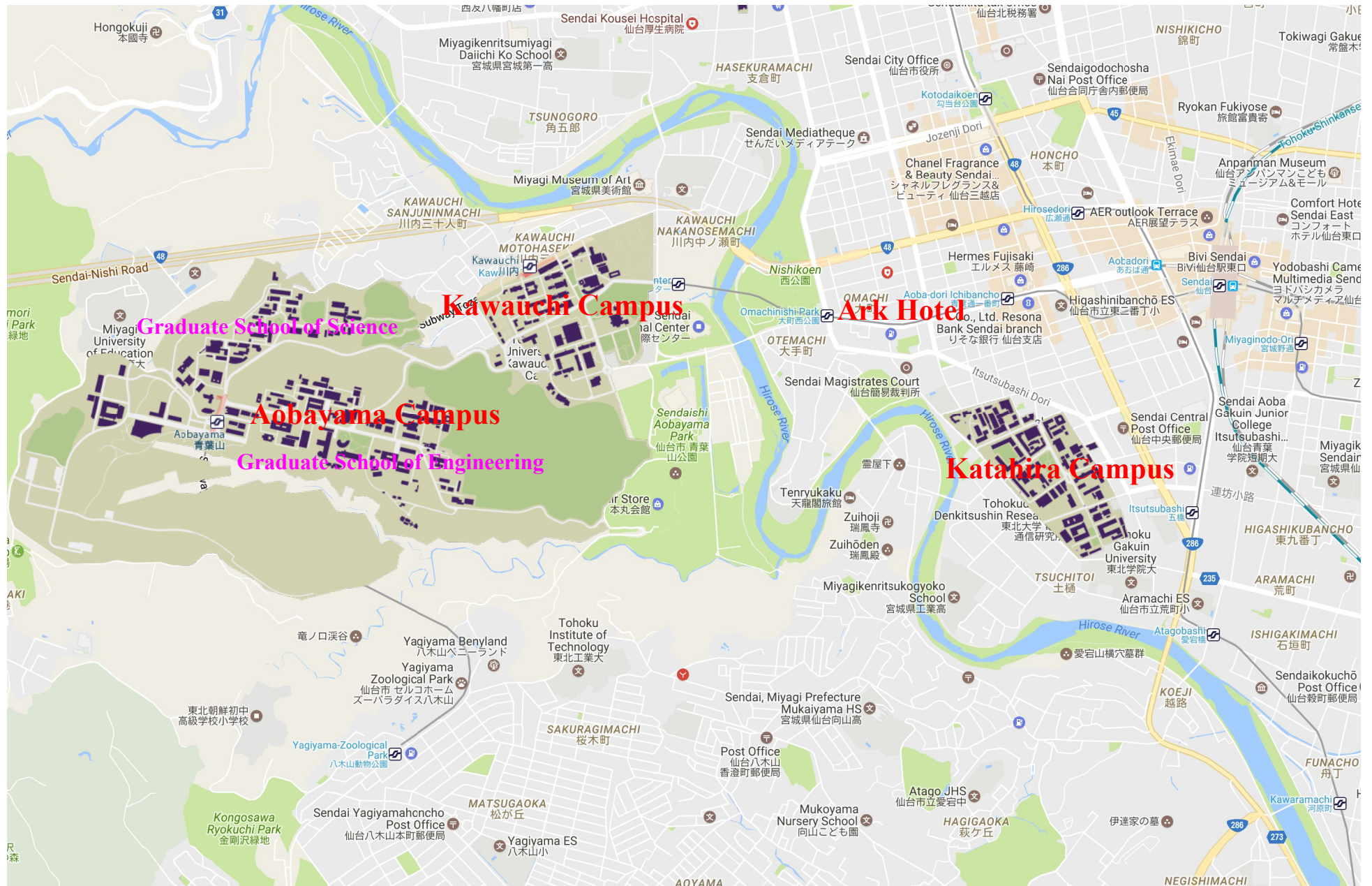
- Science and Engineering

Seiryō Campus

- School of Medicine
- School of Dentistry
- University Hospital

New Aobayama Campuse

- Faculty of Agriculture



Map data ©2017 Google, ZENRIN



Google

Map data ©2017 Google, ZENRIN



〔レストラン・カフェ Canteen | 11〕

- A 31 こもれびカフェ Komorebi cafe
- C 01 あおば食堂 THE Aoba DINING
- C 02 BOOOK(ブーク) Book+cafe "Boook"
- C 03 四季彩 Shikisai
- C 10 エスパース・コマン Espace Commun
- E 10 けやきダイニング Keyaki dining

〔バス停 Bus stop | 11〕

- 1 青葉山植物園西 Aobayama Shokubutsuen-nishi
- 2 工学部中央 Kogakubu-chuo
- 3 工学部西 Kogakubu-nishi
- 4 青葉山駅 Aobayama-eki
- 5 理学部自然史標本館前 Rigakubu Shizenshi Hyohonkan-mae
- 6 災害科学国際研究所前 Saigai kagaku kokusai kenkyujo-mae

〔地下鉄駅 Subway Station | 11〕

- 1 青葉山駅 北1番出口 Aobayama sta. North 1
- 2 青葉山駅 南1番出口 Aobayama sta. South 1

〔凡例 Explanatory notes〕

- 11 インフォメーション Information
- 11 警備員室 Guardroom
- 11 バス停 Bus stop
- 11 バス停 [るーぶる仙台停留所] Bus stop [Loople SENDAI]
- 11 地下鉄駅 Subway Station

- 11 レストラン・カフェ Canteen
- 11 カフェ Cafe
- 11 コンビニエンスストア Newsagent store
- 11 購買部 Cooperative store
- 11 避難場所 Place of refuge
- 11 工事等に伴う立入禁止範囲

A

機械・知能系 Mechanical and Aerospace Engineering

A 01 機械系 1号館 [M1] | 心

- Research Building No.1 - M.E.

A 03 機械系 2号館 [M2] | 心

- Research Building No.2 - M.E.

A 02 機械系 講義棟 | 心

- Lecture Room Building - M.E.

A 05 機械系 実験棟 I [M-I]

A 04 機械系 実験棟 J [M-J]

- Research Laboratory A to J - M.E.

A 06 機械系 実験研究棟

- Mechanical Engineering Laboratory Building

A 07 機械・知能系 教育実験棟・

- 高機能試作センター

- Laboratories for Students - M.A.E.

- Nano-Precision Machining Shop

A 15 機械・知能系 共同棟 | 心

- Research Building - M.A.E.

A 40 量子エネルギー工学専攻 本館 | 心 心

- Research Building -

- Quantum Science and Energy Engineering

A 10 機械系 環境材料強度研究棟

- Environmental Strength Research Laboratory-M.E.

A 14 マイクロ・ナノマシニング

- 研究教育センター

- マイクロマシニング棟

- Micromachining Facility

- Micro/Nano-Machining Research and Education Center

A 17 マイクロ・ナノマシニング

- 研究教育センター

- ナノマシニング棟

- Nanomachining Facility

A 40 量子エネルギー工学専攻 本館 Research Building - Quantum Science and Energy Engineering | 心 心

A 41 量子エネルギー工学専攻 講義棟 Lecture Room Building

A 42 生活環境早期復旧技術研究センター 研究棟

- Research building of research center for remediation engineering of living environments contaminated with radioisotopes

A 43 放射性同位元素実験室 Radioisotope Laboratory

A 44 先進核融合炉工学総合実験棟 Integrated Laboratory for Advanced Fusion Reactor Engineering

A 45 生活環境早期復旧技術研究センター 実験棟

- Laboratory building of research center for remediation engineering of living environments contaminated with radioisotopes

A 46 高速中性子実験室 Fast Neutron Laboratory

A 47 臨界未満実験装置室[量子エネルギー科学館] Subcritical Assembly

A 13 ナノ医工学研究棟

- Nano-Biomedical Engineering Research Building

A 21 ナノ医工学実験棟

- Nano-Biomedical Engineering Research Laboratory

環境科学研究科

Graduate School of Environmental Studies

A 50 研究棟 Research Building | 心

- Research Laboratory A to J - M.E.

A 52 地殻環境強度特別実験室

- Geoscience Research Laboratory

A 53 実験棟 Research Laboratory

- Research Laboratory A to J - M.E.

A 54 研究棟 アネックス Annex

- Research Laboratory A to J - M.E.

A 55 エコラボ Ecollab.

A 30 自動車の過去・未来館

- Automobile Museum

A 31 デイリーヤマザキ・こもれびカフェ | 心 心

- Daily Yamazaki, Komorebi Cafe

A 32 青葉山植物園ゲート

- Botanical Gardens Tohoku University Aobayama Gate

M.E.: Mechanical Engineering
M.A.E.: Mechanical and Aerospace Engineering

B

マテリアル・開発系 Materials Science and Engineering

B 01 マテリアル・開発系 教育研究棟 Education and Research Building | 心 心

- Research Building No.1 - M.E.

B 02 マテリアル・開発系 材料実験棟 The Materials Experiments Building | 心

- Research Building No.2 - M.E.

B 03 大講義棟 Lecture Hall

B 04 マテリアル共同研究棟 Materials Collaborative Research Building

B 11 革新材料研究棟 Materials Evolution Research Building

B 12 マテリアル・開発系 実験・研究棟 Research & Machining Building

- Research Building No.3 - M.E.

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C 01 中央棟 CENTER HALL | 心 心 心

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D 01 附属図書館 工学分館 Engineering Library | 心 心

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電子情報システム・応物系 Electrical Engineering and Applied Physics

D 03 磁気共鳴電波実験室 Research Room for Magnetic Resonance and Radio Wave

- Research Building No.1 - M.E.

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E

化学・バイオ系 Applied Chemistry, Chemical Engineering and Biomolecular Engineering

E 01 化学・バイオ系研究棟 本館 Research Building - Main | 心 心

- Research Building No.1 - M.E.

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F

人間・環境系 Civil Engineering and Architecture

F 01 人間・環境系 教育研究棟 Civil Engineering and Architecture | 心 心

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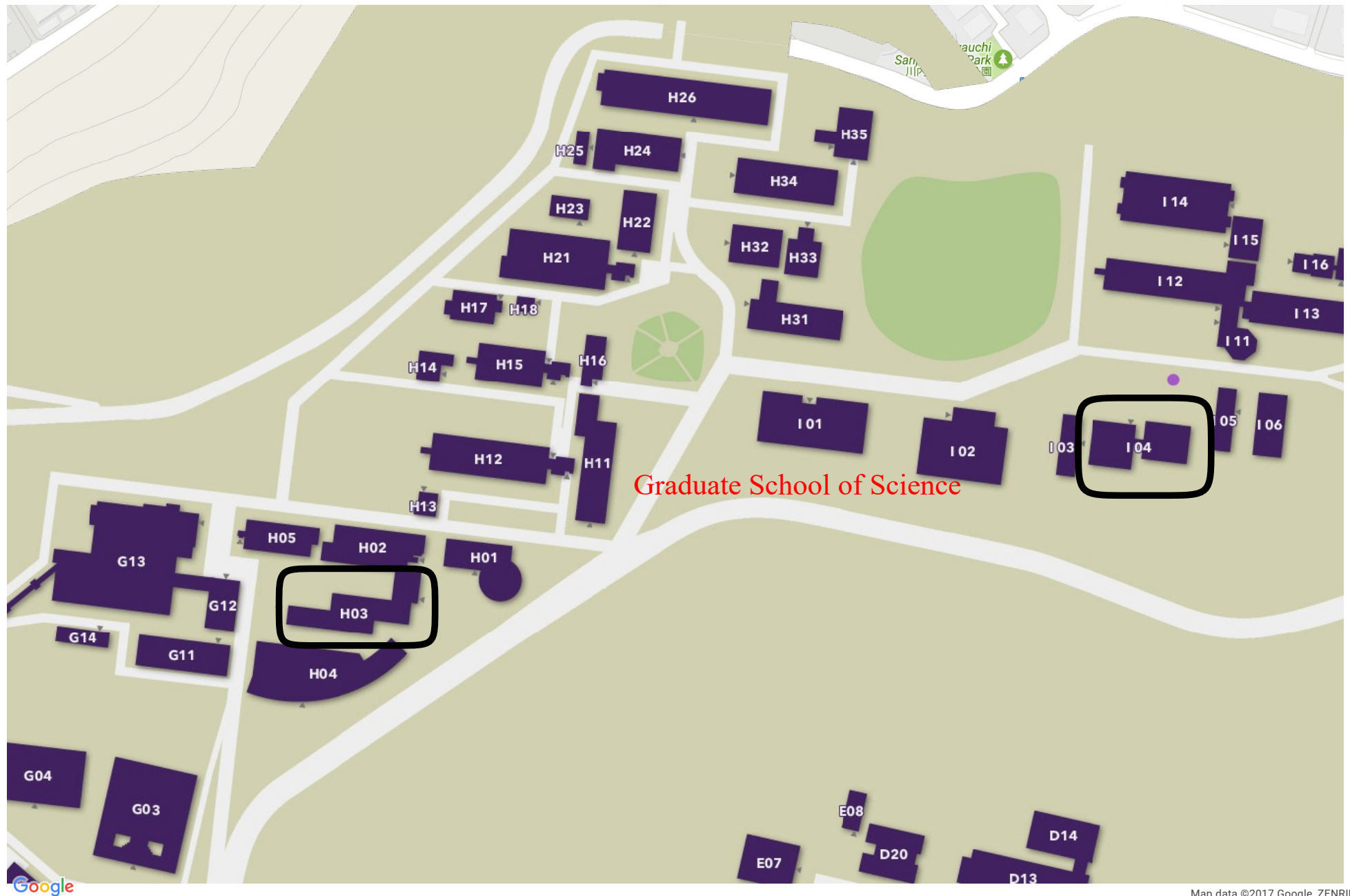
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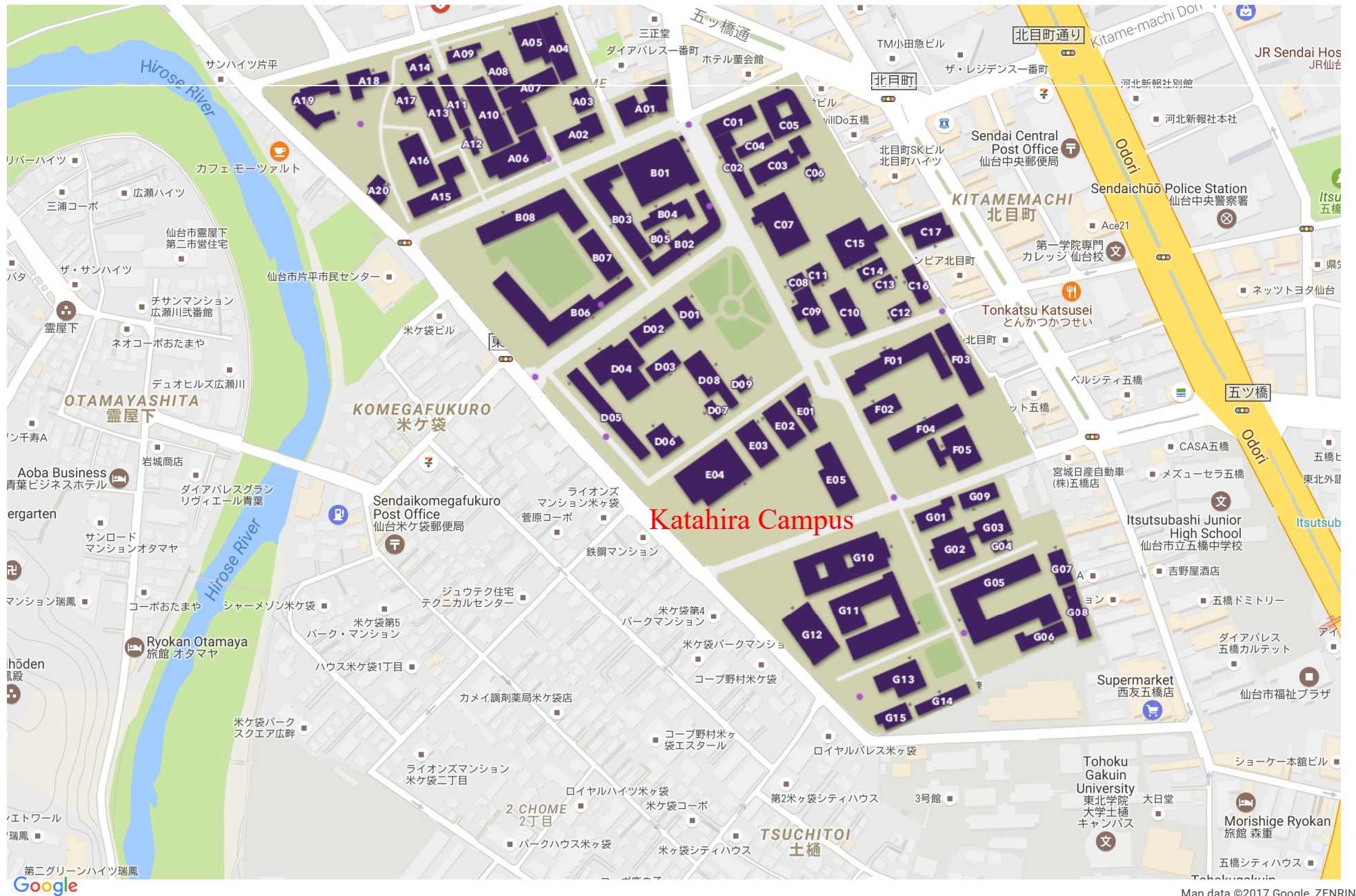
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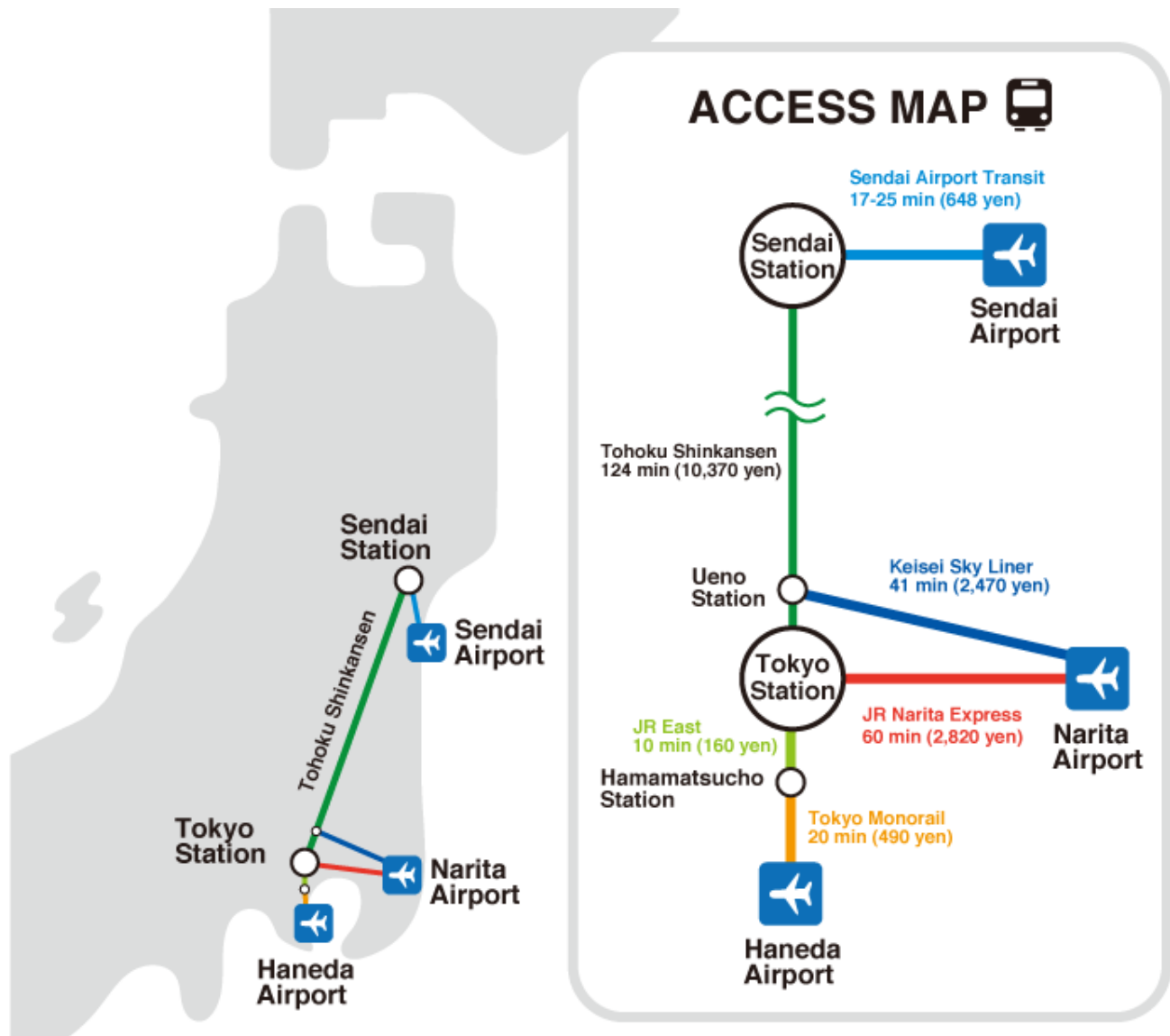


7. Other information

A. Arrival in Sendai

Getting to Sendai

The simplest way to get to Sendai is by direct flight to Sendai Airport. Another option is to fly into Narita International Airport or Haneda Airport (Tokyo International Airport) and travel the rest of the distance by train.



Related links

- Narita International Airport: <http://www.narita-airport.jp/en/>
- Haneda Airport (Tokyo International Airport): <http://www.tokyo-airport-bldg.co.jp/en/>
- East Japan Railway (JR East): <http://www.jreast.co.jp/e/>
- Tokyo Monorail: <http://www.tokyo-monorail.co.jp/english/>
- Keisei Skyliner: <http://www.keisei.co.jp/keisei/tetudou/skyliner/us/index.html>

B. Access to your Accommodations

You will be staying at **Ark Hotel Sendai Aoba-dori**, located 20-30 minutes on foot, or approximately 5 minutes by taxi, from Sendai Station. The taxi stand is located on the 1st floor of Sendai Station. Please follow the directions and the access map below to get to the hotel on your own.

Ark Hotel Sendai Aoba-dori (アークホテル仙台青葉通り)

Address: 2-2-10 Omachi, Aoba-ku, Sendai, Miyagi, JAPAN / Tel: 022-222-2111

Hotel website: <http://www.ark-hotel.co.jp/sendai/> (Japanese only), Check-in: 15:00/Check-out: 10:00



Access from Sendai Station

By Subway

Get on the Sendai Subway Tozai Line from JR Sendai Station. The JR station and subway station are connected, so please follow the signs and instructions at the station. Take the Tozai Line subway bound for Yagiyama Zoological Park and get off at Omachinishi Park station. Ark Hotel Sendai Aoba-dori is located 5-min. by foot from Omachinishi Park station.

C. Cash Withdrawal

Japan Post Bank

You can withdraw money with your overseas bank/credit card at any Japan Post Bank ATM in Japan. Withdrawal charges might be deducted for this service.

If you have any questions on ATMs and Cash Withdrawal, please refer to the following website:

http://www.jp-bank.japanpost.jp/en/ias/en_ias_index.html

Seven Bank

You can withdraw cash at any Seven Bank machine at 7-Eleven convenience stores.

The cards you can use for withdrawal at Seven Bank are limited; you can easily find 7-Eleven convenience stores

in the city of Sendai.

For more info, please visit the following website:

<http://www.sevenbank.co.jp/intlcard/index2.html>

Foreign Banks

There are no ATMs of foreign banks in Sendai.

Note: There is one Travelex shop for foreign currency exchange in the Sendai city center.

Here is a rough estimate of everyday costs in Japan is as follows:

- 500 ml bottled water – JPY 150
- Subway one-way ride from the station near your hotel to Kawauchi Campus – JPY 200
- Simple meal at the cafeteria on Kawauchi Campus – JPY 350~
- Simple dinner at a restaurant around the city center – JPY 1000~

D. JASSO Scholarship

A JASSO scholarship of JPY 80,000 will be provided to qualified participants.

Please note that recipients of the scholarship are expected to complete the entire program. Students might be asked to return the scholarship in case of unsatisfactory participation in the program. Please remember you will be required to submit the designated reporting forms provided near the final day of the program.

Students who do not receive the JASSO scholarship will be asked to pay the program fee.

E. Insurance

There is no Japanese travel insurance available to cover your stay in Japan.

BEFORE you come to Japan please make sure to obtain travel insurance that covers the duration of your stay. The insurance should cover death and medical expenses. It is also strongly recommended that your insurance has a general liability policy. Tohoku University shall not bear any responsibility for injuries, medical treatment, damage to property, or robbery.

It is YOUR OWN RESPONSIBILITY to cover any medical expenses and accidents, and usually you CANNOT use credit cards for medical payments in Japan.

Japan is well known as one of the safest countries in the world, but it is still necessary to be prepared for unexpected incidents at all times.

F. Contact Information

Ark Hotel Sendai Aoba-dori (アークホテル仙台青葉通り)

Address: 2-2-10 Omachi, Aoba-ku, Sendai, Miyagi, JAPAN / Tel: 022-222-2111

Police: 110	Ambulance and Fire Department: 119
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Hospital (Sendai City Kyukan Center)

Phone: 022-266-6521

Address: 64-12 Funacho Wakabayashi-ku, Sendai (仙台市若林区舟丁 64-12)

Tohoku University Global Learning Center

Professor in charge: Yoshitaka Kasukabe, Global Learning Center

Address: 41 Kawauchi, Aoba-ku, Sendai

Tel: 022-795-7978 (TSSP_UW 2017)

Mobile: 090-2846-3628 (Available only during the program period)

Email: kasukabe@insc.tohoku.ac.jp

URL: <http://www.insc.tohoku.ac.jp/english/>

University of Washington

Professor in charge: Fumio Ohuchi

Email: ohuchi@uw.edu

Mobile: 080-4330-4846 (Available only during the program period)

Tohoku University
Institute for Excellence in Higher Education
Global Learning Center

41 Kawauchi, Aoba-ku, Sendai

980-8576 Japan

<http://www.insc.tohoku.ac.jp/cms/index-e.cgi>