Course Description

UEC Exchange program

Japanese University Studies in Science and Technology (JUSST)

Fall Semester, 2017

Center for International Programs and Exchange

The University of Electro-Communications

国立大学法人
電気通信大学
UEC TOKYO

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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Research / Project
(Required for JUSST student)</td><td colspan="2">[UNDERGRADUATE STUDENTS]
<u>Individual Study Project</u> under the supervision of UEC faculty member. Minimum 8 hours/week
5 Credits/one academic year (2 Credits/one semester)</td></tr>
<tr><td colspan="2">[GRADUATE STUDENTS]
<u>Independent Research Project</u> under the supervision of UEC Faculty member. Minimum 8 hours/week
6 Credits/one academic year (3 Credits/one semester)</td></tr>
<tr><td>Academic Skills I</td><td rowspan="2">2 hours/week (2 Credits)</td><td rowspan="2">–</td></tr>
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<tr><td>Japanese Language</td><td colspan="2">Elementary / Intermediate / Advanced *
12 - 14 hours/week (6 - 7 Credits)</td></tr>
<tr><td rowspan="3">Science and Engineering Subjects
(ELECTIVE)</td><td colspan="2">[UNDERGRADUATE STUDENTS]
Need to pass <u>3 subjects</u> at minimum **
in Each Semester</td></tr>
<tr><td colspan="2">[GRADUATE STUDENTS]
Need to pass <u>3 subjects</u> at minimum **
in One Academic Year</td></tr>
<tr><td colspan="2">Electronic Experiment Lab.
4 hours/week (2 Credits)
Required for all Undergraduate Students
Only offered in the FALL Semester</td></tr>
<tr><td rowspan="5">FREE ELECTIVE</td><td>Preparation for Overseas Study</td><td colspan="2" rowspan="2">2 hours/week (2 Credits)
Offered in the SPRING Semester only</td></tr>
<tr><td>English for Intercultural Communication</td></tr>
<tr><td>Advanced Reading in Academic English</td><td colspan="2" rowspan="2">2 hours/week (2 Credits)
Offered in the FALL Semester only</td></tr>
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<tr><td>Sports Classes</td><td>–</td><td>2 hours/week (1 Credit)</td></tr>
</table>

*) Japanese language classes are exempted for Graduate Students in their 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)

2017 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						
		New Students Arrival	Orientation		Opening Ceremony				Health & Sports Day	Classes Begin	Weekly Meeting Begin						Japanese Language Classes only			Medical Checkup 1st Semester Student		19th to 25rd Course registration period															
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																				Labor Day	24th - 27th No Classes University Festival (open campus)										
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	
																												Emperor's Birthday		25th Dec to 4th 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					
										6th to 8th Make-up Class Period					National Foundation Day	Make-up Holiday	13th to 19th Examination Period						Preparing for the mini-Conference													
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 Every JUSST student have to attend (to be announced)																Spring Break					Spring Equinox Day													
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 All students have to attend																																			

National holiday

University center exam and UEC entrance exams

@ JUSST students Weekly Meeting on every Wednesday (start from 16:30 in E2-B117)

Time-Table for Fall Semester, 2017
平成29年度秋学期（後期）　短期留学プログラム時間割

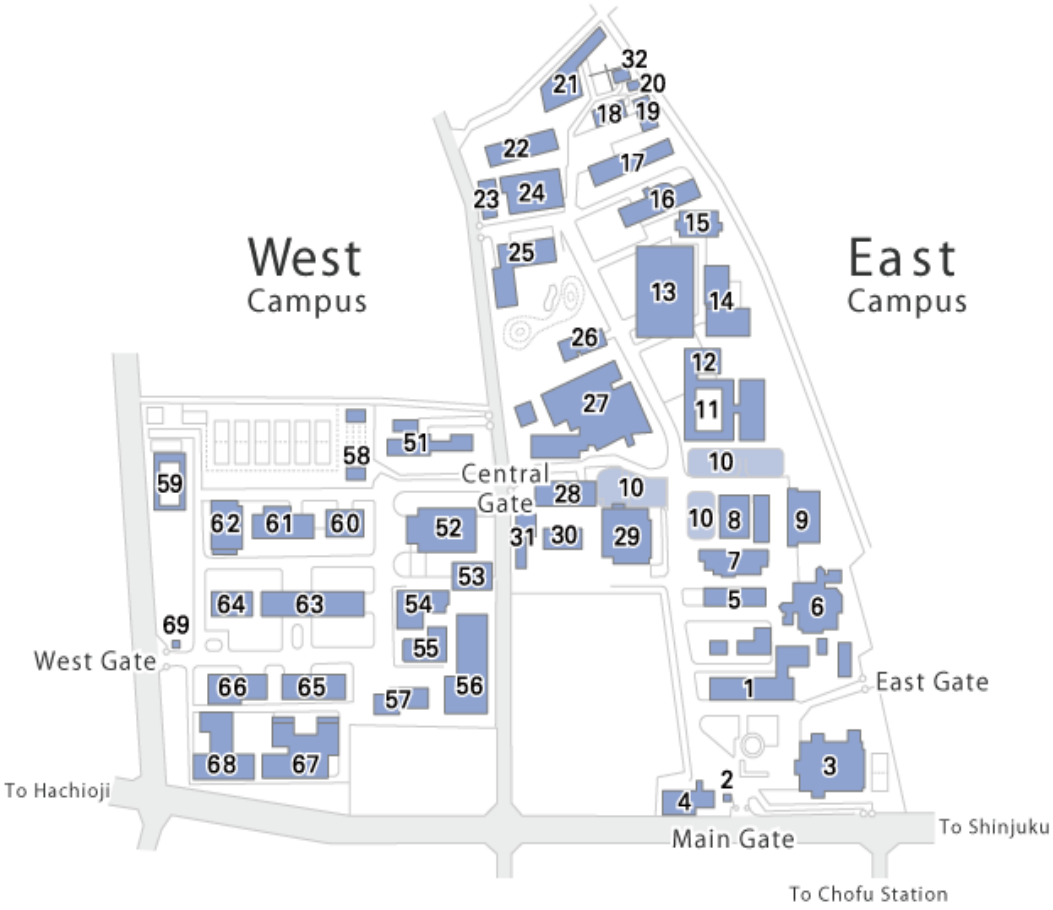
Day 曜日	Period 授業時間	Subject　授業名	Department 学科等	Lecturer 教員名	Classroom 教室	Note 備考
Mon 月	1					
	2					
	3					
	4	Quality and Reliability Engineering	J	SUZUKI Kazuyuki（鈴木 和幸）	W5-209	
	5	Research Writing	HLSS	SHI Jie（史　傑）	E1-606	
Tue 火	1	UEC Academic Skills I (Computer Literacy)	CIPE	CHOO	C-401	Old C building (Computer room)
	2	UEC Academic Skills II (Information literacy and Research)	CIPE	CHOO	C-401	
		Life　Long　Learning　Sports (for Senior student only)	SPORTS	ANDO Soichi（安藤　創一）		*
	3	Japanese Language（日本語）	CIPE			
	4	Japanese Language（日本語）	CIPE			
	5	Semiconductor Materials and Devices	I	NOZAKI Shinji（野崎　眞次）	E6-204	
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	E3-1st floor	Computer Room
	2	Advanced Communication Engineering and Informatics III (Computational Complexity)	I	TARUI Jun（垂井　淳）	C-301	Old C building
	3	Advanced Communication Engineering and Informatics IV (Computer Algorithms)	I	KOBAYASHI Satoshi（小林　聡）	W9-116	
	3	Experimental Electronics Laboratory	S	KISHIMOTO Tetsuo（岸本　哲夫） VOHRA Varun	W8-318	Compulsory for Undergraduate
	4					
	5	Topics in Mechanical and Intelligent Systems Engineering II (Visual Communications)	M	KANEKO Masahide（金子　正秀）	W8-132	
Fri 金	1	Japanese Language（日本語）	CIPE			
	2	Japanese Language（日本語）	CIPE			
	3	Advanced Reading in Academic English	HLSS	Jeffreys Atsuko M.	C-401	Old C building (Computer room)
	4					
	5					
Intensive Course		Topics in Mechanical and Intelligent Systems Engineering I (Advanced Robotics and Mechatronics Engineering)	M	AOYAMA Hisayuki（青山　尚之）, et al.	See page 22 for the classroom and schedule	

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
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

* for 2nd semester students only

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）

UEC Academic Skills I (Computer Literacy)

General Information

Course name	UEC Academic Skills I (Computer Literacy)		
English Course name	UEC Academic Skills I (Computer Literacy)		
Academic Year	2017	**Offered to year**	1/2
Semester offered	Fall semester	**Offered for**	School of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	General culture subjects		
Department	School of Informatics and Engineering		
Lecturer	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as1@jusst.fedu.uec.ac.jp		
Course's URL	http://www.fedu.uec.ac.jp/skills		
Last updated	2017/03/01 18:46:35	**Status**	Released

Course Description

Topic, goals and objectives	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 preparation	コンピューターリテラシー Computer literacy
Course texts and materials	NIL
Course contents and procedures	Course schedule and topics that will be covered ========== 1. Introduction (Usage: The Information Technology Center ITC, UEC campus network use policies) 2. Computer operating system and Tools (fundamentals) 3. Unix operating system (fundamentals) 4. Unix operating system (The Internet and computer network) 5. Word Processing (Basic; Desktop publishing, WYSIWYG, and LaTeX) 6. LaTeX (Environments and layout; LaTeX commands, Structure, Package, Class, style, Text typesetting) 7. LaTeX (Mathematical Formulas) 8. LaTeX (Displayed; Lists, Tabulator, Tables) 9. LaTeX (Displayed; Graphics, Drawing) 10. LaTeX (Labels, Cross-referencing, Citations and Bibliography) 11. World Wide Web (Overview; Web systems, applications, HTML) 12. HTML (Basic; Structure, Tag, color, typesetting) 13. HTML (Links and Multimedia; Images, Sound, and Movies) 14. HTML (Forms, Tables, and Frames) 15. HTML (Interactivity, Cascading Style Sheet; CSS) ========== This course is intended to be a lecture in combination with a practical exercise ("learn, practice, implement and apply") that will cover the usage of the UNIX system, and including how to write in LaTeX and HTML. The lectures will take place in the computer room at the Information Technology Center. Note that the lecture schedule is subject to constant revisions throughout the course.
Study time (preparing and reviewing)	Students have 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 method and grading scale（target and standard）	Evaluation is given as follows; (Attendance 20%, Tasks 50%, Mid-Semester presentation 20%, Final presentation 10%) 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.
A message for students	We expect students to be the active part of the learning process. We encourage the participation of students with questions, discussions, and comments. If you have anything interesting to say about the topics of this course covers please feel free to share with the others in class.
Others	Students are expected to come to class on time and stay for the 1.5 hours. Absences are excused in case of emergency, sickness, and trips to conferences.
Keywords	UNIX, HTML, Latex

UEC Academic Skills II (Information Literacy and Research)

General Information

Course name	UEC Academic Skills II (Information Literacy and Research)		
English Course name	UEC Academic Skills II (Information Literacy and Research)		
Academic Year	2017	**Offered to year**	2
Semester offered	Fall semester	**Offered for**	School of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	General culture subjects		
Department	School of Informatics and Engineering		
Lecturer	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as2@jusst.fedu.uec.ac.jp		
Course's URL	http://www.fedu.uec.ac.jp/skills		
Last updated	2017/03/01 18:47:18	**Status**	Released

Course Description

Topic, goals and objectives	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 preparation	NIL
Courses texts and materials	NIL
Course content and procedures	Course schedule and topics that will be covered ========== 1. Introduction (Usage: The Information Technology Center etc.) 2. Academic Integrity (Referencing, citing) 3. Mind mapping, brain storming 4. Scientific literatures and resources retrieval 1/2 5. Scientific literatures and resources retrieval 2/2 (UEC Library) 6. Managing resources 7. Managing, accessing and sharing resources, and Create bibliographies 8. Logical and Critical reading (comprehend, examine, evidence, utilize) 9. Graphical information (Inkscape, GIMP) 10. Tables, Graphs, Charts, Diagrams and Timelines (SciDAVis) 11. Formula editor (word processing and computation) 12. Desktop publishing for poster presentation (Scribus) 13. Preparation for presentation 14. Poster presentation 1/2 15. Poster presentation 2/2 ========== The course gives an introduction to the use of some powerful tools for research scientists and engineer, and the lectures include hands-on learning and applicable exercises. The lectures will take place in the computer room at the Information Technology Center (E-3 building). Note that the lecture schedule is subject to constant revisions throughout the course.
Study time (preparing and reviewing)	Students have to read 1 to 3 articles about varied topics and in the final exam, students are expected to make a postal presentation.

Evaluation method and grading scale（target and standard）	Evaluation is given as follows; (Attendance 20%, Assignments 30%, midterm presentation 20%, Poster presentation 30%) Since this course is a practical course, attendance and participant ion 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.
A message for students	We expect students to be the active part of the learning process. We encourage the participation of students with questions, discussions, and comments. If you have anything interesting to say about the topics of this course covers please feel free to share with the others in the class.
Others	Students are expected to come to class on time and stay for the 1.5 hours. Absences are excused in case of emergency, sickness, and trips to conferences.
Keywords	Research, library, Desktop publishing, poster presentation

UEC Academic Skills III（Publishing Literacy and Research）

General Information

Course name	UEC Academic Skills III（Publishing Literacy and Research）		
English Course name	UEC Academic Skills III（Publishing Literacy and Research）		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	General culture subjects		
Department	Faculty of Informatics and Engineering		
Lecturer	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as3@jusst.fedu.uec.ac.jp		
Course's URL	http://www.fedu.uec.ac.jp/skills		
Last updated	2017/03/01 18:47:47	**Status**	Released

Course Description

Topic, goals and objectives	This class 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 semester, there will be an international mini-conference that has participants of all JUSST Exchange Students and other regular UEC Students. Students are required to give a presentation on their research-based projects.
Prerequisites	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
Recommended preparation	UEC Academic Skills II (Information Literacy and Research)
Course texts and materials	NIL
Course contents and procedures	Course schedule and topics that will be covered ========== 1. Introduction (Usage: The Information Technology Center etc.) 2. Academic Integrity (interesting and Unpublished, Scientific misconduct) 3. Researcher's outputs (Why, How, Where) 4. Planning the research/research protocol (LaTeX editor, Mind mapping and brainstorming etc.) 5. Proposing and Reporting on Research 6. Making a scientific presentation 7. Midterm Presentation 1/2 8. Midterm Presentation 2/2 9. Brush up on your skills (Handling Q&A) 10. Communication and Correspondence (Peer, Researcher, Editor, etc.) 11. Academic publishing (Overviews; Dissertation, Monograph, Scientific paper) 12. Academic publishing (Procedures, Processes and standards) 13. Assessment and evaluation 14. Oral presentation 1/2 15. Oral presentation 2/2 ========== This course is designed to support the pursuit of writing research paper and share the skills of quality publishing. The lectures are linked with practical activities, and the final assignment requires that each student to publishing and presenting a research paper/article in a mock conference (in class for regular student). The lectures will take place in the computer room at the Information Technology Center (E-3 building). Note that the lecture schedule is subject to constant revisions throughout the course.

Study time (preparing and reviewing)	Students have to read 2 to 3 articles about varied topics and at the mid and end of term, students are expected to make an oral presentation. 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 method and grading scale（target and standard）	Evaluation is given as follows; (Attendance 20%, Assignments 30%, Writing paper 20%, Oral presentation 30%) 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.
A message for students	We expect students to be the active part of the learning process. We encourage the participation of students with questions, discussions, and comments. If you have anything interesting to say about the topics of this course covers please feel free to share with the others in class.
Others	Students are expected to come to class on time and stay for the 1.5 hours. Absences are excused in case of emergency, sickness, and trips to conferences.
Keywords	Research, Publishing paper, oral presentation

Research Writing

General Information

Course name	Research Writing		
English Course name	Research Writing		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	General culture subjects		
Department	Faculty of Informatics and Engineering		
Lecturer	Shi Jie		
Office	E1-609		
e-mail	shi.jie@uec.ac.jp		
Course's URL	Nil		
Last updated	2017/03/02 14:03:06	**Status**	Released

Course Description

Topic, goals and objectives	The transition from undergraduate to graduate study presents many challenges and requires careful preparation in many aspects and substantial effort. This course is designed to help undergraduate students make the difficult transition and gain the basic knowledge and the necessary competencies of what will be required of them at graduate school particularly in the respects of English language and other language-related academic skills. Students in this course will familiarize themselves with the common academic activities/tasks such as group discussion, critical reading and analysis of textbooks and academic articles, informal oral and written report, formal presentation at symposiums and conferences (poster and computer-aided), and basic academic paper writing. This course will also support students in areas of how to communicate with professors and international students orally and through emailing. At the end of the course, students will conduct a field research to survey and interview UEC graduate students and professors on how to succeed in graduate school.
Prerequisites	1st and 2nd year compulsory English courses of UEC
Recommended preparation	Some Advanced English courses focusing on academic English, presentation and writing
Course texts and materials	Teaching materials will be prepared by the teacher and students based on the needs of the syllabus.
Course contents and procedures	Week 1: Guidance/Course Orientation Week 2: What is academic English? What kinds of English are needed in your future labs? Week 3: Journal articles and reporting them bilingually Week 4: Research and types of academic writing Week 5: PPT writing Week 6: PPT writing Week 7: Poster writing Week 8: Poster writing Week 9: Definition wriing Week 10: Manual writing Week 11: Manual writing Week 12: Academic abstract writing Week 13: Academic abstract writing Week 14: Academic journal writing Week 15: Academic journal writing (Week 16: Self-evaluation and course evaluation)
Study time (preparing and reviewing)	Group work or research for presentations may take up a lot of time outside of the classes.
Evaluation method and grading scale (target and standard)	Performance and attitude in class: 20% PPT writing: 20% Poster writing: 20%

	Abstract writing: 20% Definition writing: 10% Manual writing: 10%
Office hours	Based on appointment by email or Tue 3.
A message for students	Never allow English to ride on you; you should ride on it (A Chinese proverb). Logic, logic, logic!
Others	Students interested in independent learning and corpus-analysis of English for Science and Technology are specially welcome.
Keywords	graduate school, academic English, presentation, abstract, journal article, research

Advanced Reading in Academic English

General Information

Course name	Advanced Reading in Academic English		
English Course name	Advanced Reading in Academic English		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	General culture subjects		
Department	Faculty of Informatics and Engineering		
Lecturer	Atsuko M Jeffreys		
Office	East 1-807		
e-mail	ajeffreys@uec.ac.jp		
Course's URL	WebClass		
Last updated	2017/08/04 10:58:59	**Status**	Released

Course Description

Topic, goals and objectives	The goal of this course is to peruse a book written by and for native speakers of English and correctly interpret the contents through the study of vocabulary, expressions, and sentence structures.
Prerequisites	The following 6 subjects are required (for regular students). Academic Spoken English I and II Academic Written English I and II Academic English in the Second Year I and II
Recommended preparation	NIL
Course texts and materials	The Seven Pillars of Health (Don Colbert, MD, SILOAM Press). The pdf version of the text will be provided (no need for purchase).
Course contents and procedures	In each lecture, a textbook section will be perused and translated into Japanese that reflects the meaning correctly and reads smoothly.. Lesson 1: Overview + Introduction of Lesson 2 Lesson 2 - Lesson 7: Sections from the following (25 chapters in all) will be perused. PILLAR 1: WATER PILLAR 2: SLEEP AND REST PILLAR 3: LIVING FOOD PILLAR 4: EXERCISE Lesson 8: Midterm Exam Lesson 9 - Lesson 14: Sections from the following (25 chapters in all) will be perused. PILLAR 4: EXERCISE PILLAR 5: DETOXIFICATION PILLAR 6: NUTRITIONAL SUPPLEMENTS PILLAR 7: COPING WITH STRESS Lesson 15: Final Exam
Study time (preparing and reviewing)	There will be an assignment associated with every lecture.
Evaluation method and grading scale（target and standard）	Assignments 25% Contributions to class 25% Midterm reading comprehension exam 25% Final reading comprehension exam 25% ---------- Total 100% AA≧90%, A≧80%, B≧70%, C≧60%, D (fail)<60%

Office hours	Friday 2nd period and other times by appointment. Email consultation is always welcome.
A message for students	Health and physical strength are the major topics of the book that will be used in this course, the reading of which will help students to improve both their reading comprehension skills and physical fitness.
Others	The contents of the syllabus may be altered as deemed necessary.
Keywords	Autonomous learning / Intensive reading / Reading comprehension / Translation

Quality and Reliability Engineering

General Information

Course name	Quality and Reliability Engineering		
English Course name	Quality and Reliability Engineering		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	Course subject		
Department	Department of Informatics		
Lecturer	SUZUKI Kazuyuki (鈴木　和幸)		
Office	West 5-605		
e-mail	suzuki@se.uec.ac.jp		
Course's URL	http://www-suzuki.se.uec.ac.jp/		
Last updated	2017/03/15 18:59:37	**Status**	Released

Course Description

Topic, goals and objectives	Lots of Japanese products have been spreading out all over the world. Two of the reasons are high quality and reliability of Japanese products. Quality control (QC) in Japan has developed after World War 2, and now the Japanese way of QC is adopted in USA, Europe and Asia. In USA, reliability and quality are categorized in different fields but in Japan they are considered to be closely related each other. This lecture course focuses on the philosophy, ideas and scientific method used to build quality and reliability into products and systems. Also, recent development of information technology has been changing the way of QC and Reliability Engineering. This new aspects is also dealt with.
Prerequisites	None
Recommended preparation	None
Course texts and materials	Handouts prepared by the teacher
Course contents and procedures	This course consists of the following three parts. 1.World Wide Quality Revolution History of Quality and Quality Control, Origin of "Made in Germany", Japanese TQC and its Spread to the World, Rally of USA. 2.Quality Assurance (QA) and Total Quality Management Meaning of Quality, What is QA? New Product Development and QA, Quality Functional Development, Four leading principles of Japanese TQC. 3.Statistical Quality Control QC seven tools, Statistical Process Control, Design of Experiments
Study time (preparing and reviewing)	Please summarize your learning after each class
Evaluation method and grading scale（target and standard）	Class appearances, assignment submissions, and group discussions within classes
Office hours	Any questions are welcomed after each class
A message for students	This lecture will be given in English. It is a good chance to improve spoken English and make international friends.
Others	None
Keywords	Quality Control, Reliability Engineering, QC Seven Tools, Design of Experiments

Semiconductor Materials and Devices

General Information

Course name	Semiconductor Materials and Devices		
English Course name	Semiconductor Materials and Devices		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	Course subject		
Department	Department of Engineering Science		
Lecturer	NOZAKI Shinji (野崎　眞次)		
Office	East31-203		
e-mail	nozaki@ee.uec.ac.jp		
Course's URL	none		
Last updated	2017/02/21 15:01:09	**Status**	Released

Course Description

Topic, goals and objectives	In this course you will receive an introduction to the operation and fabrication of the most important semiconductor devices used in integrated circuit technology together with device design and layout. At the end of the course you will have a basic understanding of pn diodes, bipolar transistors, and MOSFETs as well as some light emitting and light detecting devices such as photodiodes, LEDs and solar cells. You will also receive an introduction to the fundamental concepts of semiconductor physics such as doping, electron and hole transport, and band diagrams.
Prerequisites	none
Recommended preparation	Electronic Circuits
Course texts and materials	Modern Semiconductor Devices for Integrated Circuits (Chenming Calvin Hu)
Course contents and procedures	1. General Overview of the course, Electrons and Holes in Semiconductors I 2. Electrons and Holes in Semiconductors II 3. Motion and Recombination of Electrons and Holes 4. Device Fabrication Technology 5. PN Junction I 6. PN Junction II 7. Application to Optoelectronic Devices (Solar Cells, LEDs, Diode Lasers, Photodiodes) 8. Metal-Semiconductor Junction 9. MOS Capacitor I 10. MOS Capacitor II 11. MOS Transistor I 12. MOS transistor II 13. MOSFETs in ICs 14. Bipolasr Transistor I 15. Bipolar Transistor II 16. Final Exam (in class) Take Home Exam in the winter holidays
Study time (preparing and reviewing)	The students are advised to buy the text and read the assigned chapter before and after the class. The paperback is available at Amazon Bookstore for a lower price.
Evaluation method and grading scale（target and standard）	Based on the scores of the takehome and inclass exams (50% each)
Office hours	After a class or e-mail for an appointment
A message for students	Semiconductors are a key driver of job growth, productivity and innovation throughout the world. The students are encouraged to take the course if they plan to work as engineers in the electronic industry or researchers in the field of semiconductor electronics in future.

Others	The lectures are in English. The credit can be transferred to "Introduction to Semiconductor Devices" in the undergraduate program of Engineering Science at IE. The students at Department of Engineering Science who are proficient in English are also encouraged to take the course.
Keywords	semiconductor, MOS, IC, LED, solar cell, transistor

Advanced Communication Engineering and Informatics III (Computational Complexity)

General Information

Course name	Advanced Communication Engineering and Informatics III (Computational Complexity)		
English Course name	Advanced Communication Engineering and Informatics III (Computational Complexity)		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	Course subject		
Department	Department of Communication Engineering and Informatics		
Lecturer	TARUI Jun (垂井　淳)		
Office	E3-824		
e-mail	tarui@ice.uec.ac.jp		
Course's URL	www.jtlab.ice.uec.ac.jp		
Last updated	2017/03/02 02:04:36	**Status**	Released

Course Description

Topic, goals and objectives	In the academic year of 2017, 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 preparation	Students should have taken an introductory course on algorithms, and should have written at least one computer program.
Course texts and materials	none
Course contents and procedures	In the first half of the course, we will discuss the following various algorithmic paradigms: (1) learning algorithms (2) randomized algorithms (3) approximation algorithms In the second half, we will discuss the following: (1) complexity classes including important classes P and NP (2) theory of NP-completeness (3) theoretical cryptography More specific plan of 15 lectures is as follows. 1. overview, review of algorithm analysis 2. review of sorting algorithms and their analysis 3. explanation of programming project 4. learning algorithm (1): learning axis-parallel rectangles 5. learning algorithm (2): PAC leaning paradigm 6. learning algorithm (3): learning conjunctions and DNFs 7. student presentation of programming project 8. randomized algorithm 9. approximation algorithm 10. complexity classes P and NP 11. NP-completeness (1): reduction 12. NP-completeness (2): 3SAT 13. NP-completeness (3): 3coloring 14. cryptography 15. P vs NP conjecture
Study time (preparing and reviewing)	at least 1.5 hour/week expected

Evaluation method and grading scale（target and standard）	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
A 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.
Keywords	algorithm, computational complexity, learning algorithm, NP-completeness

Advanced Communication Engineering and Informatics IV (Computer Algorithms)

General Information

Course name	Advanced Communication Engineering and Informatics IV (Computer Algorithms)		
English Course name	Advanced Communication Engineering and Informatics IV (Computer Algorithms)		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	Course subject		
Department	Department of Communication Engineering and Informatics		
Lecturer	KOBAYASHI Satoshi (小林　聡)		
Office	West-9 Room 735		
e-mail	kobayashi.satoshi@uec.ac.jp		
Course's URL	http://www.comp.cs.uec.ac.jp/lectures/		
Last updated	2017/03/08 14:55:49	**Status**	Released

Course Description

Topic, goals and objectives	The purpose of this lecture is provide the theory and technique to design efficient algorithms for various fundamental problems. The goals of the students are to achieve the following points: (1) to understand the behavior, correctness, and time complexity analysis of the algorithms discussed in the lecture, (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 preparation	None
Course texts and materials	Some printed materials are provided at the lecture.
Course contents and procedures	(a) Contents of the lecture [1] Minimum spanning tree problem and greedy algorithms [2] Correctness of Prim's and Kruskal's algorithm [3] Greedy algorithms for other problems [4] Shortest path problem and Dynamic Programming (DP) [5] DP Method (1) --- Transform DFAs to regular expressions [6] DP Method (2) --- Context-free grammar and its recognition problem [7] DP Method (3) --- CYK algorithm for CFG recognition [8] DP Method (4) --- Hidden Markov Models (HMM) [9] DP Method (5) --- Recognition problem of HMM [10] DP Method (6) --- HMM recognition algorithm [11] DP Method (7) --- Approximate string matching algorithms [12] String matching problem [13] Computing failure functions in KMP algorithm [14] Correctness and time complexity of KMP algorithm [15] Summary and conclusion of this lecture (b) How does this lecture proceed? 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. Example runs will be used to enrich the understanding.

Study time (preparing and reviewing)	Implement algorithms given in the the lecture, if possible.
Evaluation method and grading scale（target and standard）	Academic performance is evaluated by exams. The lowest standard is 60%.
Office hours	Any time, but appointments by emails are required.
A message for students	None.
Others	None.
Keywords	Dynamic programming, greedy algorithms, context free grammars, HMM, string matching, etc.

Experimental Electronics Laboratory

General Information

Course name	Experimental Electronics Laboratory		
English Course name	Experimental Electronics Laboratory		
Academic Year	2017	**Offered to year**	2
Semester offered	Fall semester	**Offered for**	School of Informatics and Engineering
Teaching methods	Practical (Experiment)	**Credits**	2
Classification	Course subject		
Department	Cluster III (Fundamental Science and Engineering)		
Lecturer	KISHIMOTO Tetsuo (岸本　哲夫)		
Office	Building East 6, Room 826		
e-mail	kishi(at)pc.uec.ac.jp		
Course's URL	none		
Last updated	2017/03/10 07:49:05	**Status**	Released

Course Description

Topic, goals and objectives	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 preparation	Analysis, especially complex numbers.
Course texts and materials	Text materials or a pdf file will be provided at the class.
Course contents and procedures	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 in between. 1) Measurement of resistance. 2) Measurement of complex impedance for C and L. 3) Resonant behavior of LC-circuits. 4) Transmit radio signals and receive them using LC-circuits. 5) Transistor and LED. 6) Operation amplifier and its applications.(transmit and receive sound signal using LEDs). 7) Logic gates.
Study time (preparing and reviewing)	Please study on the basic technical terms of the IC you will work on each week.
Evaluation method and grading scale（target and standard）	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. Contact: Bldg-E6, room 628 Ext:5449 kishi(at)pc.uec.ac.jp
A message for students	Electronic circuits are fun to play with.
Others	The course has originally been designed for JUSST students, but regular students can take it.
Keywords	complex impedance, inductor, capacitor, logic gate, operational amplifier, bipolar junction transistor.

Topics in Mechatronical and Intelligent Systems Engineering II （Visual Communications）

General Information

Course name	Topics in Mechatronical and Intelligent Systems Engineering II（Visual Communications）		
English Course name	Topics in Mechatronical and Intelligent Systems Engineering II		
Academic Year	2017	**Offered to year**	3/4
Semester offered	Fall semester	**Offered for**	Faculty of Informatics and Engineering
Teaching methods	Lecture	**Credits**	2
Classification	Course subject		
Department	Department of Mechanical Engineering and Intelligent Systems		
Lecturer	KANEKO Masahide (金子　正秀)		
Office	West 8-514		
e-mail	kaneko@ee.uec.ac.jp		
Course's URL	None		
Last updated	2017/03/02 18:47:27	**Status**	Released

Course Description

Topic, goals and objectives	As represented by the famous proverb "Seeing is believing", visual information plays a very important role in our daily lives. Nowadays digital cameras and digital videos are widely used by many people. Furthermore we enjoy the digital broadcasting, digital cinema, and various pictures and videos through Internet every day. So the technologies of visual communications are very popular for us. In this class, the fundamentals of visual communication, especially image coding techniques, are lectured from the viewpoint of efficient transmission and storage of image information, and better communication through visual media. International activities to establish the worldwide common standards of image coding are also introduced.
Prerequisites	NIL
Recommended preparation	NIL
Course texts and materials	Original handouts will be prepared in the class.
Course contents and procedures	(Outline of Class and Contents) [1] Visual media Definition of "visual media" Classification of "visual media" Use of visual information in the fields of information and communication [2] Fundamentals to handle digital images Definition of "digital image / digital picture" Digitization : sampling + quantization Amount of information contained in digital images Characteristics of human vision [3] Visual communication and Image / Video Coding Role of visual communication and image / video coding Redundancies contained in images and videos Basic methods of image and video data compression predictive coding, transform coding, interframe coding, motion compensation, coding of facsimile (MH, MR, MMR) [4] International standards of image / video coding JPEG, JPEG2000, JPEG XR, Motion-JPEG2000, JBIG H.261, H.263, H-264 (MPEG-4 / AVC), HEVC/H-265 MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21 ◯ JPEG ==> Digital camera, Pictures used in Web site MPEG-2 ==> Digital broadcasting (satellite, terrestrial), DVD

	MPEG-4 ==> Digital movie camera, Video by mobile phone (One segment broadcasting), and so on HEVC/H-265 ==> QVGA -- 8Kx4K(Super High Vision) : High Efficiency Video Coding [5] Video over Internet and over mobile network Internet as transmission media of video Streaming Mobile network as transmission media of video Error resilience coding
Study time (preparing and reviewing)	Preparation is not required. However the intensive review is required for every lesson.
Evaluation method and grading scale（target and standard）	There will be some report requirements on the topics mentioned above during the semester. One examination will be carried out at the end of semester. Assessment in this class will take account of these reports, examination, and contribution for class discussions at the score proportion of 30%, 50%, and 20% respectively.
Office hours	Before visiting to the office, please make an appointment by using E-mail.
A message for students	Not only attending lessons but also deliberating upon visual communications and their applications deeply.
Others	NIL
Keywords	visual communication, image coding, video coding, digital image, compression, international standard of coding method

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

General Information

Course name	Advanced Robotics and Mechatronics Engineering		
English Course name	Advanced Robotics and Mechatronics Engineering		
Academic Year	2017	**Offered to year**	All years
Semester offered	Spring semester	**Offered for**	Joint Program
Teaching methods	Lecture (Intensive)	**Credits**	2
Classification	Course subject		
Department	Department of Mechanical and Intelligent Systems Engineering		
Lecturer	AOYAMA Hisayuki (青山　尚之), MING Aiguo (明　愛国), YOKOI Koji (横井　浩史), JIANG Yinlai (姜　銀来), KANAMORI Chisato (金森　哉吏), KAN Tetsuro (菅　哲朗), and KOIZUMI Norihiro (小泉　憲裕)		
Office	E4-304, E4-503, E4-601,E4-305,E4-405		
e-mail	aoyama@mce.uec.ac.jp,ming@mce.uec.ac.jp,kanamori@mce.uec.ac.jp, yokoi@mce.uec.ac.jp, tetsuokan@uec.ac.jp, jiang@hi.mce.uec.ac.jp, nkoizumi@uec.ac.jp		
Course's URL			
Last updated	2017/03/06 22:28:27	**Status**	Released

Course Description

Topic, goals and objectives	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 robotics 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 preparation	Mechanical and Electrical Engineering, Control Engineering, Robotics Engineering
Course texts and materials	Fundamental Robotics and Applications
Course contents and procedures	[0] **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 will be given. [1] **Industrial 4.0, IoT and Global Warming for Robotics and Mechtronics Engineering** - The latest topics such as Industrial 4.0, IoT and Global Warming are discussedand the solution to these problems are given to improve the quality of the life for aged societies. [2] **Intelligent Mechatronics (I)** - The fundamental topics with Intelligent Mechatronics are given and such the typical structure and the function are discussed. [3] **Intelligent Mechatronics (II)** - As the application of Intelligent Mechatronics, the self-locomotion in-door system and the home service robot are discussed. [4] **Micro Electronics Mechanical System (I)** - The fundamental topics with Micro Electro Mechanical Systems are given and the fabrication process for MEMS is discussed. [5] **Micro Electronics Mechanical System (II)** -As the application of MEMS, micro sensors/devices and applications are discussed. [6] **Medical Robotics (I)** - The fundamental topics with Medical Robotics are given and such the typical function and the unique structure are discussed. [7] **Medical Robotics (II)** - As the application of Medical Robotics, the diagnostic technique with ultrasound imaging for motion control is discussed.

	[8] **Brain Science for Robotics (I)** - The fundamental topics for image processing in brain for robot motion control is discussed. [9] **Brain Science for Robotics (II)** - As the application of Brain Science for Robotics, several latest technologies for human life support and health care monitor are discussed. [10] **Mechatronics for Artificial Arm and Intelligent Control (I)** - The fundamental topics for control the artificial arm mechanism and the signal processing as well as image processing are discussed. [11] **Mechatronics for Artificial Arm and Intelligent Control (II)** - 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. [12] **Bio-Robotics and Mechatronics (I)** - The fundamental topics of the mechanical dynamics and biominietcs that can give the sense of new technologies inspired by biological solutions. [13] **Bio-Robotics and Mechatronics (II)** - As the application of bio-robotics and mechatronics, such a jumping mechanism and a fish swimming robots are discussed. [14] **Smart Material for New Generation (I)** [15] **Smart Material for New Generation (II)**
Study time (preparing and reviewing)	Before course work, it is required to check the background of the topics by such the internet. After course works, some homework should be given to improve the knowledge about the topics.
Evaluation method and grading scale（target and standard）	(Assessment Policy) There will be some report requirements on the topics mentioned above during the semester. And the practical mechatronics development will be given to improve the mechatronics sense. Assessment in this class will take account of (1)these reports, (2)attendance-rate and (3)the prototype development with the score proportion of 30%, 30% and 40%, respectively.
Office hours	Monday 16:00-17:00 at UEC.
A 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	
Keywords	Robotics, Mecatronics, Electronics, Signal Processing, Micro System, Medical Engineering, Brain Science, Biomimitics, Robot Navigation, MEMS

Course Schedule (Tentative)

Lecture	Date	Period	Classroom	Lecturer	Topics
0	15th Nov (Wed)	6th, 7th 17:50-21:00	***E4-222***	Prof. Aoyama	Introduction to Advanced Robotics and Mechatronics
1	16th Nov (Thu)	6th, 7th 17:50-21:00	E4-315	Prof. Aoyama	Industrial 4.0, IoT and Global Warming for Robotics and Mechtronics Engineering
2, 3	17th Nov (Fri)	5th, 6th 16:15-19:20	E4-315	Prof. Kanamori	Intelligent Mechatronics (I) & (II)
4, 5	20th Nov (Mon)	5th, 6th 16:15-19:20	E4-315	Prof. Kan	Micro Electronics Mechanical System (I) & (II)
6, 7	21st Nov (Tue)	6th, 7th 17:50-21:00	E4-315	Prof. Koizumi	Medical Robotics (I) & (II)
8, 9	22nd Nov (Wed)	5th, 6th, 7th 16:15-21:00	***E4-222***	Prof. Yokoi	Brain Science for Robotics (I) & (II)
10, 11	27th Nov (Mon)	6th, 7th 17:50-21:00	E4-315	Prof. Jiang	Mechatronics for Artificial Arm and Intelligent Control (I) & (II)
12, 13	28th Nov (Tue)	5th, 6th 16:15-19:20	E4-315	Prof. Ming	Bio-Robotics and Mechatronics (I) & (II)
14, 15	18th Dec (Mon)	5th, 6th, 7th 16:15-21:00	E4-315	Prof. Junghyun Cho (SUNY, BU, USA)	Smart Material for New Generation (I) & (II)