### General Education Syllabus [FGL] (2017 2nd semester courses (1st year Fall))

#### Basic Japanese

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Day/Period</th>
<th>Categories</th>
<th>Credits</th>
<th>Object</th>
<th>Instructor (Position)</th>
<th>Description</th>
<th>Language Level Required</th>
<th>Object and Summary of Class</th>
<th>Goal of Study</th>
<th>Content and Progress Schedule of the Class</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE15339</td>
<td>An Introduction to Information Science</td>
<td>A, M/W/F</td>
<td>Graduate Major: Information Sciences</td>
<td>2</td>
<td>FAL</td>
<td>Takanori ISOYAYA, Motoko KANNO (Graduate School of Information Sciences)</td>
<td>2</td>
<td>Information Fundamentals B</td>
<td>Understanding basic literacy and knowledge of information science and society.</td>
<td>Urban basic knowledge of computer science and technology, and ability to live in an information society.</td>
<td>Overview and preparation: Learn the use of computer systems in university. History of computer and computer science. Documentation and presentation. Discussion on information ethics. Computer Architecture and Networks.</td>
<td>Impact at 1 time: 80% Presentation and 20% Oral presentation</td>
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<tr>
<td>CE15337</td>
<td>Meteorology, Geology &amp; Geotechnology</td>
<td>A, M/M/W/Tue.</td>
<td>Graduate Major: Subarea Natural Earth and Space Science</td>
<td>2</td>
<td>FAL</td>
<td>TAMADA, Makoto (Faculty of Excellence in Higher Education)</td>
<td>2</td>
<td>Foundations of Crystal Structures of Solids.</td>
<td>The chemical and physical properties of solids are important because the solid structures are the base of the chemical and physical properties of the solids. We must understand the different types of solids with crystalline and amorphous structures, a number of possible chemical bonding (driving forces) in solids, and also as fundamental energy units to characterize crystal systems.</td>
<td>Also, we must understand the structure property relationship to describe tiny chemical and physical properties of solids.</td>
<td>Evaluation will be based on class attendance, quizzes, mid-term and final examination.</td>
<td>Evaluation will be based on class attendance, quizzes, mid-term and final examination.</td>
</tr>
<tr>
<td>CE15340</td>
<td>Foundations of Calculus</td>
<td>A, M/M/W/Tue.</td>
<td>Graduate Major: Mathematics</td>
<td>2</td>
<td>MIN</td>
<td>Watanabe, Frank (Faculty for Excellence in Higher Education)</td>
<td>2</td>
<td>Foundations of Linear Algebra</td>
<td>Students will learn fundamental techniques of elementary linear algebra.</td>
<td>Basic Vector and Matrix Calculus.</td>
<td>Equivalent to the two-dimensional vector calculus, the dot-product, and the cross-product.</td>
<td>Evaluation will be based on weekly attendance and participation (20%), completion of in-class activities, assignments (25%), and a final examination (55%).</td>
</tr>
<tr>
<td>CE15341</td>
<td>Life and Nature</td>
<td>A, M/W/Tue.</td>
<td>Graduate Major: Science Studies</td>
<td>2</td>
<td>FAL</td>
<td>Nakamura, Manabu (Faculty for Excellence in Higher Education)</td>
<td>2</td>
<td>Big History: the organization and evolution of the universe (from the Big Bang to now, in one semester)</td>
<td>Students will learn the evolution of various species and the complexity of the universe throughout 13.7 billion years. This course will also provide a general framework for non-science majors to help students to understand the big picture of the universe and to better understand their own place in the universe.</td>
<td>Students will learn the evolution of various species and the complexity of the universe throughout 13.7 billion years. We will help the students understand the big picture of the universe and their own place within it.</td>
<td>Evaluation of the course will be based on weekly attendance and participation (20%), completion of in-class activities, exercises and assignments (25%), a final project (20%) as well as a mid-term and final examination.</td>
<td>Evaluation of the course will be based on weekly attendance and participation (20%), completion of in-class activities, exercises and assignments (25%), a final project (20%) as well as a mid-term and final examination.</td>
</tr>
<tr>
<td>CE15342</td>
<td>Basic Japanese</td>
<td>A, B, C, D, E, F, G, H, I, J, K, L</td>
<td>Graduate Major: Subarea for International Students</td>
<td>3</td>
<td>FAL</td>
<td>Izumi SATO, Kiyotaka YOKYOKAMOTO</td>
<td>3</td>
<td>Beginner for beginners</td>
<td>Designed for students who wish to study Japanese for the first time. This class aims to help students acquire basic knowledge of Japanese language and enhance the four skills of speaking, listening, reading, and writing.</td>
<td>Students will master elementary Japanese grammar, vocabulary, kana (hiragana), katakana, and appropriately 100 basic kana, acquire elementary skills in speaking, listening, reading, and writing for essential everyday situations and achieve a proficiency level equivalent to JPT B1.</td>
<td>Overview and preparation: Learn the use of computer systems in university. History of computer and computer science. Documentation and presentation. Discussion on information ethics. Computer Architecture and Networks.</td>
<td>Evaluation of the course will be based on weekly attendance and participation (20%), completion of in-class activities, assignments and exams (25%), a term paper (20%) as well as a mid-term and final examination.</td>
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<tr>
<td>Subject</td>
<td>Textbook 1 - Textbook Title</td>
<td>Textbook 1 - Author</td>
<td>Textbook 1 - Publisher</td>
<td>Textbook 1 - ISBN/ISSN</td>
<td>Textbook 2 - Textbook Title</td>
<td>Textbook 2 - Author</td>
<td>Textbook 2 - Publisher</td>
<td>Textbook 2 - ISBN/ISSN</td>
<td>URL</td>
<td>Preparation and Review</td>
<td>In Addition</td>
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<td>An Introduction to Information Science B</td>
<td>Mineralogy, Petrology &amp; Geochemistry</td>
<td>Physical Chemistry</td>
<td>K.C. Saxby and R.A. Albery</td>
<td>2000</td>
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<td></td>
<td>We will be given in English, but with Japanese accents</td>
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<tr>
<td>Foundations of Calculus</td>
<td>Life and Nature</td>
<td>Introduction to Linear Algebra 2.ed.</td>
<td>Serge Lang</td>
<td>Springer Verlag</td>
<td>2008</td>
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<td>We will have small quizzes, term and</td>
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<td>term-end tests. A number of original journal papers will be also given at selected lecture classes.</td>
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<tr>
<td>Life and Nature</td>
<td>Basic Japanese 1</td>
<td>Big History 2</td>
<td>R.J. Silbey and R.A. Alberty</td>
<td>2000</td>
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<td>The lecture attendance will be string</td>
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<td>Homework: The students are required to solve exercises for each lecture.</td>
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<td>The lecturer prepares presentation slides for each lecture and puts them on the homepage for the course.</td>
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<td>URL Preparation and Review In Addition There should be homework on programming and documentation.</td>
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<td>Students are required to spend 1-2 hours per week, on average, reviewing video and written documents and doing assignments.</td>
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<td>INSTRUCTOR: You take a course that is open to all students, regardless of their study program and background. It is a required course for all first-year FGJ program students. Japanese students and exchange students from any field of study are encouraged to enroll. Knowing that this is an introductory course that is held completely in English. There will be many opportunities to listen, read, write and discuss in English in small groups. Instructor available for questions clarification during office hours, Thursday 10:00-12:00, and by e-mail (<a href="mailto:mrobert@m.tohoku.ac.jp">mrobert@m.tohoku.ac.jp</a>).</td>
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<td>GENKI 1, second edition</td>
<td>Banno et al. The Japan Times</td>
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</table>
Economics

Upon the completion of this course, students will come to understand economic theory. Students are also expected to be able to build simple models explaining non-standard behavior.

Goal of Study

We will first introduce the economic sense of value and then discuss economic behavior deriving from this hypothesis. We will give presentations about typical nonstandard behaviors in their own culture.

Course Contents

1. Historical trends in the economic sense
2. Rational decision maker in the economic sense
3. Linear consumption
4. Utility
5. Utility and risk
6. Strategic behavior: Noncooperative games
7. Game: Japanese social obligation
8. "Hito to Hito" - Private vs. public stance in Japan
9. Hito to Hito in contrast to Social obligation
10. Essential Tokyo: Japanese group consciousness
11. Utility following rules
12. Modeling nonstandard behavior
13. Student Presentation
14. Week 15, 16, and 15 are reserved for student to make presentations about examples of nonstandard behavior in their own culture.
15. Student Presentation
16. Week 16, 17, and 15 are reserved for student to make presentations about examples of nonstandard behavior in their own culture.

Evaluation Method

Students will be evaluated on class participation (40%) and presentation (60%).
<table>
<thead>
<tr>
<th>Subject</th>
<th>Textbook 1 - Textbook Title</th>
<th>Author</th>
<th>Textbook 1 - Publisher</th>
<th>Textbook 1 - ISBN/ISSN</th>
<th>Textbook 2 - Textbook Title</th>
<th>Author</th>
<th>Textbook 2 - Publisher</th>
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<th>Textbook 3 - Textbook Title</th>
<th>Author</th>
<th>Textbook 3 - Publisher</th>
<th>Textbook 3 - ISBN/ISSN</th>
<th>URL</th>
<th>Preparation and Review</th>
<th>In Addition</th>
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</thead>
<tbody>
<tr>
<td><strong>Biology A</strong></td>
<td>Essential Cell Biology</td>
<td>Alberts B, Bray D, Lewis J, Raff M, Roberts K, Kallen K, Hoppen K, Raff K</td>
<td>Garland Science</td>
<td>2012</td>
<td>Students will be expected to spend 1-2 hours per week, on average, reading relevant textbook material and completing assignments.</td>
<td>Alberts B, Bray D, Lewis J, Raff M, Roberts K, Kallen K, Hoppen K, Raff K</td>
<td>Garland Science</td>
<td>2012</td>
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<td>Instructor available for questions and consultation during office hours, Thursday 10:00-12:00, and by e-mail (<a href="mailto:mrobert@m.tohoku.ac.jp">mrobert@m.tohoku.ac.jp</a>).</td>
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<td><strong>Sports A</strong></td>
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**Archery**
- Archery equipment will be provided by the university. Earings and other accessories must be removed before class. For safety reasons, please do not wear earrings or other accessories.
### General Education Syllabus (FGL) [2017 2nd semester classes (1st year Fall)]

#### Language Used
- **E (English)**

#### Subject | Code | Day/Period | Categories | Credits | Object | Instructor (Position) | Semester | Object and Summary of Class | Goal of Study | Contents and Progress Schedule of the Class | Evaluation Method
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
#### Sports A | CB23257 | Tue./3rd | Common Subjects | 2 | Seminar | 永富 良一 graduate school of biomedical engineering | Fall | 目的: "Sports A: Softball class is constructed of two part. First part is "Team management" and Second part is Coaching". Goal of first part is to learn the team management is how to relation with team member using softball game. Goal of second part is to learn the coaching that is how to make menu of practice and to teach for member. | 1. Introduction 2. Decision of own objective and team formation. 3. Softball practice and Communication with team mate. 4. Softball practice and team production. 5. Softball game and competition management. 6. Softball game and leadership. 7. Softball game and norm within the team. 8. Softball game and review and team management. | Evaluation: Excellent (90%-100%), Good (80%-89%), Passing (60%-69%), Failure (0%-59%).
#### Sports A | CB23258 | Wed./1st | Core Subjects | 2 | Seminar | 藤本 敏彦 institute for excellence in higher education | Fall | The aim of "Sports A: Softball class is constructed of two part. First part is "Team management" and Second part is Coaching". Goal of first part is to learn the team management is how to relation with team member using softball game. Goal of second part is to learn the coaching that is how to make menu of practice and to teach for member. | 1. Team management. (Number of classes: 1-8) 2. Coaching. (Number of classes:9-15) | Evaluation will be based on results of a test and home work.
#### Linear Algebra A | CB23259 | Wed./2nd | Expansion | 2 | Seminar | TRUSHIN, Igor institute for excellence in higher education | Fall | The purpose of this class is to teach the classic notions and properties of vectors and matrices. | 1. Properties of real vectors 2. Linear independence and basis. 3. Rank of a matrix, row space and column space. 4. 4.5. Addition, scalar and matrix multiplications. 5. 5.6. Applications of matrix and basis. 6. Determinants. 7. Fundamental properties of determinants. 8. Calculation of determinants. 9. Column expansion of a matrix. 10. row expansion of a matrix. 11. Cramer’s rule. 12. Final examination. | Evaluation will be based on attendance and understanding of lecture and the results of in-class examination.
<table>
<thead>
<tr>
<th>Subject</th>
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<th>Textbook 3 - Textbook Title</th>
<th>Textbook 3 - Author</th>
<th>Textbook 3 - ISBN/ISSN</th>
<th>URL</th>
<th>Preparation and Review</th>
<th>In Addition</th>
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<tbody>
<tr>
<td>History and Human Society</td>
<td>History and Human Society</td>
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</table>

Each to bring own wear and soccer shoes.

More Kawauchi field.

To bring own wear and soccer shoes.

You must attend the first class session.

The maximum number of participants for this course is 40 due to the circumstances of field trips. If there are more applicants than spots, participants will be selected by lottery. Office hours are from 13:00 to 16:00 on Thursdays. Make an appointment in advance via e-mail or other means. E-mail: manabun@m.tohoku.ac.jp.

We will have small quizzes, mid-term and term-end tests. The lecture attendance will be strictly controlled.

We will have small quizzes, mid-term and term-end tests. The lecture attendance will be strictly controlled.
<table>
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<tr>
<th>Code</th>
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<th>Description</th>
<th>Goal of Study</th>
<th>Object and Summary of Class</th>
<th>Course Evaluation</th>
<th>Contents and Progress Schedule of the Class</th>
<th>Evaluation Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>454229</td>
<td>World of Fine Arts</td>
<td>Fri. &amp; Tue.</td>
<td>Core Subject - Human Studies</td>
<td>2</td>
<td>FGL</td>
<td>Masako KOGA (Institute for Excellence in Higher Education)</td>
<td>2</td>
<td>Japanese Art History</td>
<td>Understand in unprecedented ways the way in which art is presented to the University. The aim is to establish as an aesthetic, not as a mere illustration of history, what is called &quot;art history,&quot; by learning its history. In this case, Japanese Art History, can never be exaggerated.</td>
<td>The objective of the course is to provide an online archival course about Japanese Art History ranging from the beginnings of human habitation in the Japanese archipelago to the present, including the art of the Jomon, Yayoi, Kofun, Asuka and Nara, Heian, Kamakura,Momonouchi, Arai-Momoyama, Edo, Meiji, Taisho, Showa and Heisei Periods.</td>
<td>Course Evaluation: Final exam (70%)</td>
<td>Contents and Progress Schedule of the Class</td>
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<tr>
<td>454239</td>
<td>Chemistry B</td>
<td>Fri. &amp; Tue.</td>
<td>Subject- Chemistry</td>
<td>2</td>
<td>FGL</td>
<td>HAMANO Takashi (Institute for Excellence in Higher Education)</td>
<td>6</td>
<td>Fundamentals of physical chemistry</td>
<td>Understand in unprecedented ways the way in which art is presented to the University. The aim is to establish as an aesthetic, not as a mere illustration of history, what is called &quot;art history,&quot; by learning its history. In this case, Japanese Art History, can never be exaggerated.</td>
<td>The objective of the course is to provide an online archival course about Japanese Art History ranging from the beginnings of human habitation in the Japanese archipelago to the present, including the art of the Jomon, Yayoi, Kofun, Asuka and Nara, Heian, Kamakura,Momonouchi, Arai-Momoyama, Edo, Meiji, Taisho, Showa and Heisei Periods.</td>
<td>Course Evaluation: Final exam (70%)</td>
<td>Contents and Progress Schedule of the Class</td>
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<tr>
<td>454429</td>
<td>Health</td>
<td>Fri. &amp; Tue.</td>
<td>Subject- Health Sciences</td>
<td>2</td>
<td>FGL</td>
<td>Norio MATSUMOTO (Institute for Excellence in Higher Education)</td>
<td>6</td>
<td>Health Science</td>
<td>Understand in unprecedented ways the way in which art is presented to the University. The aim is to establish as an aesthetic, not as a mere illustration of history, what is called &quot;art history,&quot; by learning its history. In this case, Japanese Art History, can never be exaggerated.</td>
<td>The objective of the course is to provide an online archival course about Japanese Art History ranging from the beginnings of human habitation in the Japanese archipelago to the present, including the art of the Jomon, Yayoi, Kofun, Asuka and Nara, Heian, Kamakura,Momonouchi, Arai-Momoyama, Edo, Meiji, Taisho, Showa and Heisei Periods.</td>
<td>Course Evaluation: Final exam (70%)</td>
<td>Contents and Progress Schedule of the Class</td>
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<tr>
<td>453229</td>
<td>Calculus A</td>
<td>Fri. &amp; Tue.</td>
<td>Core Subject - Mathematics</td>
<td>2</td>
<td>FGL</td>
<td>HAYASHI, Shigeki (Institute for Excellence in Higher Education)</td>
<td>5</td>
<td>Calculus of Functions of one variable</td>
<td>Understand in unprecedented ways the way in which art is presented to the University. The aim is to establish as an aesthetic, not as a mere illustration of history, what is called &quot;art history,&quot; by learning its history. In this case, Japanese Art History, can never be exaggerated.</td>
<td>The objective of the course is to provide an online archival course about Japanese Art History ranging from the beginnings of human habitation in the Japanese archipelago to the present, including the art of the Jomon, Yayoi, Kofun, Asuka and Nara, Heian, Kamakura,Momonouchi, Arai-Momoyama, Edo, Meiji, Taisho, Showa and Heisei Periods.</td>
<td>Course Evaluation: Final exam (70%)</td>
<td>Contents and Progress Schedule of the Class</td>
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<tr>
<td>453239</td>
<td>Sports A</td>
<td>Fri. &amp; Tue.</td>
<td>Core Subject - Health Sciences</td>
<td>1</td>
<td>AMC</td>
<td>Akira SATO (Institute for Excellence in Higher Education)</td>
<td>3</td>
<td>Kyudo (Japanese Archery - State of Bushido and Espionage)</td>
<td>Understand in unprecedented ways the way in which art is presented to the University. The aim is to establish as an aesthetic, not as a mere illustration of history, what is called &quot;art history,&quot; by learning its history. In this case, Japanese Art History, can never be exaggerated.</td>
<td>The objective of the course is to provide an online archival course about Japanese Art History ranging from the beginnings of human habitation in the Japanese archipelago to the present, including the art of the Jomon, Yayoi, Kofun, Asuka and Nara, Heian, Kamakura,Momonouchi, Arai-Momoyama, Edo, Meiji, Taisho, Showa and Heisei Periods.</td>
<td>Course Evaluation: Final exam (70%)</td>
<td>Contents and Progress Schedule of the Class</td>
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<td>Subject</td>
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Sports A  FAL, FAL+2  General Education  Health Sciences  1  TMC  Mariko YAMAMOTO  B.S.  Waseda University (Graduate School of Medicine)  2  3  Introduction  This class aims to learn the importance of physical activity and how to enjoy exercising through activities. Students will learn to enjoy various games that satisfy various preferences. In this class, students will learn how to play badminton. This badminton class targets basic students, so there is no need for students to have prior experience in badminton. **Object:** Students will come to enjoy exercising through actively participating in physical activities. **Expectations:** 1. Need to learn basic skills concerning badminton. 2. To learn techniques on hitting the shuttlecock with the racket. 3. To enjoy rallies and matches. 4. To control your balance in order to hit the shuttlecock with the racket. 5. To develop social skills. 6. To develop the ability to self-observation. 7. To learn about teamwork. **Evaluation:** Students will have a mid-term test. Students will be graded in two categories: Pass - A (excellent) or Fail - D (poor).  

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<tr>
<th>Day/Period</th>
<th>Categories</th>
<th>Credit(s)</th>
<th>Object</th>
<th>Instructor (Position)</th>
<th>Semester</th>
<th>Class Subject</th>
<th>Object and Summary of Class</th>
<th>Goal of Study</th>
<th>Contents and Progress Schedule of the Class</th>
<th>Evaluation Method</th>
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<td>1st</td>
<td>Academic</td>
<td>1</td>
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<td>AMB HANSEN, Frank</td>
<td>2017 Fall, Fri./3rd</td>
<td><strong>Common Subjects-</strong></td>
<td><strong>Foundations of Calculus</strong></td>
<td><strong>Calculus</strong></td>
<td><strong>Schedule of the course:</strong></td>
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### Sports A

In this course, it is necessary to investigate various information on sports. The details will be announced in class.

Place: Kawauchi field.

### Foundations of Calculus

It is necessary to investigate various information on sports. The details will be announced in class.

### Physics A

- **Textbook Title:** University Physics Vol. I
  - 13th edition
- **Author:** Young and Freedman
- **Publisher:** Wiley
- **Publication Year:** 2011
- **URL:** [https://www.wileyplus.com/](https://www.wileyplus.com/)

This course requires purchase of the WileyPlus system which costs $40 USD. The system includes an electronic version of the required textbook with many integrated features to facilitate understanding of the subject and problem-solving skills in physics. The system also comes with a self-diagnostic tool, ORION, with which one will practice problem-solving based on topics and proficiency in each chapter that will be covered in the course. Access to online is necessary outside of classes. The ORION account and payment method will be announced in the orientation at the first lecture.

For those planning to take Physics B, C and D, the WileyPlus account that is purchased in this course will be kept, and no additional payment is necessary. Survey of conceptual understanding of the subject will be conducted at the first and last lecture to assess effectiveness of the instruction method. For contact info: Takeshi.Koike.b6@tohoku.ac.jp

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**Note:** The information provided is based on the given text and may not be exhaustive. For the most accurate and up-to-date information, please refer to the class syllabus or course materials.