# Course Description

## UEC Exchange program

### Japanese University Studies in Science and Technology (JUSST)

**Fall Semester, 2021**

Center for International Programs and Exchange
The University of Electro-Communications

We stay United against thE innovational Challenge

国立大学法人
電気通信大学
UEC TOKYO

100th ANNIVERSARY SINCE 1918

**UEC JUSST Program Course Description**

Japanese University Studies in Science and Technology (JUSST)
Center for International Programs and Exchange (CIPE)
The University of Electro-Communications
1-5-1 Chofugaoka, Chofu-shi, 182-8585
Tokyo, Japan
E-mail: jusst@fedu.uec.ac.jp

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# JUSST Program Course Requirements

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<tr><td colspan="2">[ GRADUATE STUDENTS ]<br><u>Independent Research Project</u> under the supervision of UEC Faculty member. Minimum 8 hours/week<br>6 Credits/one academic year (3 Credits/one semester)</td></tr>
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<tr><td>Japanese Language</td><td colspan="2">Elementary / Intermediate / Advanced *<br>8 - 14 hours/week (6 - 7 Credits)</td></tr>
<tr><td>Science and Engineering Subjects<br>( ELECTIVE )</td><td colspan="2">[ UNDERGRADUATE STUDENTS ]<br>Need to pass <u>3 subjects</u> at minimum **<br>in Each Semester<br>[ GRADUATE STUDENTS ]<br>Need to pass <u>3 subjects</u> at minimum **<br>in One Academic Year<br>Electronic Experiment Lab.<br>4 hours/week (2 Credits)<br>Required for all Undergraduate Students<br>Only offered in the FALL Semester</td></tr>
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<tr><td>Advanced Reading in Academic English<br>Research Writing</td><td colspan="2">2 hours/week (2 Credits)<br>Offered in the FALL Semester only</td></tr>
<tr><td>Sports Classes</td><td>–</td><td>2 hours/week (1 Credit)</td></tr>
</table>

*) Japanese language classes may be exempted in the 2nd semester.

**) Students are highly recommended to take scientific & Engineering courses, at least one subject more than the minimum requirement in order to ensure your successful completion of JUSST program. (Form D)

***) “Electronic Experiment Lab” is considered as one of the Science and Engineering Subjects.

# 2021 FALL SEMESTER CALENDAR

| | SUN | MON | TUE | WED | THU | FRI | SAT | SUN | MON | TUE | WED | THU | FRI | SAT | SUN | MON | TUE | WED | THU | FRI | SAT | SUN | MON | TUE | WED | THU | FRI | SAT | SUN | MON | TUE | WED | THU | FRI | SAT | SUN | MON |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | |
| | | 3rd and 4th Week, Sep Prepare for the new semester | | | | New Students Arrival | | | Classes Begin | | | | | | | | | | | 14th to 19th Course registration period | | | | | | Univ. Sports Day No Classes | | | | | | | | | | | |
| NOV | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | | | | | |
| | | | | Culture Day | | | | | | | | | | | | | | | | 19th - 22nd No Classes University Festival (open campus day) | | | | Labor Day | | | | | | | | | | | | | |
| DEC | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 28th Dec to 3rd Jan Winter Break | | | | | | |
| JAN | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| | | | | | | | New Year's Day | Winter Break | | Classes Resume | | | | | | Coming-of-Age Day | | | | Afternoon No Classes | | | | | | | | | | | | | | | | | |
| FEB | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | | | | | | |
| | | | | | | 4th to 10th Make-up Class Period | | | | | | | National Foundation Day | 12th to 18th Examination Period | | | | | | | | | Preparing for The mini-Conference (JUSST Program Presentation) | | | | | | | | | | | | | | | |
| MAR | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | | | |
| | | | JUSST mini-Conference and Closing Ceremony 2 days (to be determined) Every JUSST student has to participate | | | | | | | | | | | 11th Mar to 31st Mar Spring Break for the regular students (no class day) | | | | | | | Spring Equinox Day | | | | | JUSST Completer Vacate Deadline | | | | | | | | | | |
| APR | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | | |
| | | | 2nd semester Class Guidance | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Showa Day | | | |

National holiday
University center exam and UEC entrance exams

**@ JUSST students Weekly Meeting**
**Will be scheduled**

# Time-Table for Fall Semester, 2021

## 令和3年度秋学期（後期）　短期留学プログラム時間割

| Day 曜日 | Period 授業時間 | Subject　授業名 | Department 学科等 | Lecturer 教員名 | Classroom 教室 | Note 備考 |
|---|---|---|---|---|---|---|
| Mon 月 | 1 | | | | | |
| | 2 | Topics in Informatics I (Evolutionary Computation) | J | SATO Hiroyuki（佐藤 寛之） | | On Demand Course |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | | | | | |
| Tue 火 | 1 | UEC Academic Skills I (Computer Literacy) | CIPE | CHOO | | |
| | 2 | UEC Academic Skills II (Information literacy and Research) | CIPE | CHOO | | |
| | | Life Long Learning Sports | SPORTS | ANDO Soichi (安藤　創一) | Face to Face only | For 2nd semester students only |
| | 3 | Japanese Language (日本語) | CIPE | | | |
| | 4 | Japanese Language (日本語) | CIPE | | | |
| | 5 | Advanced Reading in Academic English | HLSS | Atsuko Marie JEFFREYS | | |
| Wed 水 | 1 | | | | | |
| | 2 | Japanese Language (日本語) | CIPE | | | |
| | 3 | Japanese Language (日本語) | CIPE | | | |
| | 4 | Japanese Language (日本語) | CIPE | | | |
| | 5 | | | | | |
| Thu 木 | 1 | UEC Academic Skills III (Publishing Literacy and Research) | CIPE | CHOO | | For 2nd semester students only |
| | 2 | Advanced Communication Engineering and Informatics III (Computational Complexity) | I | TARUI Jun (垂井　淳) | | |
| | 3 | Advanced Communication Engineering and Informatics IV (Computer Algorithms) | I | KOBAYASHI Satoshi (小林　聡) | | |
| | 3-4 | Experimental Electronics Laboratory | S | KISHIMOTO Tetsuo (岸本　哲夫)<br>VOHRA Varun | Face to Face only | |
| | 5 | Topics in Mechanical and Intelligent Systems Engineering II (The Human Brain as Intelligent Machines) | M | MIYAWAKI Yoichi (宮脇　陽一) | | |
| Fri 金 | 1 | Japanese Language (日本語) | CIPE | | | |
| | 2 | Japanese Language (日本語) | CIPE | | | |
| | 3 | | | | | |
| | 4 | | | | | |
| | 5 | International Communication for Science and Technology | I | MATSUURA Motoharu (松浦 基晴)<br>ISHIBASHI Koichiro　（石橋 孝一郎） | | * Some lesson might will be conducted in Japanese (course materials in English) |
| | | Research Writing | HLSS | OISHI Yukiko (大石 由紀子) | | |
| Intensive Course | | Topics in Mechanical and Intelligent Systems Engineering I (Advanced Robotics and Mechatronics Engineering) | M | AOYAMA Hisayuki (青山　尚之), et al. | * Start in the middle of Nov for 2 weeks in 5th and 6th periods | |

* Joint classes with regular graduate students

**Department 学科等**

- **J:** Department of Informatics (情報学専攻)
- **I:** Department of Computer and Network Engineering (情報・ネットワーク工学専攻)
- **M:** Department of Mechanical and Intelligent Systems Engineering (機械知能システム学専攻)
- **S:** Department of Engineering Science (基盤理工学専攻)
- **CIPE:** Center for International Programs and Exchange (国際教育センター)
- **SPORTS:** UEC Physical Education Division (健康・スポーツ科学部会)
- **HLSS:** The Division of Humanities Languages and Social Sciences (総合文化部会)

**Period 授業時間 (JST)**

| | |
|---|---|
| 1: | 9:00-10:30 |
| 2: | 10:40-12:10 |
| 3: | 13:00-14:30 |
| 4: | 14:40-16:10 |
| 5: | 16:15-17:45 |
| 6: | 17:50-19:20 |
| 7: | 19:30-21:00 |

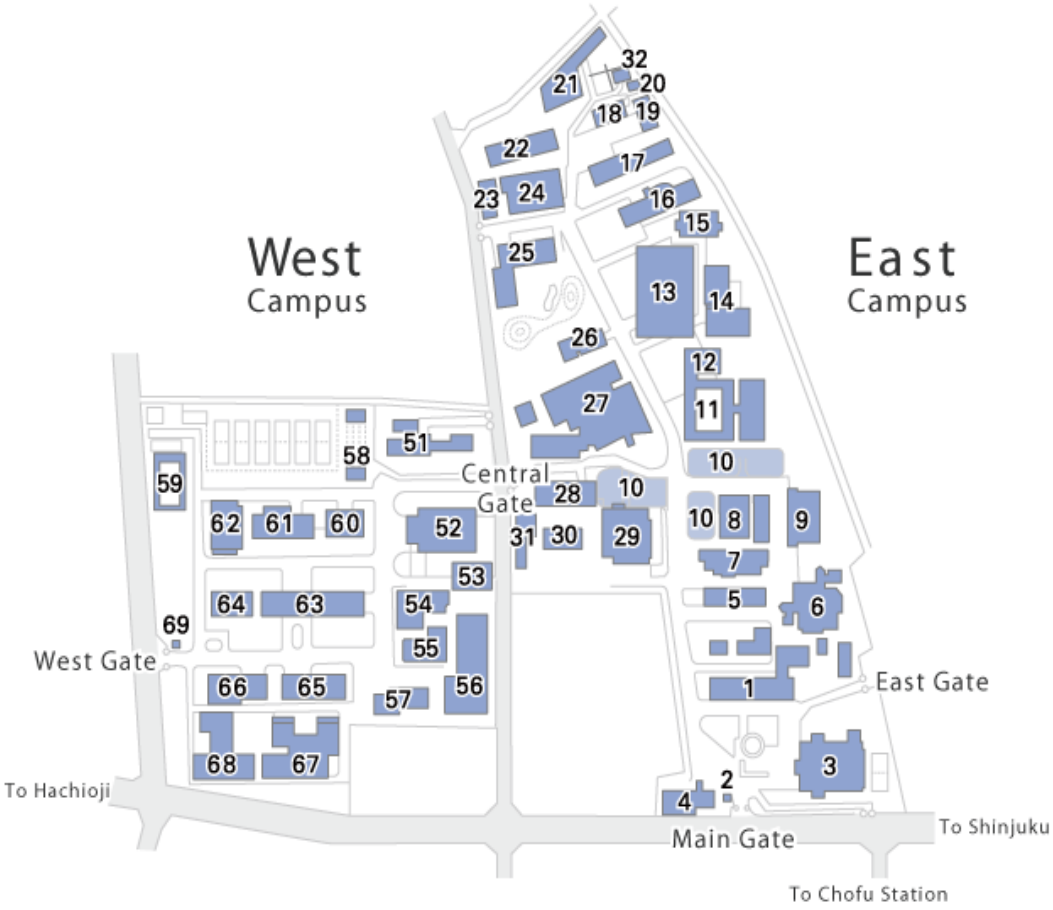
## Home University's Time Zone

| Tokyo (JST) | China, Taiwan | Thailand, Vietnam, Indonesia | Estonia | Germany, Sweden | America, Mexico |
|---|---|---|---|---|---|
| | minus 1 hour | minus 2 hours | minus 6 hours（Apr-Oct）<br>**minus 7 hours（standard）** | minus 7 hours（Mar-Oct）<br>**minus 8 hours（standard）** | minus 14 hours（Mar-Oct）<br>**minus 15 hours（standard）** |
| 9:00-10:30<br>**1st Period** | 8:00-9:30 | 7:00-8:30 | 3:00-4:30<br>2:00-3:30 | 2:00-3:30<br>1:00-2:30 | 19:00-20:30<br>18:00-19:30 |
| 10:40-12:10<br>**2nd Period** | 9:40-11:10 | 8:40-10:10 | 4:40-6:10<br>3:40-5:10 | 3:40-5:10<br>2:40-4:10 | 20:40-22:10<br>19:40-21:10 |
| 13:00-14:30<br>**3rd Period** | 12:00-13:30 | 11:00-12:30 | 7:00-8:30<br>6:00-7:30 | 6:00-7:30<br>5:00-6:30 | 23:00-0:30<br>22:00-23:30 |
| 14:40-16:10<br>**4th Period** | 13:40-15:10 | 13:40-14:10 | 8:40-10:10<br>7:40-9:10 | 7:40-9:10<br>6:40-8:10 | 0:40-2:10<br>23:40-1:10 |
| 16:15-17:45<br>**5th Period** | 15:15-16:45 | 14:15-15:45 | 10:15-11:45<br>9:15-10:45 | 9:15-10:45<br>8:15-9:45 | 2:15-3:45<br>1:15-2:45 |
| 17:50-19:20<br>**6th Period** | 16:50-18:20 | 15:50-17:20 | 11:50-13:20<br>10:50-12:20 | 10:50-12:20<br>9:50-11:20 | 3:50-5:20<br>2:50-4:20 |

The time zone not recommended for taking a real-time course

Grey time zone

# UEC CAMPUS MAP




- Main Building （1）
- Auditorium （3）
- 80th Anniversary Memorial Hall（4）
- Building E-1（7）
- Building E-2（28）
- Building E-3（27）
- Building E-4（11）
- Building E-5（12）
- Building E-6（13）
- Building E-7（14）
- Building E-8（15）
- Building E-9（16）
- Building E-10（17）
- Building A（5）
- Building B（6）
- Building C（8）
- Building D（9）
- Communication Park （10）
- University Center （29）
- Health Care Center（26）
- International House（21）
- Facilities for Extracurricular Activities（22）
- Judo Gymnasium（31）
- Personnel Clubhouse（20）
- Child-Care Facility（32）
- Building E-31（18）
- Building E-32（19）
- Building E-33（23）
- Building E-34（24）
- Building E-35（25）
- Building E-36（30）
- Security Office of the Main Gate（2）
- Building W-1（65）
- Building W-2（63）
- Building W-3（66）
- Building W-4（64）
- Building W-5（54）
- Building W-6（60）
- Building W-7（61）
- Building W-8（67）
- Building W-9（68）
- Building W-10（56）
- Building W-11（62）
- Gymnasium（52）
- Gymnasium II（53）
- Archery Facility（58）
- Swimming Pool（59）
- West Cafeteria（55）
- Student Dormitory（51）
- Building W-31（57）
- Security Office of West Gate（69）
- Center for International Programs and Exchange（28）
- University Library（27）
- Information Technology Center（27）
- Coordinated Center for UEC Research Facilities（13）
- Center for Industrial and Governmental Relations（14）
- Advanced Wireless Communication Research Center（17）
- UEC Museum of Communication（17）
- Center for Developing e-Learning（66）
- Institute for Laser Science（61）
- Center for Community Relations（1）
- Innovation Research Center for Fuel Cells（16）
- Center for Photonic Innovation（62）
- Research Center for Ubiquitous Networking and Computing（66）
- Advanced Ultrafast Laser Research Center（62）

# Japanese Language

## General Information

| | | | |
|---|---|---|---|
| **Course title (Japanese)** | 日本語 | | |
| **Course title (English)** | Japanese Language | | |
| **Course Code** | JPN101z | | |
| **Academic year** | All year | **Year offered** | 1/2/3/4 |
| **Semester(s) offered** | Spring/Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | Based on the seated time |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering and JUSST program | | |
| **Lecturer(s)** | 内藤 真理子, 笠原 ゆう子 and et al. | | |
| **Office** | East 2-213（内藤）, East 2-215（笠原） | | |
| **e-mail** | 内藤真理子<naito-m@uec.ac.jp>, 笠原ゆう子<ykasahara@uec.ac.jp> | | |
| **Course website** | NIL | | |
| **Last updated** | 2021/04/20 14:54:54 | **Update status** | Released |

## Course Description

| | |
|---|---|
| **Topic and goals** | Students will learn the basic grammar, daily use vocabulary and comprehensive in an intensive manner (自分の考えや情報が的確に伝えられる日本語を習得する). |
| **Prerequisites** | NIL |
| **Recommended prerequisites and preparation** | NIL |
| **Course textbooks and materials** | Texts and materials will be provided |
| **Course outline and weekly schedule** | A placement test will be taken before courses begin and students will be assigned to a class, as shown below, based on their Japanese language level.<br>Japanese Language Elementary I<br>Japanese Language Elementary II<br>Japanese Language Intermediate I<br>Japanese Language Intermediate II<br>Japanese Language Advanced<br>The course content, schedule and other information will be provided after the class assigning. |
| **Preparation and review outside class** | Nil |
| **Evaluation and grading** | Evaluation method<br><br>90% < S<br>80% < A<br>70% < B<br>60% < C<br>60% > D（fail） |
| **Office hours** | Comments and questions could be submitted by email |
| **Message for students** | |
| **Others** | Lecture style: Real time<br>Tools to be used: ZOOM, Webclass, Google Classroom, Google Drive and else |
| **Keyword(s)** | |

# UEC Academic Skills I (Computer Literacy)

## General Information

| | | | |
|---|---|---|---|
| **Course title (Japanese)** | UEC Academic Skills I (Computer Literacy) （上級科目） | | |
| **Course title (English)** | UEC Academic Skills I (Computer Literacy) | | |
| **Course Code** | INT001z INT101z | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering | | |
| **Lecturer(s)** | Choo Cheow Keong | | |
| **Office** | E2-305 | | |
| **e-mail** | uec-as1@fedu.uec.ac.jp | | |
| **Course website** | http://www.fedu.uec.ac.jp/skills | | |
| **Last updated** | 2021/03/09 18:38:01 | **Update status** | Released |

## Course Description

| | |
|---|---|
| **Topic and goals** | This course gives the students the intermediate-advanced knowledge of computer systems and computer networks in a typical academic environment. The lecture stresses fundamental tools and techniques that are applicable to a broad reach of systems such as the use of primitive, but powerful tools as UNIX shell, HTML, LaTeX. |
| **Prerequisites** | NIL |
| **Recommended prerequisites and preparation** | コンピューターリテラシー<br>Computer literacy |
| **Course textbooks and materials** | NIL |
| **Course outline and weekly schedule** | Course schedule and topics that will be covered<br>==========<br>1. Introduction (Usage: The Information Technology Center ITC, UEC campus network use policies)<br>2. Computer operating system and Tools (fundamentals)<br>3. Unix operating system (fundamentals)<br>4. Unix operating system (The Internet and computer network)<br>5. Word Processing (Basic; Desktop publishing, WYSIWYG, and LaTeX)<br>6. LaTeX (Environments and layout; LaTeX commands, Structure, Package, Class, style, Text typesetting)<br>7. LaTeX (Mathematical Formulas)<br>8. LaTeX (Displayed; Lists, Tabulator, Tables)<br>9. LaTeX (Displayed; Graphics, Drawing)<br>10. LaTeX (Labels, Cross-referencing, Citations and Bibliography)<br>11. World Wide Web (Overview; Web systems, applications, HTML )<br>12. HTML (Basic; Structure, Tag, color, typesetting)<br>13. HTML (Links and Multimedia; Images, Sound, and Movies)<br>14. HTML (List, Tables and Interactivity, Cascading Style Sheet; CSS)<br>15. HTML (Project Work)<br>==========<br><br>This is a lecture-lab course in which the instructor presents the topics, and the students complete the assignments during lab periods or outside of class. The content is intended to be a lecture in combination with a practical exercise ("learn, practice, implement and apply") that will cover the basic usage of the UNIX system, and including how to write in LaTeX and HTML.<br><br>Note that the lecture schedule is subject to constant revisions throughout the course. |

| | |
|---|---|
| **Distance learning information** | Will be informed by the JUSST program office. |
| **Preparation and review outside class** | Students are required to create/design a homepage and present it in class at the end of the semester. Thus, student may need some extra time to create the homepage. |
| **Evaluation and grading** | Evaluation is given as follows; (Tasks 50%, Mid-Semester presentation 30%, Final presentation 20%)<br><br>Since this course is a practical course, attendance and participation in class is obligatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted all the assignments and 3) made their Mid-semester & final presentations can obtain the credits. |
| **Office hours** | 12:00-13:00, for just-in-case, schedule an appointment before walking in. |
| **Message for students** | We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class. |
| **Others** | Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences. |
| **Keyword(s)** | Unix, HTML, Latex, Website |

# UEC Academic Skills II (Information Literacy and Research)

## General Information

| | | | |
|---|---|---|---|
| **Course title (Japanese)** | UEC Academic Skills II (Information Literacy and Research) （上級科目） | | |
| **Course title (English)** | UEC Academic Skills II (Information Literacy and Research) | | |
| **Course Code** | INT002z | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering | | |
| **Lecturer(s)** | Choo Cheow Keong | | |
| **Office** | E2-305 | | |
| **e-mail** | uec-as2@fedu.uec.ac.jp | | |
| **Course website** | http://www.fedu.uec.ac.jp/skills | | |
| **Last updated** | 2021/03/09 18:44:53 | **Update status** | Released |

## Course Description

| | |
|---|---|
| **Topic and goals** | This course is designed to foster students' ability to identify, evaluate and use diverse information sources effectively in science and engineering studies. It involves the knowledge of information technology tools and their application to research. Students are required to give a poster presentation on their major study or research at the end of the semester. |
| **Prerequisites** | UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー |
| **Recommended prerequisites and preparation** | NIL |
| **Course textbooks and materials** | NIL |
| **Course outline and weekly schedule** | Course schedule and topics that will be covered<br>==========<br>1. Introduction (Usage: The Information Technology Center etc.)<br>2. Scientific literatures and resources retrieval (UEC Library)<br>3. Mind mapping, brain storming<br>4. Academic Integrity (Referencing, citing, create bibliographies)<br>5. Managing and sharing resources<br>6. Writing a research proposal<br>7. Scientific drawing, Charts, Diagrams and Timelines (Inkscape, GIMP)<br>8. Tables, Graphs (SciDAVis)<br>9. Desktop publishing for scientific poster (Scribus)<br>11. Creating effective scientific poster<br>12. Formula editor (word processing)<br>12. Writing an Abstract for a research<br>13. Preparation for presentation<br>14. Poster presentation 1/2<br>15. Poster presentation 2/2<br>==========<br><br>The course introduces the use of some powerful tools for scientific research and engineering, field. The lectures include hands-on learning and applicable exercises that assumes no any previous experience or training, so the initial emphases are on the use of the basic scientific software and the basic research procedures.<br><br>Note that the lecture schedule is subject to constant revisions throughout the course. |
| **Distance learning information** | Will be informed by the JUSST program office. |

| | |
|---|---|
| **Preparation and review outside class** | Students have to read 1 to 3 articles about varied topics, and at the end of the semester, the students are expected to make a postal presentation. |
| **Evaluation and grading** | Evaluation is given as follows; (Assignments 50%, midterm presentation 20%, Poster presentation 30%)<br><br>Since this course is a practical course, attendance and participation in class is obligatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted all the assignments and 3) made their poster presentations can obtain the credits. |
| **Office hours** | 12:00-13:00, for just-in-case, schedule an appointment before walking in. |
| **Message for students** | We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class. |
| **Others** | Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences. |
| **Keyword(s)** | Research, library, Desktop publishing, poster presentation |

# UEC Academic Skills III (Information Literacy and Research)

## General Information

| | | | |
|---|---|---|---|
| **Course title (Japanese)** | UEC Academic Skills III (Publishing Literacy and Research) | | |
| **Course title (English)** | UEC Academic Skills III (Publishing Literacy and Research) | | |
| **Course Code** | INT003z | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering | | |
| **Lecturer(s)** | Choo Cheow Keong | | |
| **Office** | E2-305 | | |
| **e-mail** | uec-as3@fedu.uec.ac.jp | | |
| **Course website** | http://www.fedu.uec.ac.jp/skills | | |
| **Last updated** | 2021/03/09 18:47:41 | **Update status** | Released |

## Course Description

| | |
|---|---|
| **Topic and goals** | This course focuses attention on the exercise of strategic research project. Students are required to carry out a study/research project for more than a half of year with a specific topic. Then, they have to proceed their own project after they choose their own topic and make a monthly plan. At the end of the semester, there will be an international mini-conference that has participants of all the JUSST Exchange Students and other regular UEC Students. |
| **Prerequisites** | UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー |
| **Recommended prerequisites and preparation** | UEC Academic Skills II (Information Literacy and Research) |
| **Course textbooks and materials** | NIL |
| **Course outline and weekly schedule** | Course schedule and topics that will be covered<br>==========<br>1. Introduction (Usage: The Information Technology Center etc.)<br>2. Academic Integrity (Interesting and Unpublished, Scientific misconduct)<br>3. Researcher's outputs (Why, How, Where)<br>4. Planning the research/research protocol (LaTeX editor, Mind mapping, brainstorming etc.)<br>5. Proposing and Reporting on Research<br>6. Making scientific presentation<br>7. Midterm Presentation 1/2<br>8. Midterm Presentation 2/2<br>9. Brush up on your skills (Handling Q&A)<br>10. Communication and Correspondence (Peer, Researcher, Editor, etc.)<br>11. Academic publishing (Overviews; Dissertation, Monograph, Scientific paper )<br>12. Academic publishing (Procedures, Processes and standards)<br>13. Assessment and evaluation<br>14. Oral presentation 1/2<br>15. Oral presentation 2/2<br>==========<br><br>The lecture is designed to support the pursuit of writing research paper and share the skills of quality publishing. All the lectures are linked with practical activities, and at the end of the course, the students are required to write a paper and give a presentation on their research-based projects.<br><br>Note that the lecture schedule is subject to constant revisions throughout the course. |

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| **Distance learning information** | Will be informed by the JUSST program office. |
| **Preparation and review outside class** | Students have to read 2 to 3 articles about varied topics and at the mid and end of the semester, the students are expected to give an oral presentation.<br><br>For laboratory assigned students, the essential project hours are estimated for more than 8 hours a week, where this is the same standard of graduate thesis project. |
| **Evaluation and grading** | Evaluation is given as follows; (Assignments 40%, Writing paper 30%, Oral presentation 30%)<br><br>Since this course is a practical course, attendance and participation in class is obligatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted the writing paper and 3) made their final presentations can obtain the credits. |
| **Office hours** | 12:00-13:00, for just-in-case, schedule an appointment before walking in. |
| **Message for students** | We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class. |
| **Others** | Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences. |
| **Keyword(s)** | Research, Publishing paper, oral presentation |

# Advanced Reading in Academic English

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Advanced Reading in Academic English | | |
| **Course title (English)** | Advanced Reading in Academic English | | |
| **Course Code** | ENG602z | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering | | |
| **Lecturer(s)** | Atsuko Marie Jeffreys | | |
| **Office** | East 1-807 | | |
| **e-mail** | ajeffreys@uec.ac.jp | | |
| **Course website** | https://www.edmodo.com/, https://advances.sciencemag.org/ | | |
| **Last updated** | 2021/03/10 2:20:14 | **Update status** | Released |

## Course Description

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| **Topic and goals** | The goal of this course is to be able to correctly interpret texts written by native speakers of English for native speakers of English, by reading them closely and studying the grammar, vocabulary and expressions, and the structures, Specifically, we will use articles in the Science Magazine online. |
| **Prerequisites** | The following courses are prerequisites to registering for this class:<br><br>Academic Spoken English I and II<br>Academic Written English I and II<br>Academic English for the Second Year I and II |
| **Recommended prerequisites and preparation** | Any science courses |
| **Course textbooks and materials** | Articles will be chosen from the Science Magazine online (https://advances.sciencemag.org/). No purchase of textbooks is necessary. |
| **Course outline and weekly schedule** | In each class, a pair of students will explain the article of their choice in lecture style, based on the class contents the previous week. It is expected that the other students react by asking questions and making comments.<br><br>Class 1: Introduction of class / preparation for next class<br>Classes 2 - 7: Grammatical study of articles / Student lectures<br>Class 8: Midterm test<br>Classes 9 - 14: Grammatical study of articles / Student lectures<br>Class 15: Final test |
| **Course content utilizing practical experience** | Thirty-five years of teaching experience will be utilized in guiding students to attract and maintain attention to one's speeches and to understand the difficulties that the listeners are encountering. |
| **Distance learning information** | Will be informed by the JUSST program office. |
| **Preparation and review outside class** | 1. Read the article for next week, study the grammar, vocabulary and expressions, and the structure.<br>2. Prepare your lecture if it is your turn next week.<br>3. Prepare to react to the lecture.<br>4. Review your learning after class. |
| **Evaluation and grading** | Class lectures 25%<br>Reaction to lectures 25%<br>Midterm test 25% |

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| | Final test 25%<br>----------<br>Total 100%<br><br>S≧90%, A≧80%, B≧70%, C≧60%, Fail<60% |
| **Office hours** | Email me to set up an appointment to meet for consultation. |
| **Message for students** | What does not kill you makes you stronger. -- This is true. |
| **Others** | The contents of this syllabus are subject to change as deemed necessary. |
| **Keyword(s)** | Autonomous learning, Close reading, Reading comprehension |

# Research Writing

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Research Writing | | |
| **Course title (English)** | Research Writing | | |
| **Course Code** | ENG601z | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | General culture subjects | | |
| **Cluster/Department** | School of Informatics and Engineering | | |
| **Lecturer(s)** | OOISHI Yukiko (大石　由紀子) | | |
| **Office** | E1-615 | | |
| **e-mail** | yukiko@UEC (UEC = uec.ac.jp) | | |
| **Course website** | None | | |
| **Last updated** | 2021/03/09 18:16:42 | **Update status** | Released |

## Course Description

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| **Topic and goals** | This course will be a workshop and project-oriented course in scientific writing, and it will extend on the principles of academic writing covered in Academic English for the Second Year II. In particular, students will search for academic papers and learn to identify relevant studies, as well as practice summarizing and precision writing. |
| **Prerequisites** | Academic Spoken English I & II, Academic Written English I & II, Academic English for the Second Year I & II |
| **Recommended prerequisites and preparation** | English Exercise (drill) |
| **Course textbooks and materials** | None. All readings will be provided in class by the instructor or found by the students. |
| **Course outline and weekly schedule** | Week 1: Class Introduction<br>Week 2: Scientific writing<br>Week 3: Searching for journal articles<br>Week 4: Scientific methodology<br>Week 5: Summarizing<br>Week 6: Presentations<br>Week 7: Presentations<br>Week 8: Precision writing<br>Week 9: Methods<br>Week 10: Peer review<br>Week 11: Discussion<br>Week 12: Brevity activities<br>Week 13: Brevity activities<br>Week 14: Final Presentations & self-evaluations<br>Week 15: Final Presentations & self-evaluations |
| **Distance learning information** | Will be informed by the JUSST program office. |
| **Preparation and review outside class** | Students are expected to spend at least one hour each week preparing for the upcoming class, as well as reviewing materials from the previous lesson. |
| **Evaluation and grading** | Active participation: 40%<br>Writing assignments: 30%<br>Presentations: 30% |
| **Office hours** | By appointment. |

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| **Message for students** | This class will be taught entirely in English. |
| **Others** | None. |
| **Keyword(s)** | Research writing, scientific writing, summarizing, English |

# Topics in Informatics I (Evolutionary Computation)

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Topics in Informatics I (Evolutionary Computation) （学部） | | |
| **Course title (English)** | Topics in Informatics I (Evolutionary Computation) | | |
| **Course Code** | | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | Faculty of Informatics and Engineering |
| **Teaching method** | | **Credits** | 2 |
| **Category** | | | |
| **Cluster/Department** | | | |
| **Lecturer(s)** | SATO Hiroyuki (佐藤　寛之) | | |
| **Office** | W6-205 | | |
| **e-mail** | h.sato@uec.ac.jp | | |
| **Course website** | WebClass | | |
| **Last updated** | 2021/03/08 14:48:15 | **Update status** | Released |

## Course Description

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| **Topic and goals** | Evolutionary computation is a bio-inspired computation methodology and categorized as a part of computational intelligence. Evolutionary computation treats information as genes of organisms, and evolve it inside the computer. The primary usage of evolutionary computation is optimization. As representative industrial applications, the front nose design of the Shinkansen N700 and the wing design of the Mitsubishi regional jet (MRJ) were optimized by evolutionary computation. Evolutionary optimization can be applied even if the characteristic of the target optimization problem is unknown. This course provides lectures of evolutionary algorithms from classic to the latest ones, types of optimization problems, their handling methods in evolutionary algorithms, and implementation techniques. The goals of the class are to be able to recognize the types of optimization problems, select appropriate evolutionary algorithms, and implement one of these algorithms. |
| **Prerequisites** | The course has computer exercises involving programming. Students need to know at least one programming language. |
| **Recommended prerequisites and preparation** | Computer literacy, Fundamental programming |
| **Course textbooks and materials** | Materials are distributed by using WebClass system. |
| **Course outline and weekly schedule** | 1. Introduction to Evolutionary Computation<br>2. Optimization Problems<br>3. MATLAB Programming<br>4. Hill Climbing<br>5. Genetic Algorithms<br>6. Evolutionary Programming<br>7. Evolution Strategies<br>8. Genetic Programming<br>9. Evolutionary Algorithm Variations<br>10. Simulated Annealing<br>11. Particle Swarm Optimization<br>12. Differential Evolution<br>13. Estimation of Distribution Algorithm<br>14. Evolutionary Multi-objective Optimization<br>15. Other Applications and Futures of Evolutionary Computation |
| **Distance learning information** | This course is on-demand and uses WebClass.<br>https://webclass.cdel.uec.ac.jp/webclass/login.php?group_id=2003091805000027momi |
| **Preparation and review outside class** | Review and computer exercises are needed after the weekly class. |

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| **Evaluation and grading** | Report submissions related to computer exercises are required. The reports are scored, and the evaluation is decided by the followings (100 points maximum).<br><br>S: >= 90 points<br>A: >= 80 points<br>B: >= 70 points<br>C: >= 60 points<br>D: <60 points |
| **Office hours** | Tuesday, 10:40-12:10. Please make sure to make an appointment by e-mail before visiting the lecturer. |
| **Message for students** | According to the schedule of the Short-term Exchange Study Program JUSST, the course starts from October 12th (Mon). The above WebClass is limited only for the registered students. The lecturer registers international students of the Short-term Exchange Study Program JUSST to the WebClass. Other students need to mail to the lecturer to join the WebClass. |
| **Others** | N/A |
| **Keyword(s)** | Evolutionary computation, evolutionary algorithm, optimization, computational intelligence |

# Advanced Communication Engineering and Informatics III （Computational Complexity）

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Advanced Communication Engineering and Informatics III （Computational Complexity）（学域） | | |
| **Course title (English)** | Advanced Communication Engineering and Informatics III （Computational Complexity） | | |
| **Course Code** | INT003c INT003d INT003f INT003g | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | Core subjects | | |
| **Cluster/Department** | Cluster I （Informatics and Computer Engineering)/Cluster II （Emerging Multi-interdisciplinary Engineering） | | |
| **Lecturer(s)** | TARUI Jun (垂井　淳) | | |
| **Office** | E3-824 | | |
| **e-mail** | juntarui0@gmail.com | | |
| **Course website** | www.jtlab.cei.uec.ac.jp | | |
| **Last updated** | 2021/03/09 21:13:31 | **Update status** | Released |

## Course Description

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| **Topic and goals** | In the academic year of 2021, the subject of this course will be Computational Complexity, which studies questions such as "Which computational problems have efficient algorithms?" and "Do quantum computers have more computational power than classical computers?" The course will be an introduction to Computational Complexity, and will cover a wide spectrum of topics. |
| **Prerequisites** | none |
| **Recommended prerequisites and preparation** | Students should have taken an introductory course on algorithms, and should have written at least one computer program. |
| **Course textbooks and materials** | none |
| **Course outline and weekly schedule** | In the first half of the course, we will dicuss the following various algorithmic paradigms:<br>(1) learning algorithms<br>(2) randomized algorithms<br>(3) approximation algorithms<br>In the second half, we will discuss the following:<br>(1) complexity classes inculuding importand classes P and NP<br>(2) theory of NP-completeness<br>(3) theoretical cryptography<br><br>More specific plan of 15 lectures is as follows.<br>I will somewhat fine-tune the lecture plan after finding out backgrounds of actual class attendees.<br><br>1. overview, review of algorithm analysis<br>2. review of sorting algorithms and their analysis<br>3. explanation of programming project<br>4. learning algorithm (1): learning axis-parallel rectangles<br>5. learning algorithm (2): PAC learning paradigm<br>6. learning algorithm (3): learning conjunctions and DNFs<br>7. student presentation of programming project<br>8. randomized algorithm<br>9. approximation algorithm<br>10. complexity classes P and NP<br>11. NP-completeness (1): reduction<br>12. NP-completeness (2): 3SAT |

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| | 13. NP-completeness (3): 3coloring<br>14. cryptography<br>15. P vs NP conjecture |
| **Distance learning information** | If necessary, the course will be by zoom; zoom link info will be announced by September. |
| **Preparation and review outside class** | at least 1.5 hour/week expected |
| **Evaluation and grading** | Grading will be based on biweekly homework reports and one programming project. To pass the course, you have to understand at least two-thirds of the topics in class well enough to the extent that you can give simple examples for explanation, and you have to complete well at least two-thirds of your homework. |
| **Office hours** | TBA |
| **Message for students** | Regular UEC students from all departments are very much welcome. |
| **Others** | If you have questions about this course, please feel free to ask me by email. |
| **Keyword(s)** | algorithm, computational complexity, learning algorithm, NP-completeness |

# Advanced Communication Engineering and Informatics IV（Computer Algorithms）

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Advanced Communication Engineering and Informatics IV （Computer Algorithms）（学域） | | |
| **Course title (English)** | Advanced Communication Engineering and Informatics IV （Computer Algorithms） | | |
| **Course Code** | INT004c INT004d INT004f INT004g | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | Core subjects | | |
| **Cluster/Department** | Cluster I （Informatics and Computer Engineering)/Cluster II （Emerging Multi-interdisciplinary Engineering） | | |
| **Lecturer(s)** | KOBAYASHI Satoshi (小林　聡) | | |
| **Office** | W9-735 | | |
| **e-mail** | kobayashi.satoshi@uec.ac.jp | | |
| **Course website** | http://www.comp.cs.uec.ac.jp/lectures/ | | |
| **Last updated** | 2021/03/08 1:17:44 | **Update status** | Released |

## Course Description

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| **Topic and goals** | The purpose of this lecture is provide the theory and technique to design efficient algorithms for various fundamental problems.<br>The goals of the students are to achieve the following points:<br>(1) to understand the behavior, correctness, and time complexity analysis of the algorithms discussed in the lecture,<br>(2) to understand the principles of design methodologies of algorithms, such as dynamic programming, greedy method, etc. |
| **Prerequisites** | Registered students should have ability to write C programs. Furthermore, the knowledge about some basic data structures (list, binary tree, heap, etc.) and basic algorithms (sorting, etc.) are required. |
| **Recommended prerequisites and preparation** | None |
| **Course textbooks and materials** | Some handouts are provided at the lecture. |
| **Course outline and weekly schedule** | (a) Contents of the lecture<br><br>[1] Minimum spanning tree problem and greedy algorithms<br>[2] Correctness of Prim's and Kruskal's algorithm<br>[3] Greedy algorithms for other problems<br>[4] Shortest path problem and Dynamic Programming (DP)<br>[5] DP Method (1) --- Transform DFAs to regular expressions<br>[6] DP Method (2) --- Context-free grammar and its recognition problem<br>[7] DP Method (3) --- CYK algorithm for CFG recognition<br>[8] DP Method (4) --- Hidden Markov Models (HMM)<br>[9] DP Method (5) --- Recognition problem of HMM<br>[10] DP Method (6) --- HMM recognition algorithm<br>[11] DP Method (7) --- Approximate string matching algorithms<br>[12] String matching problem<br>[13] Computing failure functions in KMP algorithm<br>[14] Correctness and time complecity of KMP algorithm<br>[15] Summary and conclusion of this lecture<br><br>(b) How does this lecture proceed? |

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| | For each problem, we first discuss on its background and motivation, and then give an algorithm for the problem. The correctness and time complexity analysis of the given algorithm will be discussed in details.<br>Example runs will be used to enrich the understanding. |
| **Distance learning information** | The information about the lecture will be given at Google classroom. |
| **Preparation and review outside class** | Implement algorithms given in the the lecture, if possible. |
| **Evaluation and grading** | Academic performance is evaluated by exams.<br>The lowest standard is 60%. |
| **Office hours** | Any time, but appointments by e-mails are necessary. |
| **Message for students** | None |
| **Others** | None |
| **Keyword(s)** | Dynamic programming, greedy algorithms, context free grammars, HMM, string matching, etc. |

# Experimental Electronics Laboratory

## General Information

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| **Course title (Japanese)** | Experimental Electronics Laboratory（学域） | | |
| **Course title (English)** | Experimental Electronics Laboratory | | |
| **Course Code** | INT401k INT401m INT401n INT401p | | |
| **Academic year** | 2021 | **Year offered** | 2/3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Practical (Experiment) | **Credits** | 2 |
| **Category** | Core subjects | | |
| **Cluster/Department** | Cluster III (Fundamental Science and Engineering) | | |
| **Lecturer(s)** | KISHIMOTO Tetsuo (岸本　哲夫), VOHRA　Varun | | |
| **Office** | Building East 6, Room 628 | | |
| **e-mail** | kishi(at)pc.uec.ac.jp, varun.vohra(at)uec.ac.jp | | |
| **Course website** | none | | |
| **Last updated** | 2021/03/08 12:58:34 | **Update status** | Released |

## Course Description

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| **Topic and goals** | This course aims for providing the students, who may have no practical knowledge of electrical circuits, with the basics of analog and digital electronics through hands-on experience. |
| **Prerequisites** | Basic Electronics |
| **Recommended prerequisites and preparation** | Analysis, especially complex numbers. |
| **Course textbooks and materials** | Instruction manual in text materials or a pdf file will be provided at the class. |
| **Course outline and weekly schedule** | A student builds the following electrical circuits on the solderless breadboard. He or she then measures and analyzes various properties. The experiments are carried out every other week, and classroom discussion is held online in between.<br><br>1) Measurement of resistance.<br>2) Measurement of complex impedance for C and L.<br>3) Resonant behavior of LC-circuits.<br>4) Transmit radio signals and receive them using LC-circuits.<br>5) Transistor and LED.<br>6) Operation amplifier and its applications.(transmit and receive sound signal using LEDs).<br>7) Logic gates. |
| **Distance learning information** | Face-to-Face classes only |
| **Preparation and review outside class** | Please study on the basic technical terms of the IC you will work on each week. |
| **Evaluation and grading** | It is mandatory to finish all the projects listed above in order to acquire the credit. The score rate is 80%, where the attitude toward the experiment is also taken into account. The student must submit a report on the project within a week, which is subject to either quick, oral examination with the lecturer or open discussion in which every student is to participate. This post-laboratory step will be assessed at a rate of 15%. The pre-laboratory test will also be assessed (5%). |
| **Office hours** | Please make an appointment before coming to my office.<br>Contact: Bldg-E6, room 628<br>Ext:5449<br>kishi(at)pc.uec.ac.jp |
| **Message for students** | Electronic circuits are fun to play with. |

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| **Others** | The course has originally been designed for JUSST students, but regular students can take it.<br>Due to COVID-19, the classroom discussion will be done online.<br><br>Online access codes and other details will be announced in the Google Classroom.<br>If you have any questions regarding taking this class or other things related to this class, please write in the Google classroom.<br><br>The first Zoom session will start at 12:45 on Thursday, Oct 8th. Please join by 12:45.<br><br>Google Classroom: 3jabtlz |
| **Keyword(s)** | complex impedance, inductor, capacitor, logic gate, operational amplifier, bipolar junction transistor. |

# Topics in Mechanical and Intelligent Systems Engineering II （The human brain as intelligent machines）

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | Topics in Mechanical and Intelligent Systems Engineering II （The human brain as intelligent machines）（学域） | | |
| **Course title (English)** | Topics in Mechanical and Intelligent Systems Engineering II （The human brain as intelligent machines） | | |
| **Course Code** | INT003h INT003i INT003j | | |
| **Academic year** | 2021 | **Year offered** | 3/4 |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | School of Informatics and Engineering |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | Core subjects | | |
| **Cluster/Department** | Cluster II （Emerging Multi-interdisciplinary Engineering）/Cluster III (Fundamental Science and Engineering) | | |
| **Lecturer(s)** | MIYAWAKI Yoichi (宮脇　陽一) | | |
| **Office** | East 4-620 | | |
| **e-mail** | yoichi.miyawaki@uec.ac.jp | | |
| **Course website** | None | | |
| **Last updated** | 2021/03/12 1:06:31 | **Update status** | Released |

## Course Description

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| **Topic and goals** | The human brain is considered as one of the most intelligent "machines." In this lecture, we explore how the human brain is receiving, processing, and producing signals that are used to sense, perceive, feel, and make actions. In particular, we will focus on the visual information processing systems in the human brain (the visual cortex) and learn how the visual cortex works from the basic viewpoints. We would also focus on methodological aspects of analysis of the human brain function, particularly on the topics of non-invasive signal acquisition of human brain activity using electroenchephalography (EEG), magnetoenchephalography (MEG), and functional magnetic resonance imaging (fMRI), together with computational analysis of these signals and computational modeling of neural signal processing. We might refer and ask students to read and introduce (in the form of presentation) the recent literature to achieve the goal. |
| **Prerequisites** | None |
| **Recommended prerequisites and preparation** | None |
| **Course textbooks and materials** | None, but the following textbook might help students to understand the topics:<br>[1] Jeremy M. Wolfe, Keith R. Kluender, Dennis M. Levi, Linda M. Bartoshuk, Rachel S. Herz, Roberta L. Klatzky and Daniel M. Merfeld, "Sensation & Perception (5th edition)," Sinauer Associates (2017)<br>[2] Peter Dayan and Laurence F. Abbott, "Theoretical Neuroscience: Computational and Mathematical Modeling of Neural Systems," The MIT Press (2005)<br>[3] Scott A. Huettel, Allen W. Song, Gregory McCarthy, "Functional Magnetic Resonance Imaging," Sinauer Associates (2008) |
| **Course outline and weekly schedule** | The following contents may vary depending on progress of students:<br><br>[1] Introduction<br>[2] Basics of our visual perception<br>[3] Evaluation of our subjective sensation/perception (1): metrics<br>[4] Evaluation of our subjective sensation/perception (2): psychophysical procedures<br>[5] Exercise of psychophysical experiment (1): survey of visual illusions<br>[6] Exercise of psychophysical experiment (2): introduction of Psychtoolbox and/or PsychoPy<br>[7] Exercise of psychophysical experiment (3): performing test experiments<br>[8] Student presentation of psychophysical experiment<br>[9] Basics of the human brain |

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| | [10] Basics of the visual cortex<br>[11] Basics of neural signal acquisition: invasive method<br>[12] Basics of neural signal acquisition: non-invasive method<br>[13] Basics of neural information encoding and decoding<br>[14] Overview of recent topics about visual information representation in the neural systems<br>[15] Student presentation about recent topics in visual information representation in the neural systems |
| **Distance learning information** | Will be informed by the JUSST program office. |
| **Preparation and review outside class** | None, but maybe preferable to get used to computer programming using matlab and/or python |
| **Evaluation and grading** | Report(s) will be requirements on the topics mentioned above. Presentation(s) will be evaluated if they are assigned in the course. |
| **Office hours** | 14:40 - 16:10, every Thursday. An e-mail contact prior to your visit is preferable. |
| **Message for students** | Active contribution for the course will enhance your understanding. Explore the attractiveness of this field by yourself, too. |
| **Others** | NA |
| **Keyword(s)** | human brain, neural information processing, brain activity measurement, neuroscience, visual perception, visual illusion, computer graphics, visual psychophysics |

# International Communication for Science and Technology

## General Information

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|---|---|---|---|
| **Course title (Japanese)** | 国際科学技術コミュニケーション論 | | |
| **Course title (English)** | International Communication for Science and Technology | | |
| **Course Code** | | | |
| **Academic year** | 2021 | **Year offered** | All years |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | Master's Program |
| **Teaching method** | Lecture | **Credits** | 2 |
| **Category** | Graduate school practical education subjects | | |
| **Cluster/Department** | Offered for all departments | | |
| **Lecturer(s)** | MATSUURA Motoharu (松浦　基晴), ISHIBASHI Koichiro (石橋　孝一郎) | | |
| **Office** | East 3-1027 | | |
| **e-mail** | m.matsuura@uec.ac.jp, ishibashi@uec.ac.jp | | |
| **Course website** | BHN桑原基金寄付講座/ BHN Kuwabara Foundation Donation Course, https://www.bhn-uec.net | | |
| **Last updated** | 2021/03/12 21:45:40 | **Update status** | Released |

## Course Description

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| **Topic and goals** | Topic<br>In the age when sciences and technologies are deeply involved in social life, engineers and researchers need not only the ability to make presentations and negotiations in their specialized fields, but also various communication skills. In addition, in order to achieve the SDGs (Sustainable Development Goals) adopted by the United Nations, it is necessary to show leadership and work with experts from different fields and/or people from different cultures. Moreover, as science and technology tend to become deeper and more complex, it is important to have the ability to explain to general public so that they can properly understand their expertise. In this course, students will understand the international activities such as international standardization, international conferences, international projects, press releases, etc., and acquire the communication skills required in those situations, through lectures and presentations.<br>Goals<br>① Understand the standardization system of science and technology that contributes to SDGs, the academic society system, the international joint research activities, and the form of press release on science and technology.<br>② Understand international customs and different cultures of activities at international organizations and conferences.<br>③ Acquire the writing and presentation skills necessary for explanations to engineers in different fields and general public by picking up science and technology articles. |
| **Prerequisites** | None |
| **Recommended prerequisites and preparation** | None |
| **Course textbooks and materials** | 参考資料/Reference materials<br>・Erin Meyer, “The Culture Map -- Breaking Through the Invisible Boundaries of Global Business,” Public Affairs Books, New York City, 2014.<br>エリン・メイヤー著?樋口武志訳 「異文化理解力」, 英治出版, 1,800 円<br>・情報通信技術委員会編 「使える会議英語～国際会議参加者の表現・事例集」, http://www.ttc.or.jp/jp/stdtext/english/<br>・山本佳世子著 「研究費が増やせるメディア活用術」, 丸善出版, 1,950 円 |
| **Course outline and weekly schedule** | This course is <English Type II>; All lectures will be given mainly in English.<br>#1 Oct. 9 (Fri), 5th period<br>“Introduction, and about SDGs”<br>Prof. MATSUURA Motoharu and Mr. TOMINO Takeshi (BHN)<br>#2 Oct. 16 (Fri), 5th period |

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| | “International communication for science and technology contributing to SDGs”<br>Emer. Prof. MIKI Tetsuya<br>#3 Oct. 23 (Fri), 5th period<br>“International standardization system and Japanese efforts”<br>TBD (Ministry of Economy, Trade and Industry)<br>#4 Oct. 30 (Fri), 5th period<br>“International standardization in the field of radio communications”<br>Dr. ATARASHI Hiroyuki (NTT Docomo)<br>#5 Nov. 6 (Fri), 5th period<br>“International standardization in the field of networks”<br>Dr. UEDA Hiromi (Emer. Prof. of Tokyo Univ. of Technology)<br>#6 Nov. 13 (Fri), 5th period<br>“International standardization and intellectual property”<br>Mr. KOBAYASHI Tetsuo (Patent Lawyer)<br>#7 Nov, 27 (Fri), 5th period<br>“OECD's commitment to science and technology”<br>Ms. KURISAKI Yoshiko (Europe-Japan Dynamics)<br>#8 Dec. 4 (Fri), 5th period<br>“International R&D Project Activities”<br>Lecturer: Dr. IGUCHI Satoshi (National Astronomical Observatory of Japan)<br>#9 Dec. 11 (Fri), 5th period<br>“Presentation at international academic conferences and paper submission<br>to academic journal”<br>Prof. MATSUURA Motoharu<br>#10, #11 Dec. 18 (Fri), 5th and 6th period<br>“Exercise 1: Presentation and discussion on the R&D contributing to SDGs”<br>Prof. MATSUURA, Prof. ISHIBASHI, Prof. MIKI and Mr. KUREMATSU<br>#12 Jan. 8 (Fri), 5th period<br>“Science and technology communication: Media and reporter activities”<br>Dr. YAMAMOTO Kayoko (The Nikkan Kogyo Shinbun)<br>#13 Jan. 22 (Fri), 5th period<br>“Text expressing the attractiveness of research results”<br>Dr. YAMAMOTO Kayoko (The Nikkan Kogyo Shinbun)<br>#14, #15 Jan. 29 (Fri), 5th period<br>“Exercise 2: Presentation and discussion on scientific and technology communication”<br>Ms. YAMAMOTO Prof.MATSUURA, Prof. ISHIBASHI and Prof. MIKI |
| **Course content utilizing practical experience** | The faculty members for this course have made practical results in joint research regarding ICT. In addition, lecturers from outside are experienced in practical work for long time on topics in charge. Since this course is provided in an omnibus format by these members, it includes very practical contents. |
| **Distance learning information** | ・Classroom: East 3-301 (3rd Floor)<br>・If you are unable to attend a face-to-face class due to unavoidable circumstances, please attend a live online class. It is also possible to take on-demand classes at a later date.<br>・Information to take online classes will be informed by the JUSST program office. |
| **Preparation and review outside class** | Read the lecture materials provided in advance so that you can ask questions during class. |
| **Evaluation and grading** | Evaluation method<br>The contents of the presentations and discussions at the exercise and the reports on the final assignments will be evaluated comprehensively.<br>Evaluation criteria<br>The level of understanding of learning goals ① and ②, and the presentation ability of goal ③ based on the following evaluation criteria;<br>A (80-100 points): It is recognized that goals ① and ② are sufficient l y achieve d , and goal ③ is excellent.<br>B (70-79 points): It is recognized most of goals ① and ② are achieved, and goal ③ is good.<br>C (60-69 points): It is recognized most of goals ① and ② are achieved fairly, and goal ③ is not sufficient but acceptable.<br>D (59 points or less, rejected): Goals ① and ② are not fully achieved and goal ③ is not acceptable. |
| **Office hours** | Take appointments by email in advance |

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| **Message for students** | If the situation of COVID-19 improves, a technical tour will be held. |
| **Others** | This subject is offered by the BHN Kuwahara Foundation Donation Course. It is also a subject for Joint Innovative PhD Program, and is offered online to students of other universities. |
| **Keyword(s)** | SDGs, information and communications, international standardization, international R&D project, academic presentation, academic journal paper, different culture, science and technology communication. |

# Topics in Mechanical and Intelligent Systems Engineering I (Advanced Robotics and Mechatronics Engineering)

## General Information

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| **Course title (Japanese)** | Topics in Mechanical and Intelligent Systems Engineering I (Advanced Robotics and Mechatronics Engineering) (大学院連携科目) | | |
| **Course title (English)** | Topics in Mechanical and Intelligent Systems Engineering I (Advanced Robotics and Mechatronics Engineering) | | |
| **Course Code** | MCEb13h MCEb13i MCEb13j | | |
| **Academic year** | 2021 | **Year offered** | |
| **Semester(s) offered** | Fall semester | **Faculty offering the course** | |
| **Teaching method** | | **Credits** | 2 |
| **Category** | | | |
| **Cluster/Department** | | | |
| **Lecturer(s)** | AOYAMA Hisayuki (青山　尚之) | | |
| **Office** | East 4-304 | | |
| **e-mail** | aoyama@mce.uec.ac.jp | | |
| **Course website** | UEC Google Classroom Class Code 7wiuqdg | | |
| **Last updated** | 2021/03/12 8:58:40 | **Update status** | Released |

## Course Description

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| **Topic and goals** | As far as Advanced Robotics and Mechatronics are concerned that it is a cutting-edge of technologies to deal with the design, fabrication, operation, structural disposition, production and application for human society, industry and medical field. Robotics and Mechatronics are very exciting area of the computer-controlled technology with such as intelligent property as well as mechanical and electrical elements. Also robotic and mechatronics are related to the science of electronics, mechanics and computer software engineering. Generally this course for the Joint Program can provide several issues of advanced robotics and mechatronics with the intensive style. In today's life, the importance of robotics and mechatronics for various practical applications are improving not only in industrial life but also other spheres such as human life. So the interesting scopes are set up for the candidates that would complete this international joint program. |
| **Prerequisites** | Mechanical and Electrical Engineering, Control Engineering, Robotics Engineering |
| **Recommended prerequisites and preparation** | Mechanical and Electrical Engineering, Control Engineering, Robotics Engineering |
| **Course textbooks and materials** | Fundamental Robotics and Applications.  In 2021,  all of lectures are distributed on UEC Google Classroom with the class code 7wiuqdg |
| **Course outline and weekly schedule** | [1]Introduction to Advaced Robotics and Mechatronics :The latest topics that are related with Robotics and Mechatronics　are introduced so that the overview of these technologies can be recognized.<br>[2]Intelligent Mechatronics(I)(II) :　The fundamental topics with Intelligent Mechatronics are given and such the typical structure and the function are discussed.<br>As the application of Intelligent Mechatronics, the self-locomotionin-door system and the home service robot are discussed.<br>[3] Micro Electronics Mechanical System(I)(II):The fundamental topics with Micro Electro Mechanical Systems are given　and the fabrication process for MEMS is discussed.As the application of MEMS, micro sensors/devices and applications are discussed.<br>[4] Medical Robotics(I)(II):  The fundamental topics with Medical Robotics are given and such the typical function and the unique structure are discussed.As the application of Medical Robotics, the diagnostic technique with ultrasound imaging for motion control is discussed.<br>[5]Brain Science for Robotics(I)(II):The fundamental topics for image processing in brain for robot motion control is discussed.As the application of Brain Science for Robotics, several latest |

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| | technologies for human life support and health care monitor are discussed.<br>[6]Mechatronics for Artificial Arm and Intelligent Control(I)(II):The fundamental topics for control the artificial arm mechanism and the signal processing as well as image processing are discussed.As the application of Mechatronics for Artificial Arm and Intelligent Control,several practical arm robots and control schemes are discussed for improving the quality of human life.<br>[7] Bio-Robotics and Mechatronics(I)(II):The fundamental topics of the mechanical dynamics and biominietcs that can give the sense of new technologies inspired by biological solutions.As the application of bio-robotics and mechatronics, such a jumping mechanism and a fish swimming robots are discussed.<br>(All of lectures are given by English: Type I) |
| **Distance learning information** | All of lectures of this course are provided from UEC Google Classroom Class Code 7wiuqdg. |
| **Preparation and review outside class** | Before course work, it is requried to check the background of the topics by such the internet.<br>After course works, some homeworks should be given to improve the knowledge<br>about the topics. |
| **Evaluation and grading** | (Assessment Policy)<br>There will be some report requirements on the topics mentioned above during the semester.<br>And the practical mechatronics development will be given to inprove the mechatronics sense.<br>Assessment in this class will take account of (1)these reports,<br>(2)attendance-rate and (3)the prototype development with the score<br>proportion of 30%, 30% and 40%, respectively. |
| **Office hours** | Monday 16:00-17:00 at UEC. |
| **Message for students** | This course is provided for the international jointly offered graduate program. The students who join this program have to get one course at UEC and another course at the counterpart oversea university. |
| **Others** | This course work is associated with UEC International Jointly Offered Graduate Program with several oversea universities. The students who join this program should get this course subject and another conterpart course work that is given at the host universities. |
| **Keyword(s)** | Robotics, Mecatronics, Electronics, Signal Processing, Micro System, Medical Engineering, Brain Science, Biomimitics, Robot Navigation, MEMS |