



Participant Information Book

International Design Contest 2021

The Cyber World Star Hunting Swallow

Tokyo Tech

Japan

IDC Robot Contest Organizing Committee



Contents

Schedule.....	3
Game rule	4
Participants	9
Map.....	14
Useful Japanese Expression.....	15



Schedule

All time is hosting Japan time which is GMT+09:00.

During **Coretime**, all students are expected to participate in the activities. You can set more active times team by team.

Date	Time	Schedule
July 26 th (Mon)	18:00–	Disclosure of team members and meeting together of each team in Zoom https://us06web.zoom.us/j/88958167383?pwd=M3JvM2F4bFY5Ti96TVpobitLbzFpUT09 Meeting ID: 889 5816 7383 Passcode: S5RQX2
26 th -1 st		Studies of 3D CAD, Unity, C#, and Photon
Aug. 2 nd (Mon)	18:00 – 19:00	Opening ceremony and game rule disclosure: Coretime
	19:00 – 20:00	Brainstorming, Machine design: Coretime (Please determine working times among team mates.)
3 rd (Tue)	16:00- 18:00	Machine design
	18:00 – 20:10	Idea Presentation: Coretime
	20:10 – 22:00	Workshop
4 th (Wed)	16:00- 18:00	Workshop
	18:00 – 20:00	Workshop: Coretime (Seeding Contest)
6 th (Fri)	18:00 – 22:00	Workshop
7 th (Sat)	16:00 – 17:00	Practice: Coretime
	17:00– 19:00	Contest: Coretime
	19:00 – 21:00	Farewell Party: Coretime

During Aug. 3rd and Aug. 6th, we will have daily meeting from 18:00 and you can ask any question.



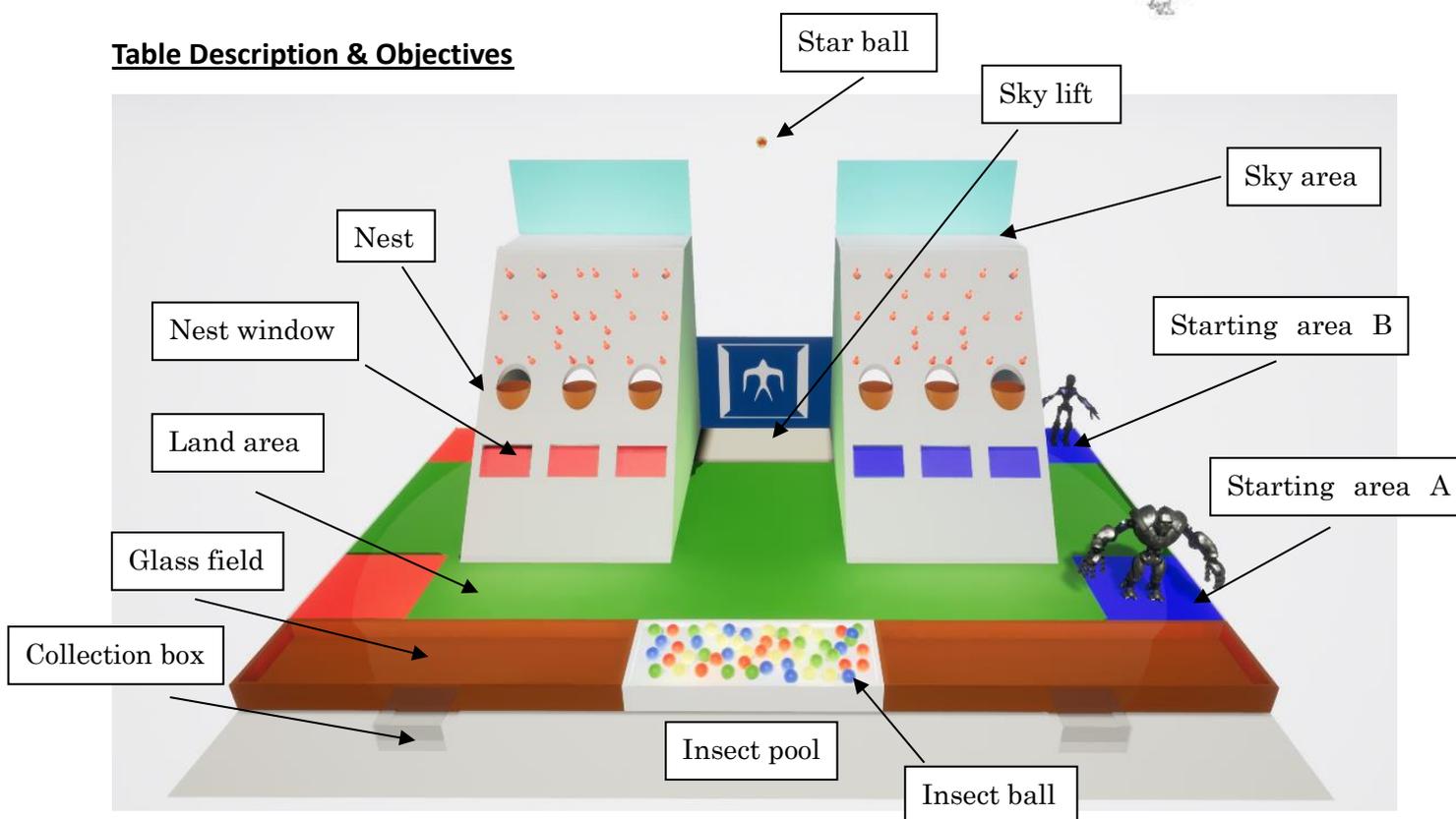
Game rule

Theme of Robocon International Design Contest 2021

The Cyber World Star Hunting Swallow (仮想空間でも、つばめよ、地上の星を探せ！)



Table Description & Objectives





Background

In Japan swallows are considered good birds which catch insects in bush fields to help them to grow healthy, and, they are believed smart to find talents (stars) in the world.

About seal of Tokyo Tech

The Tokyo Tech seal was designed in 1947 by Mr. Shinji Hori, who was at that time a professor at the Tokyo Fine Arts School. The backdrop represents the Japanese character [工], which is the first character of "engineering" [工業]. This part of the seal also evokes the image in silhouette of a window opening out on the world. Window is the second character of "school" [学窓]. The central figure of the seal depicts a swallow and represents the Japanese character [大], which is the first character of "university" [大学].



Tokyo Tech.

In Japan, swallows traditionally portend good fortune, and are believed to be good birds which eat bad insects to protect the growth of rice. The design was originally adopted for staff badges and has been used throughout Tokyo Tech ever since. In 1981, at the Institute's 100th anniversary, the design was formally adopted as the official seal of Tokyo Tech. On that occasion, Assistant Professor Ario Tejima of Tokyo University of the Arts, grandson of the late Professor Seiichi Tejima, refined the design. So, this year is the 70th anniversary of the birth of the seal.

Mission

You will design and built robots to act as swallows to find stars in the world!

Scoring

Scoring rule is described mainly in two sections. Contestants control your robots to bring insects(balls) to nests or a collection box. When a ball is entered into a nest, it is changed to a star, and it means that the star is caught. When a boll is entered to the middle nest, 30 points is added, and when a ball is entered to other nests, 10 points is added. When an insect ball is put in own collection box, 1 point is added. When the star ball is put in the collection box, 10 points are added, and the total score is doubled. When each nest has one or more balls and the star ball is in the collection box, you can win the match immediately.

1. Insect ball and star ball

Initially 60 insect balls are set in the insect pool and a star boll is set at a middle position at a sky area.

2. Sky lift

A sky lifter is located at the center of the contest filed and the lift is set at the field level initially. The lift starts to move to the sky area after 45 seconds when each match starts. The lift is stopped



when it reached the sky area and remained in the sky level.

Rules & Regulations

1. General Principles

- a. These rules are intended to create opportunities to learn engineering.
- b. Those things not specifically forbidden are allowed.

2. Timing and regulation

- a. Each round of the contest is 120 seconds long. After that period, you can not control robots.
- b. Up to 3 balls can be preloaded into the robot 'A'.
- c. You cannot intentionally interfere with opponent robots.
- d. Robots must start from area 'A' and 'B' with touching the level floor.
- e. A robot must ride the sky lift in the own side.

3. Winning & Advancing

- a. The contest consists of qualifying round and final tournament.
- b. Qualifying round is a four-group league match. Three teams are competing in a league, and the top two teams in each league will advance to the final tournament. Some teams are tie for wins in a league, a team with more total score is more advantage.
- c. The final tournament is a single elimination one.
- d. If a match is finished in a tie, the following tie-breaking rule is applied; 1) a team who catches more stars wins, 2) a team who reached a robot in the sky area wins, c) a team whose own area except the insect pool has more bolls wins.

4. Control

- a. Team members must control their own machines. All control must be accomplished without contacting the robot.
- b. Control should be made by keyboard or game pad which can be prepared by yourself.
- c. A contestant may not deliberately interfere with the opposing player.

5. Robot Configuration

- a. **Materials:** Material and collider properties must not be changed during a contest.
- b. **Control Unit:** Your robots must be actuated by prefab actuators, Bosh motors, air cylinders, and DC motors, and control command must control only the actuator output, e.g., you cannot change the position and velocity of objects by the control command except an angular velocity in a virtual gear box. You can use up to 8 Bosh motors, 4 air cylinders, 4 DC motors, and 1 sky



engine. You can not change the maximum torque and force of the actuators. You can use feedback mechanisms and sequence controller so that actuators generate suitable output according to the command.

- c. **Size and weight:** Your entire robot must fit in the Starting Box at the time of impounding and at the beginning of each match when set up on the table. The size of the starting box is defined 50cm cubic volume. The starting area on the table is the same. Your entire robot must be less than 5kg.
- d. **Total execution time:** Robots should be controlled smoothly using a keyboard or equivalent device. Numbers of Mesh colliders and mesh data should not be so large so that the execution time is not so long. The validity of the execution time is judged by IDC staffs.
- e. **Set-up for match:** You must make robots as prefabs and whose names should be team's 'A+'team's number' and 'B+'team's number'. The prefabs and, starting position and orientation information must be sent by a specified date and time to IDC staff.

6. Sporting Conduct & Safety

- a. Damaging, overturning, pushing and lifting an opponent's robot is not allowed (although blocking without intentional touching an opponent's robot is allowed).
- b. Once scoring is accomplished, it cannot be reversed by defensive actions, but additional scoring can be prevented.
- c. Actions to make the game program running crazy are prohibited.
- d. Contestants and spectators (i.e. any human beings) may not directly affect the motion of the machines or anything else on the table.
- e. Any robot components or table items that depart the table cannot be used.
- f. All machines have to fit into the 500mm cubic starting area on your side at the starting time.
- g. It is not permissible to drive a robot off the table during a round. It is permissible for a robot to reach outside the boundaries of the table during a round.
- h. Nets or entanglement devices are not permitted, but other defensive devices generally are permitted.
- i. Only free assets can be used
- j. During a match, colliders can not be changed.
- k. After the time limit, the referee judges the winner of the match according the points as mentioned.
- l. **NO POLITICAL MESSAGES ON MACHINES. THE JUDGES' DECISIONS ON SAFETY MUST BE RESPECTED AND OBEYED PROMPTLY.**

General questions may be asked of all participating faculties, graduate students, undergrad assistants, and staff of IDC2021. However, all officially sanctioned rule interpretations will be made by the



referees. The key rulings will be discussed in daily meeting and rules and properties of the game field may be changed this year based on the discussions.

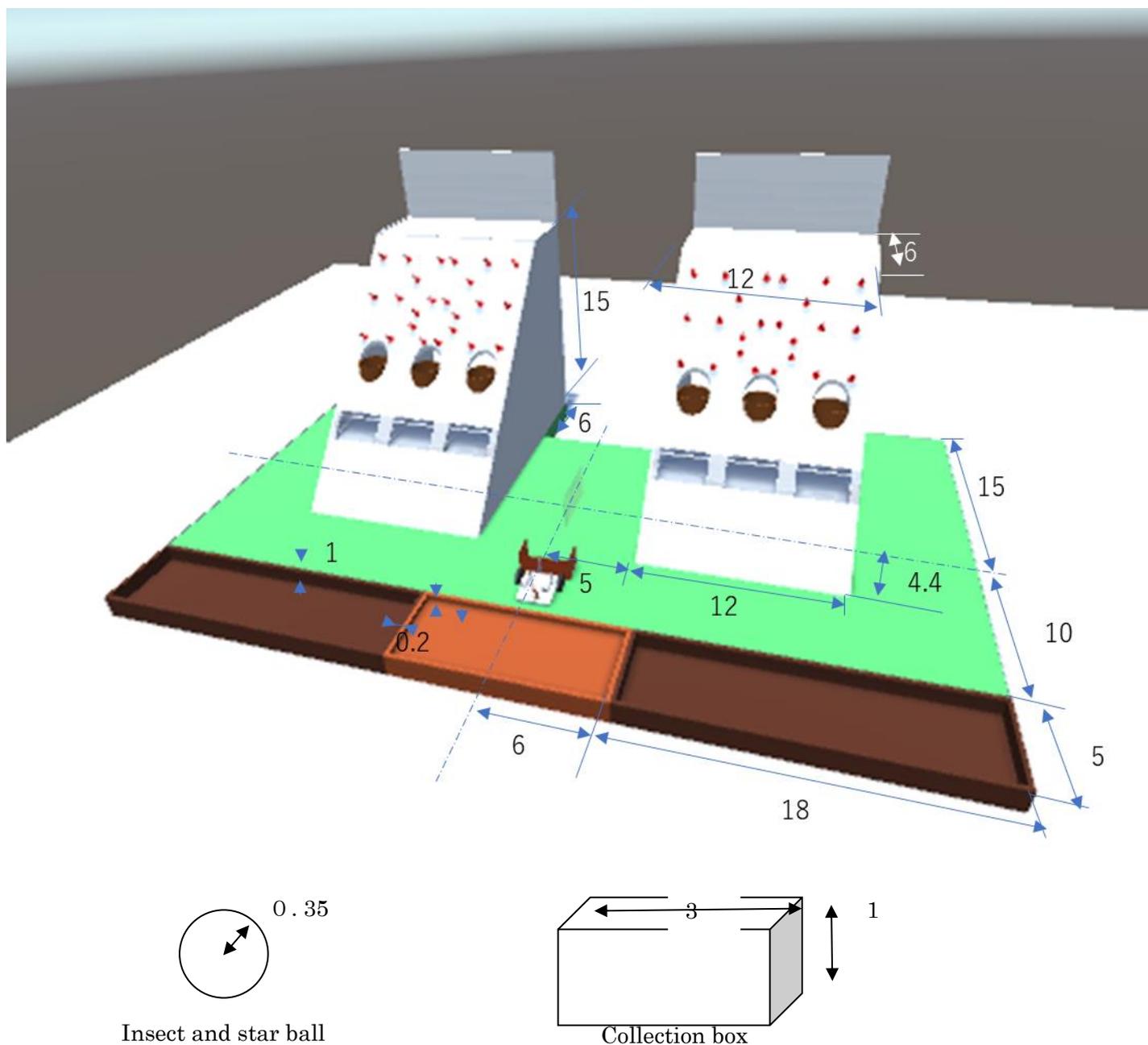


Fig. 2 Dimensions of contest field. (unit is 100mm)

You can download the game field from the following link:

<https://drive.google.com/file/d/1KP0DrXa0HGScoRW5FHcLie8eFbAimhEh/view?usp=sharing>

or you can download a sample game field for testing with 'cart1d' prefab from the following link:

https://drive.google.com/file/d/1wwCwagFqIPwujwhjHyFabw_lxWrhmV-8/view?usp=sharing



Participants

China	Institution	S/I	Name	
	Tsinghua University		Xing Sen	
			Yao Boxian	
			Chu Chi	
		INSTRUCTOR	Li,Cao	
	Zhejiang University		Yilin Lang	
			Jiangpeng Hu	
			Tianyi Zhu	
			Bohao Zhang	
		INSTRUCTOR	You Wang	
	Shanghai Jiao Tong University		LONG Fei	
			SHEN Rongqiang	
			YOU Xin	
			LEI Kaichong	
			LIANG Rongbo	
		INSTRUCTOR	Libo SONG	
	India	Amrita Vishwa Vidyapeetham		Kota Avinash Hegde
				P Vijaya Krishna Tejaswi
				K S Sankardas
			Gaurav Rudravaram	
			Kotaprolu Sai Smaran	



			Devisetty Vijay Kumar
			A Sai Deepika
			Kusumanchi Surya Shanmukh
			Aditya Ashvin
			Koushik Reddy P
			Pochareddy Nishith Reddy
		INSTRUCTOR	Rajesh Kannan, Megalingam
Thailand	King Mongkut's University		Channarong Aodkaew
			Athittaya Phontakam
	Prince of Songkla University		Worrasak yonglan
	Thaksin University Phatthalung Campus		Kanokpon Rodbun
	Suranaree University of Technology		Annop Sengsomwong
	Rajamangala University of Technology Tawan-ok		Minthada Khan-in
	Chiang Mai University		Panjanot Ruangsri
	College of Integrated Science and Technology		Chuthimon Thongkad
	College of Integrated Science and Technology		Poramet Jaimool
	College of Integrated Science and Technology		Yannawut Ekbang
			Mettri Royrak
	INSTRUCTOR	Peerapong Pinwanich	



Singapore	Singapore University of Technology and Design		Samarakoon Mudiyanseleage Bhagya Prasangi Samarakoon
			Povendhan Palanisamy
			Borusu Charan Satya Chandra Sairam
			Sriniketh Konduri
			Jia Yin
			Yeo Soon Kiat Matthew
		INSTRUCTOR	Mohan Rajesh Elara
Mexico	IPN Esimez		Martin Saul Villegas Quiroz
			Rodolfo Juarez Vazquez
			Alan Alejandro Hernández García
			Gustavo Tonatiuh Quintero Lopez
			Lesly Monserrat Quiroz Torrijos
			Jaime Santana Zamora
		INSTRUCTOR	Juan Jose Munoz Cesar
Brazil	University of Sao Paulo		Isabela Mosna Esteves
			Leticia Miyuki Kimoto



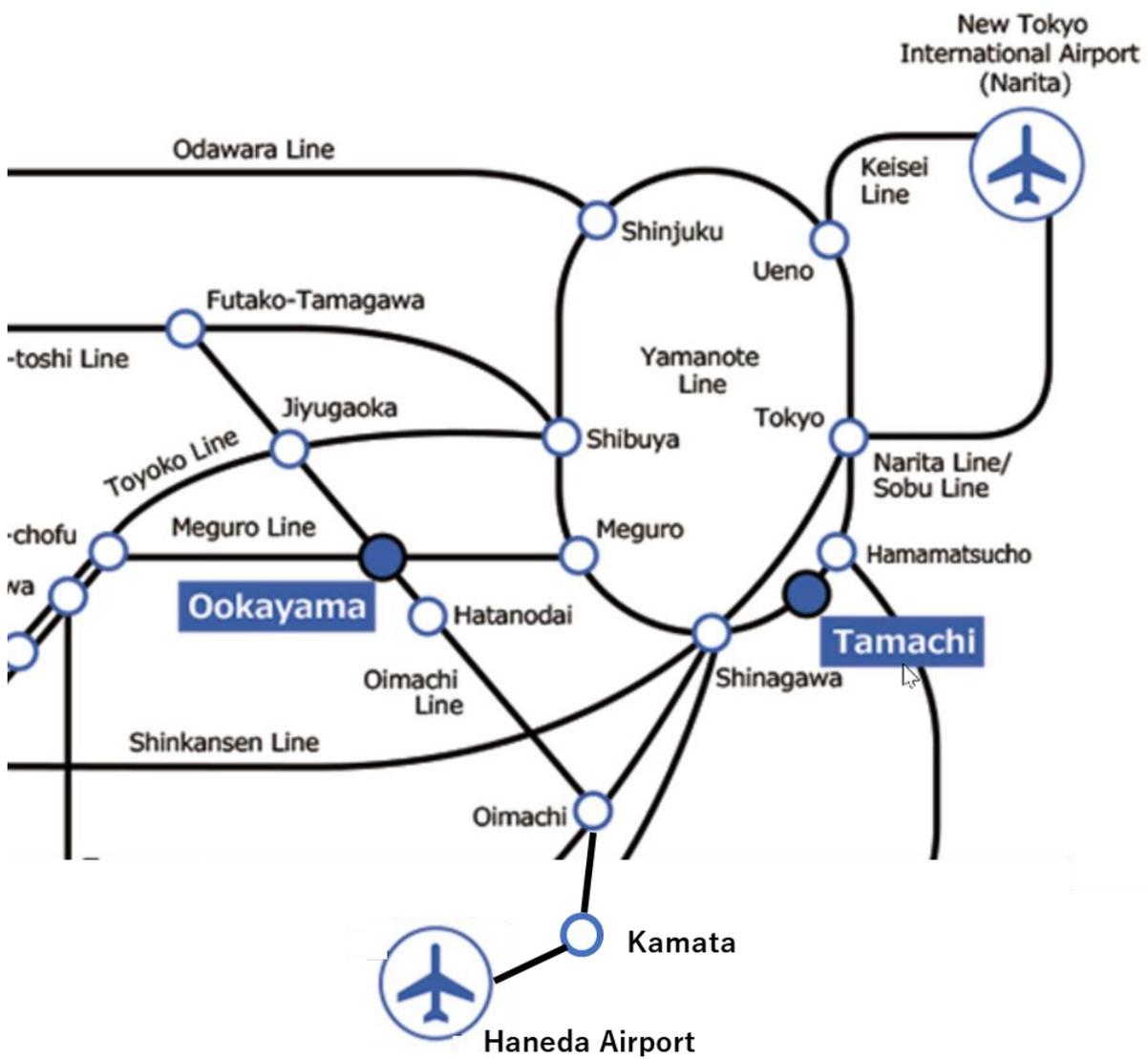
			Caio Felipe dos Santos Oliveira
			Gabriella Arbulu Cury
			Maria Fernanda Fernandes Rezende
			Gabriel Souza Lima
		INSTRUCTOR	Gilberto Francisco Martha de Souza
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			Huh seunghyuk
			Chung gene
			Kim jaehyuk
			Kim yejoon
			Kim sangmin
			Song dogyong
			Choi byeongpil
			Lee seunghoon
			Yoo sunha
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		INSTRUCTOR	Kyu-Jin Cho
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	Tanpipat Kornvik		
	Maniwa Ryuichi		



			Inagaki Ryouzuke
			Chawit Chaijirawiwat
		INSTRUCTOR	Tsuyoshi Nagasawa
		INSTRUCTOR	Hidenori Kosaka
		INSTRUCTOR	MASAKI YAMAKITA
	Tokyo Denki University		KOBAYASHI Yuga
			WEI YAN
			GOTO Yuka
			KANAKUBO Haruki
			IWASHITA Hiroki
			HAYASHI Yuki
			AEBA Takaki
			LEE Ming Han
		INSTRUCTOR	NORHIRO KAMAMICHI



Map





Useful Japanese Expression

English	Japanese
Yes	Hai
No	Iie
Small	Chiisai
Big	Ookii
A little	Sukoshi
Good morning	Ohayou gozaimasu
Good afternoon / Hello	Konnichiwa
Good evening	Konbanwa
Good night	Oyasumi nasai
Good-bye	Sayonara
See you later	Ja mata
Nice to meet you	Hajimemashite
My name is ~	Watashi wa ~ desu
I am from ~	~ kara kimashita
How are you?	O-genki desuka?
I am fine.	Genki desu
I am sorry.	Gomen nasai
Excuse me.	Sumimasen
Thank you (very much)	(Doumo) arigato
You are welcome.	Dou itashimashite
Is it OK?	Ii desu ka?
I don't understand.	Wakarimasen
Does this train/bus go to ~ ?	Kono densha/basu wa ~e ikimasu ka?
Where is ~ ?	~ wa doko desuka?



The train station	Eki
The bus stop	Basu tei
The subway	Chikatetsu
A public phone	Koushu denwa
The bathroom	Otearai
How much is this?	Ikura desu ka?
Do you have an English menu?	Eigo no menyu wa arimasu ka?
What is recommended?	Osusume wa nan desu ka?
Non-smoking seat	Kin-en seki
Smoking seat	Kitsuen seki
May I have ~ ?	~ onegai shimasu
Water	Mizu
Japanese tea	Ocha
Check	Okanjo
This (pointing)	Kore
One	Ichi
Two	Ni
Three	San
Four	Shi
Five	Go
Six	Roku
Seven	Shichi
Eight	Hachi
Nine	Kyuu
Ten	Juu
Eleven	Juu-ichi
Twenty-one	Ni juu-ichi
One hundred	Hyaku
One thousand	Sen
Ten thousand	Man