

# Course Description

**UEC Exchange program**  
**Japanese University Studies in Science**  
**and Technology (JUSST)**

**Fall Semester, 2016**

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



国立大学法人  
**電気通信大学**

**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

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# JUSST Program Course Requirements

	Subject	1 <sup>st</sup> Semester	2 <sup>nd</sup> Semester
CORE SUBJECTS	LAB WORK Research / Project (Required for JUSST student)	[ 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)	
		[ 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)	
	Academic Skills I	2 hours/week (2 Credits)	–
	Academic Skills II		
	Academic Skills III	–	2 hours/week (2 Credits)
	Japanese Language	Elementary / Intermediate / Advanced * 8 - 14 hours/week (6 - 7 Credits)	
	Science and Engineering Subjects ( ELECTIVE )	[ UNDERGRADUATE STUDENTS ] Need to pass <u>3 subjects</u> at minimum ** in <i>Each Semester.</i> (H-6)	
		[ GRADUATE STUDENTS ] Need to pass <u>3 subjects</u> at minimum ** in <i>One Academic Year.</i> (H-9)	
		Electronic Experiment Lab. 4 hours/week (2 Credits) Required for all Undergraduate Students Only offered in the FALL Semester	
	FREE ELECTIVE	Research Presentation	2 hours/week (2 Credits) Offered in the SPRING Semester only
Reading Scientific Research			
English for Interpersonal Communication		2 hours/week (2 Credits) Offered in the FALL Semester only	
Presentation for Graduate School			
Sports Classes		–	2 hours/week (1 Credit)

\*) Japanese language classes are exempted for Graduate Students in their 2<sup>nd</sup> 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. (H-5, H-7)

# 2016 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													
OCT	2	New Students Arrival		4nd to 7th Orientation		Opening Ceremony					Classes as usual (Japanese Classes)	Weekly Meeting																								
									Health & Sports Day																											
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 - 28th 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									23th Dec to 3th 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							Coming-of-Age Day																											
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					
										Make-up Day for Fall Semester	Make-up Day for Fall Semester	Make-up Day for Fall Semester	Make-up Day for Fall Semester	National Day																						
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)																																
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

National holiday  
University center exam and UEC entrance exams

@ JUSST students Weekly Meeting on every Wed (start from 18:00)

2nd semester Class Guidance  
All students have to attend

# Time-Table for Fall Semester, 2016

## 平成28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	English for Interpersonal Communication	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	
		Presentation for Graduate School	HLSS	UEHARA Suwako (上原 寿和子)	A-301	
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 (1F)	* Computer Room
	2	Advanced Communication Engineering and Informatics III (Computational Complexity)	I	TARUI Jun (垂井 淳)	C-301	Old C building
	3	Experimental Electronics Laboratory	S	KISHIMOTO Tetsuo (岸本 哲夫)	W8-318	
	4			VOHRA Varun		
	5	Topics in Mechanical and Intelligent Systems Engineering II (Visual Communication)	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 Communication Engineering and Informatics IV (Computer Algorithms)	I	NAKANO Keisuke (中野 圭介)	W9-116	
	4					
	5					

**Department 学科等**

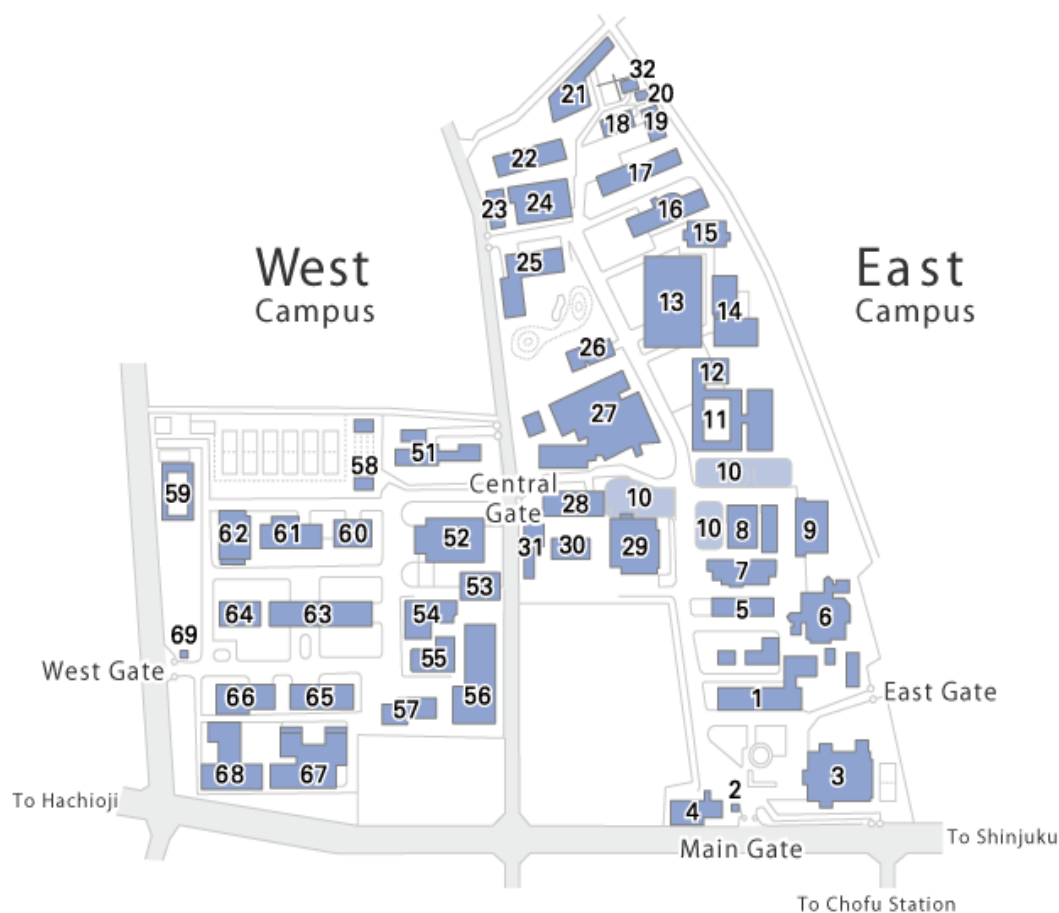
J: Department of Informatics (情報学専攻)  
 I: Department of Computer and Network Engineering (情報・ネットワーク工学専攻)  
 M: Department of Mechanical and Intelligent Systems Engineering (機械知能システム学専攻)  
 S: Department of Engineering Science (基盤理工学専攻)  
 CIPE: Center for International Programs and Exchange (国際交流センター)  
 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

<b>Course name</b>	UEC Academic Skills I (Computer Literacy) (上級科目)		
<b>English Course name</b>	UEC Academic Skills I (Computer Literacy)		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Spring semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	General culture subjects		
<b>Department</b>	School of Informatics and Engineering		
<b>Lecturer</b>	Choo Cheow Keong		
<b>Office</b>	E2-305		
<b>e-mail</b>	uec-as1@jusst.fedu.uec.ac.jp		
<b>Course's URL</b>	<a href="http://www.fedu.uec.ac.jp/skills">http://www.fedu.uec.ac.jp/skills</a>		
<b>Last updated</b>	2016/03/14 11:55:16	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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.
<b>Prerequisites</b>	NIL
<b>Recommended preparation</b>	Computer literacy コンピューターリテラシー
<b>Course texts and materials</b>	NIL
<b>Course content and procedures</b>	<p>Course schedule and topics that will be covered</p> <p>=====</p> <ol style="list-style-type: none"> <li>1. Introduction (Usage: The Information Technology Center ITC, UEC campus network use policies)</li> <li>2. Computer operating system and Tools (fundamentals)</li> <li>3. Unix operating system (fundamentals)</li> <li>4. Unix operating system (The Internet and computer network)</li> <li>5. Word Processing (Basic; Desktop publishing, WYSIWYG, and LaTeX)</li> <li>6. LaTeX (Environments and layout; LaTeX commands, Structure, Package, Class, style, Text typesetting)</li> <li>7. LaTeX (Mathematical Formulas)</li> <li>8. LaTeX (Displayed; Lists, Tabulator, Tables)</li> <li>9. LaTeX (Displayed; Graphics, Drawing)</li> <li>10. LaTeX (Labels, Cross-referencing, Citations and Bibliography)</li> <li>11. World Wide Web (Overview; Web systems, applications, HTML )</li> <li>12. HTML (Basic; Structure, Tag, color, typesetting)</li> <li>13. HTML (Links and Multimedia; Images, Sound, and Movies)</li> <li>14. HTML (Forms, Tables, and Frames)</li> <li>15. HTML (Interactivity, Cascading Style Sheet; CSS)</li> </ol> <p>=====</p> <p>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.</p> <p>The lectures will take place in the computer room at the Information Technology Center (E-3 building).</p>



	Note that the lecture schedule is subject to constant revisions throughout the course.
<b>Study time (preparing and reviewing)</b>	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.
<b>Evaluation method and grading scale (target and standard)</b>	<p>Evaluation is given as follows; (Attendance 20%, Tasks 50%, Mid-Semester presentation 20%, Final presentation 10%)</p> <p>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 &amp; final presentations can obtain the credits.</p>
<b>Office hours</b>	12:00-13:00, for just-in-case, schedule an appointment before walking in.
<b>A message for students</b>	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.
<b>Others</b>	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.
<b>Keywords</b>	Unix, HTML, Latex

# UEC Academic Skills II (Information Literacy and Research)

## General Information

<b>Course name</b>	UEC Academic Skills II (Information Literacy and Research) (上級科目)		
<b>English Course name</b>	UEC Academic Skills II (Information Literacy and Research)		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Spring semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	General culture subjects		
<b>Department</b>	School of Informatics and Engineering		
<b>Lecturer</b>	Choo Cheow Keong		
<b>Office</b>	E2-305		
<b>e-mail</b>	uec-as2@jusst.fedu.uec.ac.jp		
<b>Course's URL</b>	<a href="http://www.fedu.uec.ac.jp/skills">http://www.fedu.uec.ac.jp/skills</a>		
<b>Last updated</b>	2016/03/14 11:56:13	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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.
<b>Prerequisites</b>	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
<b>Recommended preparation</b>	NIL
<b>Course texts and materials</b>	NIL
<b>Course content and procedures</b>	<p>Course schedule and topics that will be covered</p> <p>=====</p> <ol style="list-style-type: none"> <li>1. Introduction (Usage: The Information Technology Center etc.)</li> <li>2. Academic Integrity (Referencing, citing)</li> <li>3. Mind mapping, brain storming</li> <li>4. Scientific literatures and resources retrieval 1/2</li> <li>5. Scientific literatures and resources retrieval 2/2 (UEC Library)</li> <li>6. Managing resources</li> <li>7. Managing, accessing and sharing resources, and Create bibliographies</li> <li>8. Logical and Critical reading (comprehend, examine, evidence, utilize)</li> <li>9. Graphical information (Inkscape, GIMP)</li> <li>10. Tables, Graphs, Charts, Diagrams and Timelines (SciDAVis)</li> <li>11. Formula editor (word processing and computation)</li> <li>12. Desktop publishing for poster presentation (Scribus)</li> <li>13. Preparation for presentation</li> <li>14. Poster presentation 1/2</li> <li>15. Poster presentation 2/2</li> </ol> <p>=====</p> <p>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.</p> <p>The lectures will take place in the computer room at the Information Technology Center (E-3 building).</p> <p>Note that the lecture schedule is subject to constant revisions throughout the course.</p>

<b>Study time (preparing and reviewing)</b>	Students have to read 1 to 3 articles about varied topics and in the final exam, students are expected to make a postal presentation.
<b>Evaluation method and grading scale (target and standard)</b>	<p>Evaluation is given as follows; (Attendance 20%, Assignments 30%, midterm presentation 20%, Poster presentation 30%)</p> <p>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.</p>
<b>Office hours</b>	12:00-13:00, for just-in-case, schedule an appointment before walking in.
<b>A message for students</b>	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.
<b>Others</b>	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.
<b>Keywords</b>	Research, library, Desktop publishing, poster presentation

# UEC Academic Skills III (Publishing Literacy and Research)

## General Information

<b>Course name</b>	UEC Academic Skills III (Publishing Literacy and Research)		
<b>English Course name</b>	UEC Academic Skills III (Publishing Literacy and Research)		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	General culture subjects		
<b>Department</b>	School of Informatics and Engineering		
<b>Lecturer</b>	Choo Cheow Keong		
<b>Office</b>	E2-305		
<b>e-mail</b>	uec-as3@jusst.fedu.uec.ac.jp		
<b>Course's URL</b>	<a href="http://www.fedu.uec.ac.jp/skills">http://www.fedu.uec.ac.jp/skills</a>		
<b>Last updated</b>	2016/03/14 12:01:27	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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.
<b>Prerequisites</b>	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
<b>Recommended preparation</b>	UEC Academic Skills II (Information Literacy and Research)
<b>Course texts and materials</b>	NIL
<b>Course content and procedures</b>	<p>Course schedule and topics that will be covered</p> <p>=====</p> <ol style="list-style-type: none"> <li>1. Introduction (Usage: The Information Technology Center etc.)</li> <li>2. Academic Integrity (interesting and Unpublished, Scientific misconduct)</li> <li>3. Researcher's outputs (Why, How, Where)</li> <li>4. Planning the research/research protocol (LaTeX editor, Mind mapping and brainstorming etc.)</li> <li>5. Proposing and Reporting on Research</li> <li>6. Making a scientific presentation</li> <li>7. Midterm Presentation 1/2</li> <li>8. Midterm Presentation 2/2</li> <li>9. Brush up on your skills (Handling Q&amp;A)</li> <li>10. Communication and Correspondence (Peer, Researcher, Editor, etc.)</li> <li>11. Academic publishing (Overviews; Dissertation, Monograph, Scientific paper )</li> <li>12. Academic publishing (Procedures, Processes and standards)</li> <li>13. Assessment and evaluation</li> <li>14. Oral presentation 1/2</li> <li>15. Oral presentation 2/2</li> </ol> <p>=====</p> <p>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).</p> <p>The lectures will take place in the computer room at the Information Technology Center (E-3</p>

	<p>building).</p> <p>Note that the lecture schedule is subject to constant revisions throughout the course.</p>
<b>Study time (preparing and reviewing)</b>	<p>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.</p> <p>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.</p>
<b>Evaluation method and grading scale (target and standard)</b>	<p>Evaluation is given as follows; (Attendance 20%, Assignments 30%, Writing paper 20%, Oral presentation 30%)</p> <p>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.</p>
<b>Office hours</b>	12:00-13:00, for just-in-case, schedule an appointment before walking in.
<b>A message for students</b>	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.
<b>Others</b>	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.
<b>Keywords</b>	Research, Publishing paper, oral presentation

# English for Interpersonal Communication

## General Information

<b>Course name</b>	English for Interpersonal Communication		
<b>English Course name</b>	English for Interpersonal Communication		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	General culture subjects		
<b>Department</b>	School of Informatics and Engineering		
<b>Lecturer</b>	Shi Jie		
<b>Office</b>	E1-609		
<b>e-mail</b>	shi.jie@uec.ac.jp		
<b>Course's URL</b>	Nil		
<b>Last updated</b>	2016/03/17 16:10:34	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	This course teaches the basic elements in interpersonal communication. Students will be given opportunities to study the basic concepts in interpersonal communication as well as practice the theories in various kinds of class activities such as simulations, discussions, skits/drama and presentations.
<b>Prerequisites</b>	All required English courses in first and second years.
<b>Recommended preparation</b>	English courses that involved students in discussion, presentation and research.
<b>Course texts and materials</b>	The teacher and students will both prepare reading, discussion and presentation materials.
<b>Course content and procedures</b>	<p>The main topics and activities are as follows:</p> <p>Week 1. Definition of communication, interpersonal communication</p> <p>Week 2. Perception of self</p> <p>Week 3. Perception of the world</p> <p>Week 4. Cross-cultural communication</p> <p>Week 5. Gender differences: a myth or fact</p> <p>Week 6. The role of language and language use in communication</p> <p>Week 7. Management of personal conflicts and crisis</p> <p>Week 8. In-class/On-campus research project</p> <p>Week 9-11. Presentation</p> <p>Week 12-14. Essay writing</p> <p>Week 15: Review and course evaluation</p>
<b>Study time (preparing and reviewing)</b>	Students must be prepared to conduct out-of-class home assignments, e.g. research, preparation for presentation, team work, and essay writing.
<b>Evaluation method and grading scale (target and standard)</b>	<p>This course adopts an accumulative grading system which divides the final grades into percentages. It is important to note that there will NOT be a final test that counts for 100% of your grade. Note: Those students who are absent for two times or more without any official excuses will not be eligible for Grade "S"; Those students who miss over 30% of total classes without any official excuses will fail automatically.</p> <p>Attitude and Performance in class: 20%</p> <p>Homework: 20%</p> <p>Research presentation: 30%</p> <p>Research essay: 30%</p>
<b>Office hours</b>	Office Hours: Period 2, Tuesday. Outside of office hours, schedule an appointment by email or phone. Any question is also welcome by email.

<b>A message for students</b>	Your attendance and your participation in class activities are two of the most important elements of the course and your achievement. You must try to use English in class all the time. Inappropriate use of Japanese in class will be considered unacceptable behaviors in class and will lead to lower final grade. You are encouraged to ask questions actively in class. In addition, you are expected to make contributions to the class materials and group collaboration for research and group work.
<b>Others</b>	All students must have an active account with the UEC e-Learning system.
<b>Keywords</b>	Personal, interpersonal, communication, discussion, presentation

# Preparation for Graduate School

## General Information

<b>Course name</b>	Preparation for Graduate School		
<b>English Course name</b>	Preparation for Graduate School		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	General culture subjects		
<b>Department</b>	School of Informatics and Engineering		
<b>Lecturer</b>	UEHARA Suwako (上原 寿和子)		
<b>Office</b>	East 1-803		
<b>e-mail</b>	uehara.suwako@uec.ac.jp		
<b>Course's URL</b>	NIL		
<b>Last updated</b>	2016/03/03 17:47:59	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	This is a course for learners who intend to pursue a graduate course. The aim is to search and collect information related to one's graduate school admission, and the kinds of English one may use in your future lab. Through a survey or interview with professors and future lab members, learners will collect data and report to the course members in a form of a presentation in English. Learners will also select and read academic papers, and provide a summary and conduct discussions in small groups. Learners should aim to complete self-set goals autonomously. By the end of the course, each learner will have a portfolio related to preparing to English for graduate school admission, and English learning goals planned and achieved.
<b>Prerequisites</b>	Academic Spoken English I Academic Spoken English II Academic Written English I Academic Written English II English Seminar
<b>Recommended preparation</b>	Academic Spoken English I Academic Spoken English II Academic Written English I Academic Written English II English Seminar
<b>Course texts and materials</b>	There is no textbook, and necessary materials will be provided in class. Students will also be required to investigate academic papers in English that is related to their interest.
<b>Course content and procedures</b>	Week 1: Introduction to Preparation for Graduate School (Overview, Login to Edmodo, Goal setting, Evaluation) Week 2: The Marshmallow Challenge Week 3: The Marshmallow Challenge (Lessons learnt) Week 4: Academic vocabulary size, vocabulary, and transition phrases Week 5: Citation Styles Week 6: Abstracts: Style and Submission Week 7: Academic papers: Style and Selection Week 8: Summary and Discussion 1 Week 9: Summary and Discussion 2 Week 10: Summary and Discussion 3 Week 11: Needs Analysis 1 Academic Publication: Where to publish? What style to use? Week 12: Needs Analysis 2 Survey or interview with a professor or lab member Week 13: Needs Analysis Report: What kind of English will you use in your future lab? Week 14: Needs Analysis Report: What kind of English will you use in your future lab? Week 15: Exam and Reflection



	(Schedule subject to change)
<b>Study time (preparing and reviewing)</b>	In addition to other assignments, students will prepare spoken summaries in English and a one-sided argument in English.
<b>Evaluation method and grading scale (target and standard)</b>	Evaluation: Participation in class (discussion, attitude, teamwork): 10% Academic vocabulary: 10% Academic paper selection: 20% Needs analysis report: 30% Summary and discussion: 30%
<b>Office hours</b>	Thursday 2nd period or by appointment.
<b>A message for students</b>	This class will be taught through English.
<b>Others</b>	Nothing.
<b>Keywords</b>	preparation, graduate school, English

# Quality and Reliability Engineering

## General Information

<b>Course name</b>	Quality and Reliability Engineering		
<b>English Course name</b>	Quality and Reliability Engineering		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Informatics		
<b>Lecturer</b>	SUZUKI Kazuyuki (鈴木 和幸)		
<b>Office</b>	West 5-605		
<b>e-mail</b>	suzuki@se.uec.ac.jp, jinlu@se.uec.ac.jp		
<b>Course's URL</b>	<a href="http://www-suzuki.se.uec.ac.jp/">http://www-suzuki.se.uec.ac.jp/</a>		
<b>Last updated</b>	2016/03/10 09:40:15	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	Lot of Japanese products have been spreading out all over the world. One of these reasons is 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.
<b>Prerequisites</b>	None
<b>Recommended preparation</b>	None
<b>Course texts and materials</b>	Handout Print
<b>Course content and procedures</b>	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
<b>Study time (preparing and reviewing)</b>	None
<b>Evaluation method and grading scale (target and standard)</b>	Based on attendance and group discussion
<b>Office hours</b>	Any question is welcome after the lecture
<b>A message for students</b>	This lecture will be given in English. It is a good chance to improve spoken English and make international friends.
<b>Others</b>	None
<b>Keywords</b>	Quality control, Reliability Engineering, QC seven tools, Design of Experiments

# Semiconductor Materials and Devices

## General Information

<b>Course name</b>	Semiconductor Materials and Devices		
<b>English Course name</b>	Semiconductor Materials and Devices		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Computer and Network Engineering		
<b>Lecturer</b>	NOZAKI Shinji (野崎 眞次)		
<b>Office</b>	East31-203		
<b>e-mail</b>	nozaki@ee.uec.ac.jp		
<b>Course's URL</b>	none		
<b>Last updated</b>	2016/03/07 16:40:23	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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.
<b>Prerequisites</b>	none
<b>Recommended preparation</b>	Electronic Circuits
<b>Course texts and materials</b>	Modern Semiconductor Devices for Integrated Circuits (Chenming Calvin Hu)
<b>Course content and procedures</b>	<ol style="list-style-type: none"> <li>1. General Overview of the course, Electrons and Holes in Semiconductors I</li> <li>2. Electrons and Holes in Semiconductors II</li> <li>3. Motion and Recombination of Electrons and Holes</li> <li>4. Device Fabrication Technology</li> <li>5. PN Junction I</li> <li>6. PN Junction II</li> <li>7. Application to Optoelectronic Devices (Slar Cells, LEDs, Diode Lasers, Photodiodes)</li> <li>8. Metal-Semiconductor Junction</li> <li>9. MOS Capacitor I</li> <li>10. MOS Capacitor II</li> <li>11. MOS Transistor I</li> <li>12. MOS transistor II</li> <li>13. MOSFETs in ICs</li> <li>14. Bipolar Transistor I</li> <li>15. Bipolar Transistor II</li> <li>16. Final Exam (in class)</li> </ol> <p>Take Home Exam in the winter holidays</p>
<b>Study time (preparing and reviewing)</b>	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.
<b>Evaluation method and grading scale (target and standard)</b>	Based on the scores of the take-home and in-class exams (50% each)
<b>Office hours</b>	After a class or e-mail for an appointment

<b>A message for students</b>	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.
<b>Others</b>	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.
<b>Keywords</b>	semiconductor, MOS, IC, LED, solar cell, transistor

# Advanced Communication Engineering and Informatics III (Computational Complexity)

## General Information

<b>Course name</b>	Advanced Communication Engineering and Informatics III		
<b>English Course name</b>	Advanced Communication Engineering and Informatics III		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Computer and Network Engineering		
<b>Lecturer</b>	TARUI Jun (垂井 淳)		
<b>Office</b>	E3-824		
<b>e-mail</b>	tarui@ice.uec.ac.jp		
<b>Course's URL</b>	www.jtlab.ice.uec.ac.jp		
<b>Last updated</b>	2016/03/07 20:22:24	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	In the academic year of 2015, 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.
<b>Prerequisites</b>	none
<b>Recommended preparation</b>	Students should have taken an introductory course on algorithms, and should have written at least one computer program.
<b>Course texts and materials</b>	none
<b>Course content and procedures</b>	<p>In the first half of the course, we will discuss the following various algorithmic paradigms:</p> <ul style="list-style-type: none"> <li>(1) learning algorithms</li> <li>(2) randomized algorithms</li> <li>(3) approximation algorithms</li> </ul> <p>In the second half, we will discuss the following:</p> <ul style="list-style-type: none"> <li>(1) complexity classes including important classes P and NP</li> <li>(2) theory of NP-completeness</li> <li>(3) theoretical cryptography</li> </ul> <p>More specific plan of 15 lectures is as follows.</p> <ul style="list-style-type: none"> <li>1. overview, review of algorithm analysis</li> <li>2. review of sorting algorithms and their analysis</li> <li>3. explanation of programming project</li> <li>4. learning algorithm (1): learning axis-parallel rectangles</li> <li>5. learning algorithm (2): PAC learning paradigm</li> <li>6. learning algorithm (3): learning conjunctions and DNFs</li> <li>7. student presentation of programming project</li> <li>8. randomized algorithm</li> <li>9. approximation algorithm</li> <li>10. complexity classes P and NP</li> <li>11. NP-completeness (1): reduction</li> <li>12. NP-completeness (2): 3SAT</li> <li>13. NP-completeness (3): 3coloring</li> <li>14. cryptography</li> <li>15. P vs NP conjecture</li> </ul>

<b>Study time (preparing and reviewing)</b>	At least 1.5 hour/week expected
<b>Evaluation method and grading scale (target and standard)</b>	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.
<b>Office hours</b>	TBA
<b>A message for students</b>	Regular UEC students from all departments are very much welcome.
<b>Others</b>	If you have questions about this course, please feel free to ask me by email.
<b>Keywords</b>	algorithm, computational complexity, learning algorithm, NP-completeness

# Experimental Electronics Laboratory

## General Information

<b>Course name</b>	Experimental Electronics Laboratory		
<b>English Course name</b>	Experimental Electronics Laboratory		
<b>Academic Year</b>	2016	<b>Offered to year</b>	2/3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	Faculty of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Engineering Science		
<b>Lecturer</b>	KISHIMOTO Tetsuo (岸本 哲夫)		
<b>Office</b>	Building East 6, Room 826		
<b>e-mail</b>	kishi(at)pc.uec.ac.jp		
<b>Course's URL</b>	none		
<b>Last updated</b>	2016/03/08 10:10:22	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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.
<b>Prerequisites</b>	Basic Electronics
<b>Recommended preparation</b>	Analysis, especially complex numbers.
<b>Course texts and materials</b>	Text materials or a pdf file will be provided at the class.
<b>Course content and procedures</b>	<p>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.</p> <ol style="list-style-type: none"> <li>1) Measurement of resistance.</li> <li>2) Measurement of complex impedance for C and L.</li> <li>3) Resonant behavior of LC-circuits.</li> <li>4) Transient behavior of LC-circuits.</li> <li>5) Transistor.</li> <li>6) Operation amplifier and its applications.</li> <li>7) Logic gates.</li> </ol>
<b>Study time (preparing and reviewing)</b>	Please study on the basic technical terms of the IC you will work on each week.
<b>Evaluation method and grading scale (target and standard)</b>	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%).
<b>Office hours</b>	<p>Please make an appointment before coming to my office.</p> <p>Contact: Bldg-E6, room 628 Ext: 5449 kishi(at)pc.uec.ac.jp</p>
<b>A message for students</b>	Electronic circuits are fun to play with.
<b>Others</b>	The course has originally been designed for JUSST students, but regular students can take it.
<b>Keywords</b>	complex impedance, inductor, capacitor, logic gate, operational amplifier, bipolar junction transistor.

# Topics in Mechanical and Intelligent Systems Engineering II (Visual Communications)

## General Information

<b>Course name</b>	Topics in Mechanical and Intelligent Systems Engineering II (Visual Communications)		
<b>English Course name</b>	Topics in Mechanical and Intelligent Systems Engineering II		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Mechanical Engineering and Intelligent Systems		
<b>Lecturer</b>	KANEKO Masahide (金子 正秀)		
<b>Office</b>	West 8-514		
<b>e-mail</b>	kaneko@ee.uec.ac.jp		
<b>Course's URL</b>	None		
<b>Last updated</b>	2016/03/03 18:58:54	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	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 at home and we see a variety of 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.
<b>Prerequisites</b>	NIL
<b>Recommended preparation</b>	NIL
<b>Course texts and materials</b>	Original handouts will be prepared in the class.
<b>Course content and procedures</b>	<p>(Outline of Class and Contents)</p> <p>[1] Visual media  Definition of "visual media"  Classification of "visual media"  Use of visual information in the fields of information and communication</p> <p>[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</p> <p>[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)</p> <p>[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</p>



	<p>MPEG-1, MPEG-2, MPEG-4, MPEG-7, MPEG-21</p> <p>○ JPEG ==&gt; Digital camera, Pictures used in Web site</p> <p>MPEG-2 ==&gt; Digital broadcasting (satellite, terrestrial), DVD</p> <p>MPEG-4 ==&gt; Digital movie camera, Video by mobile phone (One segment broadcasting), and so on</p> <p>HEVC/H-265 ==&gt; QVGA -- 8Kx4K(Super High Vision) : High Efficiency Video Coding</p> <p>[5] Video over Internet and over mobile network</p> <p>Internet as transmission media of video</p> <p>Streaming</p> <p>Mobile network as transmission media of video</p> <p>Error resilience coding</p>
<b>Study time (preparing and reviewing)</b>	Preparation is not required. However the intensive review is required for every lesson.
<b>Evaluation method and grading scale (target and standard)</b>	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.
<b>Office hours</b>	Before visiting to the office, please make an appointment by using E-mail.
<b>A message for students</b>	Not only attending lessons but also deliberating upon visual communications and their applications deeply.
<b>Others</b>	NIL
<b>Keywords</b>	visual communication, image coding, video coding, digital image, compression, international standard of coding method

# Advanced Communication Engineering and Informatics IV (Computer Algorithms)

## General Information

<b>Course name</b>	Advanced Communication Engineering and Informatics IV		
<b>English Course name</b>	Advanced Communication Engineering and Informatics IV		
<b>Academic Year</b>	2016	<b>Offered to year</b>	3/4
<b>Semester offered</b>	Fall semester	<b>Offered for</b>	School of Informatics and Engineering
<b>Teaching methods</b>	Lecture	<b>Credits</b>	2
<b>Classification</b>	Course subject		
<b>Department</b>	Department of Computer and Network Engineering		
<b>Lecturer</b>	NAKANO Keisuke (中野 圭介)		
<b>Office</b>	West 9 Bldg. 615		
<b>e-mail</b>	ksk@cs.uec.ac.jp		
<b>Course's URL</b>	<a href="http://millsmess.cs.uec.ac.jp/class/16algE/">http://millsmess.cs.uec.ac.jp/class/16algE/</a>		
<b>Last updated</b>	2016/03/11 00:54:14	<b>Status</b>	Released

## Course Description

<b>Topic, goals and objectives</b>	<p>With rapid progress of the computer and information technologies, the theory of computer algorithms is regarded as one of the most important theories in order to use computers smartly. In this lecture, we will learn some methods to analyze and design efficient computer algorithms for several fundamental computing problems. The goal of the lecture is:</p> <ol style="list-style-type: none"> <li>1) Understand the behavior, correctness, and the time and space complexity analysis of the algorithms presented at the lecture.</li> <li>2) Understand principles of basic design methods of computer algorithms, including, greedy method, dynamic programming method, etc.</li> </ol>
<b>Prerequisites</b>	The students who take this lecture are assumed to have some basic skills of writing programs in a programming language.
<b>Recommended preparation</b>	Introduction to Discrete Mathematics
<b>Course texts and materials</b>	<p>Textbooks for your study (if you need):</p> <ul style="list-style-type: none"> <li>- Introduction to Algorithms (3rd edition) By H. Cormen, C. Leiserson, R. Rivest, and C. Stein, MIT Press.</li> <li>- Algorithms By S. Dasgupta, C Papadimitriou, and U. Vaziran, Available online.</li> </ul>
<b>Course content and procedures</b>	<p>(a) Contents of the lecture</p> <ul style="list-style-type: none"> <li>#1 Introduction</li> <li>#2 Divide and Conquer</li> <li>#3 Master Method</li> <li>#4 Randomized Algorithms</li> <li>#5 Minimum Cut Problem</li> <li>#6 Breadth First Search and Depth First Search</li> <li>#7 Dijkstra's Algorithm</li> <li>#8 Floyd-Warshall's Algorithm</li> <li>#9 Minimum Spanning Trees</li> <li>#10 Prim's Algorithms</li> <li>#11 Kruskal's Algorithms</li> <li>#12 Greedy Methods</li> <li>#13 Dynamic Programming Methods</li> </ul>

	<p>#14 Applications of Dynamic Programming #15 Summary and Exam.</p> <p>(b) How to proceed the lecture</p> <p>We emphasize and focus on the proof and time complexity analysis of the algorithms since it is very important to understand each algorithm theoretically so that you can design algorithms by yourselves for new problems you faced.</p>
<b>Study time (preparing and reviewing)</b>	Please implement the algorithms you learned using your favorite programming language, if possible.
<b>Evaluation method and grading scale (target and standard)</b>	<p>(a) Evaluation method</p> <p>The grade will be determined by reporting assignments and final examination.</p> <p>(b) Evaluation criteria</p> <p>The students are required to be able to design an efficient and correct algorithm by themselves even for a problem they have never seen.</p>
<b>Office hours</b>	Please send an e-mail to make an appointment.
<b>A message for students</b>	I strongly recommend you to take notes on a lecture and review the contents after every lecture. It will be a short cut to master a skill to design algorithms.
<b>Others</b>	Nothing
<b>Keywords</b>	Algorithms, Computational Complexity, Greedy Method, Dynamic Programming