Course Description

UEC Exchange program

Japanese University Studies in Science and Technology (JUSST)

Spring Semester, 2024

International Education Center (IEC)

The University of Electro-Communications

国立大学法人 電気通信大学

100th ANNIVERSARY SINCE 1918

UEC JUSST Program Course Description
Japanese University Studies in Science and Technology (JUSST)
International Educational Center (IEC)
The University of Electro-Communications
1-5-1 Chofugaoka, Chofu-shi, 182-8585
Tokyo, Japan
E-mail: jusst@fedu.uec.ac.jp

Contents

JUSST Program Course Requirements

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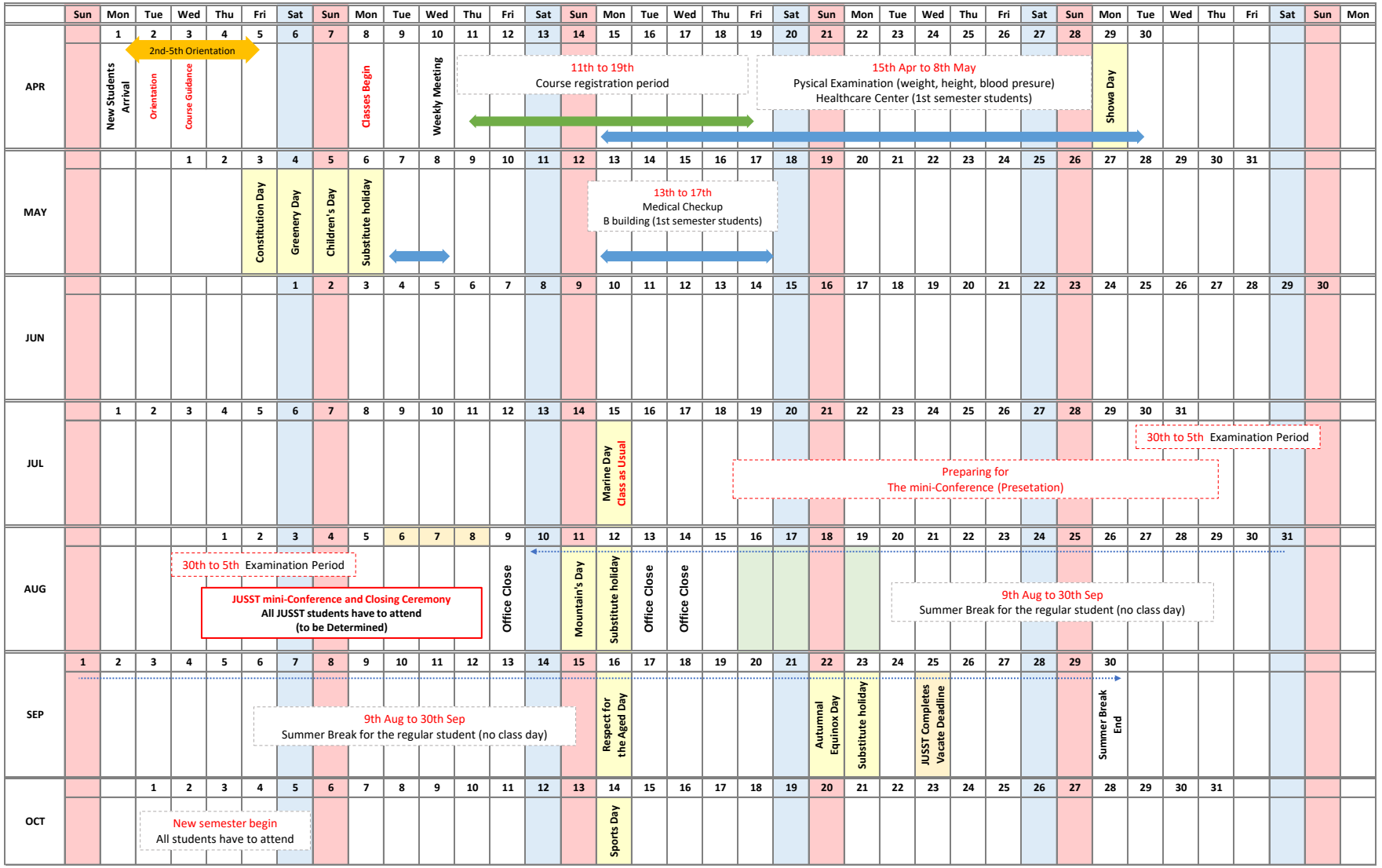
<tr><th></th><th>Subject</th><th>1st Semester</th><th>2nd Semester</th></tr>
<tr><td rowspan="8">CORE SUBJECTS</td><td rowspan="2">RESEARCH WORK
Research / Project
(Required for JUSST student)</td><td colspan="2">[UNDERGRADUATE STUDENTS]
<u>Individual Study Project</u> under the supervision of UEC faculty 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>
<tr><td>Academic Skills II</td></tr>
<tr><td>Academic Skills III</td><td>–</td><td>2 hours/week (2 Credits)</td></tr>
<tr><td>Japanese Language</td><td colspan="2">Elementary / Intermediate / Advanced *
4 - 14 hours/week (2 - 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="4">FREE ELECTIVE</td><td>Reading Scientific Research</td><td colspan="2" rowspan="2">2 hours/week (2 Credits)
Offered in the SPRING Semester only</td></tr>
<tr><td>Research Presentation</td></tr>
<tr><td>Preparation for Graduate School</td><td colspan="2" rowspan="2">2 hours/week (2 Credits)
Offered in the FALL Semester only</td></tr>
<tr><td>English for Interpersonal Communication</td></tr>
<tr><td>Sports Classes</td><td>–</td><td>2 hours/week (1 Credit)</td></tr>
</table>

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

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

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

2024 SPRING SEMESTER CALENDAR



National holiday

Entrance examination for UEC graduate school

@ JUSST students Weekly Meeting on every Wed (start from 16:20)

2024/04/12

Time-Table for Spring Semester, 2024

令和6年度春学期（前期）　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	VLSI Low Power Circuit Design	I	ISHIBASHI Koichiro （石橋 孝一郎） HOANG TRONG THUC	W2-106	*
	3	Advanced Communication Engineering and Informatics I (Information and Communication Networks)	I	Kitsuwan　NATTAPONG	E4-317	*
	4					
	5	Advanced Communication Engineering and Informatics II (Optical Communication Engineering)	I	KISHI Naoto (來住 直人)	E6-201	
		Reading Scientific Research	HLSS	UEHARA Suwako (上原　寿和子)	C-401	Old C building
Tue 火	1	UEC Academic Skills I (Computer Literacy)	IEC	CHOO	C-401	Old C building
	2	UEC Academic Skills II (Information literacy and Research)	IEC	CHOO	C-401	
		Life　Long　Learning　Sports (for Senior student only)	SPORTS	ANDO Soichi (安藤 創一)		2nd-semester students only
	3	Japanese Language (日本語)	IEC			
	4	Japanese Language (日本語)	IEC			
	5	Research Presentation	HLSS	JEFFREYS Atsuko Marie	C-402	Old C building
Wed 水	1	Introduction to Computational Methods in Science and Engineering	M	MATUTTIS Hans-Georg	C-401	Old C building
	2	Advanced Environmental Materials Science	S	FURUKAWA Rei (古川　怜)	W2-105	*
		Japanese Language (日本語)	IEC			
	3	Japanese Language (日本語)	IEC			
	4	Japanese Language (日本語)	IEC			
	5					
Thu 木	1	UEC Academic Skills III (Publishing Literacy and Research)	IEC	CHOO	E3-1st floor	Computer Room (2nd-Semester Students only)
	2	Advanced Engineering Science I　(Polymer Photonics)	S	FURUKAWA Rei (古川　怜)	W10-111	
		Advanced Theory of Systems Reliability	J	JIN Lu (金 路)	W5-214	*
	3					
	4	Topics in Informatics II (Sustainable Supply Chain Management)	J	YAMADA Tetsuo (山田 哲男)	W5-209	
	5	Advanced Engineering Science III (Exercises in Advanced Computational Sciences)	S	MORISHITA Toru (森下 亨)	E6-237	11th April Course Guidance in E6-803
Fri 金	1	Japanese Language (日本語)	IEC			
	2	Japanese Language (日本語)	IEC			
	3	Advanced Engineering Science II (Photonics and Opto-electronics)	S	UENO Yoshiyasu (上野 芳康)	W2-106	
	4					
	5	Information and Communications Technologies for SDGs	I	MATSUURA Motoharu (松浦 基晴) TAKAHASHI Hiroki (高橋　裕樹)	E3-301	*

Informatics, Science and Enginerring Courses

(1/2), (2/2) For the course which is offered twice (2 classes) a week, you will have to take both (1/2 and 2/2) to earn the credits. And the course will end earlier in 8 weeks' time.

* Joint classes with graduate programs

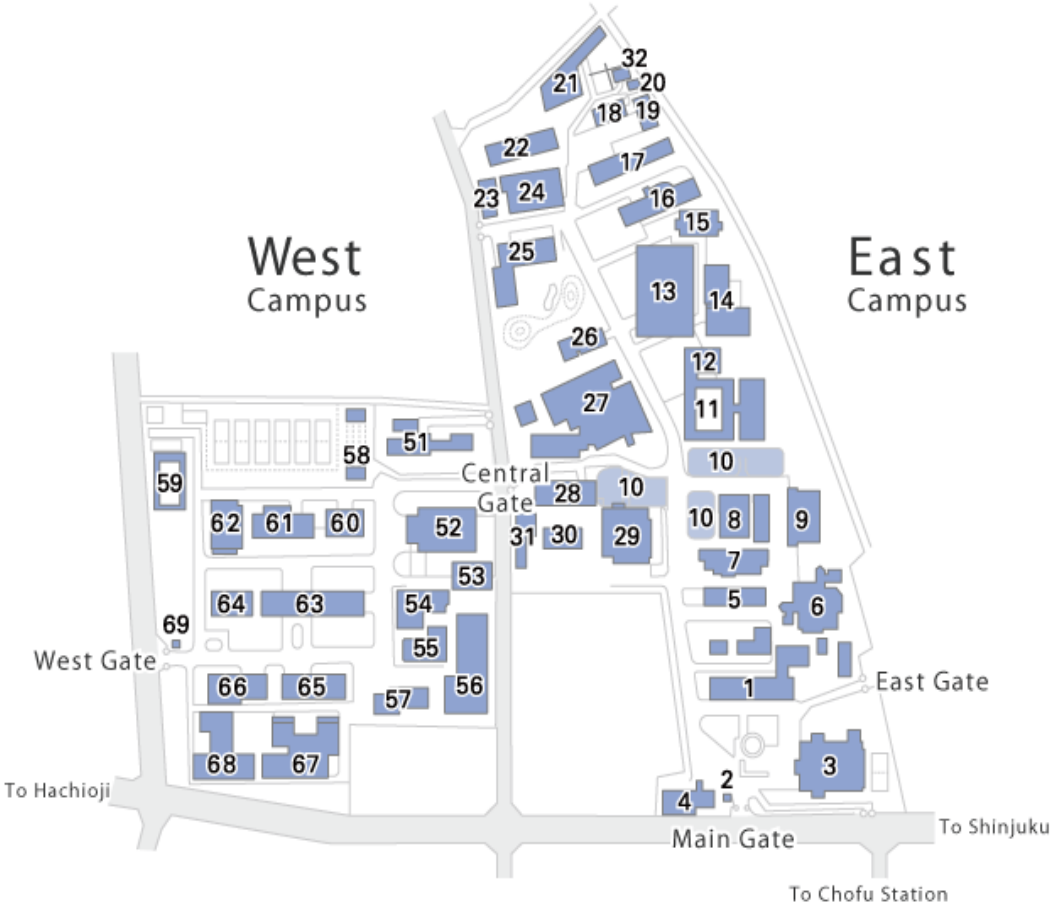
Department 学科等

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)
IEC: International Education Center (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 (JST) 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

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）
- International Education Center（IEC）（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）

Reading Scientific Research

General Information

Course title (Japanese)	Reading Scientific Research		
Course title (English)	Reading Scientific Research		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	UEHARA Suwako (上原　寿和子)		
Office	E1-803		
e-mail	uehara.suwako@uec.ac.jp		
Course website	Google Classroom		
Last updated	2024/03/20 17:20:58	**Status**	Released /now open to public

Course Description

Topic and goals	This course focuses on skills required to read scientific research. Students will develop skills to recognize different sources of reading material related to scientific research, to skim and scan, and speed read, to critically evaluate journals and other scientific research, to make use of tools and understand necessary vocabulary that will help enhance reading. By the end of the course, students should gain skills to read scientific papers with a critical eye and be able to summarise the ideas behind the scientific research. Students are expected to be prepared to voice their opinions in English. The classes will be conducted in English.
Prerequisites	ASE I/II AWE I/II AE2Y I/II
Recommended prerequisites and preparation	None
Course textbooks and materials	Materials will be provided in class, and students will also search for relevant materials prior to class and during class time. Make sure you bring a computer to use in class.
Course outline and weekly schedule	Week 1: Class introduction, Introduction to reading scientific articles, Student selection Week 2: Machine translation for reading Week 3: Science for young learners Week 4: Scientific research in newspaper articles Week 5: Scientific research in magazines Week 6: Scientific research in books Week 7: Searching for scientific research articles Week 8: Scientific research in scientific journals Week 9: Scientific research in scientific reviews Week 10: Skimming and scanning, and reading speed Week 11: Reading papers deeply Week 12: Critical thinking skills in evaluating validity and reliability Week 13: Vocabulary for scientific reading Week 14: Summarizing and presenting general ideas in scientific research Week 15: Presentations & self-evaluations

Course content utilizing practical experience	
Distance learning information	The first class will be conducted face-to-face in the classroom. Teaching mode for later classes will be announced by the teacher. Google Classroom: kcai3f6
Preparation and review outside class	Preparation by reading assigned readings and searching for readings relevant for the class should be done as instructed prior to each class. Students are expected to spend about one to two hours each week to complete assignments and review class notes.
Evaluation and grading	Class participation = 30% Searching for reading materials = 20% Assignments = 30% Presentation = 20%
Office hours	By appointment.
Message for students	The class will be conducted in a warm and welcoming atmosphere, and to encourage critical thinking and discussion.
Others	None
Keyword(s)	reading, discussion, presentation, critical thinking

Research Presentation

General Information

Course title (Japanese)	Research Presentation		
Course title (English)	Research Presentation		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	Atsuko Marie Jeffreys		
Office	East 1-807		
e-mail	ajeffreys@uec.ac.jp		
Course website	Google Classroom		
Last updated	2024/03/02 14:20:30	**Status**	Released /now open to public

Course Description

Topic and goals	The goal of this course is for students to be able to explain their research results in such a way as to attract and maintain the audience's attention and ensure their understanding all throughout the presentation. Through this course, the students will master the art of public speaking, with topics based on the research they have made, or are intending to make.
Prerequisites	The following courses are prerequisites to registering for this class: Academic Spoken English I and II Academic Written English I and II Academic English for the Second Year I and II
Recommended prerequisites and preparation	None in particular
Course textbooks and materials	Activities will be based on TED Masterclass on presentations.
Course outline and weekly schedule	In each class, a lesson from TED Masterclass will be studied. The list of lessons appears below. The course also includes issues concerning making research presentations, such as avoiding committing plagiarism. Class 1: Introduction of class / Lesson 1 - What are ideas? Class 2: Lesson 2 - What are your ideas? Class 3: Lesson 3 - What is your throughline? Class 4: Extracting ideas for a presentation from your previous research Class 5: Lesson 4 - Crafting your talk plan Class 6: Lesson 5 - Voice and Presence Class 7: How not to commit plagiarism Class 8: Midterm presentation + Q & A Class 9: Lesson 6 - Talk Tool: Connection Class 10: Lesson 7 - Talk Tool: Storytelling Class 11: Lesson 8 - Talk Tool: Explanation Class 12: Lesson 9 - Talk Tool: Persuasion Class 13: Lesson 10 - Talk Tool: Revelation Class 14: Lesson 11 - Talk Tool: Visuals Class 15: Final presentation + Q & A (Schedule subject to change)

Course content utilizing practical experience	
Distance learning information	Google Classroom class code: TBA
Preparation and review outside class	Review your learning after class by practicing the exercises. Prepare for next class by previewing the activities.
Evaluation and grading	Completion of activities 30% Midterm presentation 35% Final presentation 35% ---------- Total 100% S≧90%, A≧80%, B≧70%, C≧60%, D<60%
Office hours	Email me to set up an appointment to meet for consultation.
Message for students	What does not kill you makes you stronger. -- This is true.
Others	Contents of this syllabus are subject to change as deemed necessary.
Keyword(s)	Autonomous learning, Presentation skills, Presentation practice

Japanese Language

General Information

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

Course Description

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

VLSI Low Power Circuit Design

General Information

Course title (Japanese)	VLSI Low Power Circuit Design		
Course title (English)	VLSI Low Power Circuit Design		
Course Code			
Academic year	2024	**Year offered**	All school year
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program
Teaching method	Lecture	**Credits**	2
Category	Graduate School Specialized Education Courses - Specialized subjectII		
Cluster/Department	Department of Computer and Network Engineering		
Lecturer(s)	ISHIBASHI Koichiro (石橋　孝一郎), HOANG TRONG THUC		
Office	E10 301-2(Ishibashi), W1-507(Thuc)		
e-mail	ishibashi (at) uec.ac.jp, hoangtt (at) uec.ac.jp		
Course website	http://mtm.es.uec.ac.jp/index.html		
Last updated	2024/03/15 18:01:35	**Status**	Released /now open to public

Course Description

Topic and goals	VLSI is the one of important infrastructure for ICT society today. We study fundamentals of VLSI design and design technology of low power LSI design
Prerequisites	Fundamental electric circuit theorems
Recommended prerequisites and preparation	Fundamental electric circuit theorems
Course textbooks and materials	Original lecture materials will be delivered on the class
Course outline and weekly schedule	The lecture in this course, type I(Aa), is offered in English; Materials such as writing on the whiteboard, PPT slides and handouts are given in English. Thanks of low power LSI, we nowadays enjoy ITC society with electronics appliances such as cell phones, electric cars and so on. The purpose of this lecture is to understand not only fundamentals of VLSI circuits, but low power circuit technologies which have made this ICT society into reality. Outline of Class and Contents 1) Introduction to rolls of VLS I on ICT society 2) Structure of MOSFET and its characteristics 3) Fundamentals of CMOS LSI circuits 4) Asynchronous and Synchronous Circuit 5) Power and Speed on CMOS LSI 6) Moore's law and Scaling law 8) Low Power digital circuit design techniques 9) Up to date Digital LSI examples 10) Final test 11) Exercise 1 Spice Simulation and SPICE Model 12) Exercise II Circuit Simulation (Inverter) 13) Exercise III Circuit Simulation (FF, NAND, NOR, ENOR) 14) Exercise IV (Circuit Synthesis)

	15) Exercise V 8bit adder synthesis
Course content utilizing practical experience	Circuit simulation and synthesis will be exercised
Distance learning information	The lectures are basically done in person. When real-time on-line lecture is carried out, Zoom ID is as follows.
Preparation and review outside class	Review for the last lecture is recommended before the lectures. VLSI Low Power Circuit Design 2023 Class code: zpsbdnu
Evaluation and grading	Final exam will be done for evaluation. Evaluation category (Score) are shown as bellow A(=>80), B(=>70), C(=>60), and D(<60)
Office hours	Send e-mail before going to the room of Prof. Thuc(W1-507)
Message for students	This class is focusing on not only low power circuit design but overview and fundamentals of VLSI technology . This class could make you access to semiconductor industry which is nowadays a kind of infrastructures.
Others	PPT slides and handouts are also given in English. Class code of Google classroom is "xixvhvv"(VLSI Low Power Circuit Design 2024)
Keyword(s)	VLSI, Low power, Circuit design

Advanced Communication Engineering and Informatics I (Information and Communication Networks)

General Information

Course title (Japanese)	情報通信ネットワーク		
Course title (English)	Information and Communication Networks		
Course Code			
Academic year	2024	**Year offered**	All school year
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program
Teaching method	Lecture	**Credits**	2
Category	Graduate School Specialized Education Courses - Specialized subjectI		
Cluster/Department	Department of Computer and Network Engineering		
Lecturer(s)	KITSUWAN　NATTAPONG		
Office	East 3-1021		
e-mail	kitsuwan@uec.ac.jp		
Course website	http://www.kitsuwan.cei.uec.ac.jp/lecture/icn/ password will be informed in the class.		
Last updated	2024/02/28 15:19:13	**Status**	Released /now open to public

Course Description

Topic and goals	Communication networks serve as the most important infrastructure for the today's information society. This course deals with mathematical programming and algorithms for communication networks. The course objectives are to understand the fundamental concepts communication networks and theories for network designs and controls, and bridge the gap between the theories and practices.
Prerequisites	The minimum requirement to understand this course is a knowledge of linear algebra and computer logic.
Recommended prerequisites and preparation	Undergraduate courses related to information, communications, networks, probability and statistics, and mathematical programming.
Course textbooks and materials	Book 1: E. Oki, Linear Programming and Algorithms for Communication Networks, CRC Press, Boca Raton, 2012. Book 2: Book 1の日本語版，大木英司, 通信ネットワークのための数理計画法, コロナ社, 2012. The contents of this course are almost covered by Book 1.
Course outline and weekly schedule	The lecture including materials in this course is offered in English (Type Aa). The subjects include the following items. The topics may be subject to change due to the progress. 1. Introduction and Basic problems for communication networks 2. Algorithms for basic problems (Shortest path routing max flow problem) 3. Algorithms for basic problems (Minimum-cost flow problem) 4. Disjoint path routing 1 (Edge-disjoint) 5. Disjoint path routing 2 (Vertex-Disjoint) 6. Liner programming basics 7. Application of liner programming 8. GLPK (GNU Liner Programming Kit) 9. Basic problems solved by LP 10. Disjoint path routing 11. Wavelength assignment 12. Routing and traffic demand model 13. Mathematical puzzles 14. Advanced mathematical puzzles 15. Report, presentation and discussion
Course content utilizing practical experience	

Distance learning information	Usually, there is no online lecture. If the online lecture is needed, I'll inform the detail in the class.
Preparation and review outside class	Reading the textbook or material before the class is preferred.
Evaluation and grading	Methods: Homework and report 50%, and final presentation 50% Criteria: Fundamentals, theories, and Practices
Office hours	Contact by email kitsuwan [at] uec.ac.jp
Message for students	The students are required to study the textbook to understand the contents of this course. Lecture and meterial will be given mainly in English.
Others	Although the lecture is in English, both Japanese and English is acceptable for question.
Keyword(s)	Information and communication, communication network, design and control, mathematical programming, algorithm

Advanced Communication Engineering and Informatics II （Optical Communication Engineering）

General Information

Course title (Japanese)	Advanced Communication Engineering and Informatics II（Optical Communication Engineering）（学域）		
Course title (English)	Advanced Communication Engineering and Informatics II（Optical Communication Engineering）		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Specialized subject		
Cluster/Department	Cluster I/Cluster II		
Lecturer(s)	KISHI Naoto (來住　直人)		
Office	East 3-1027		
e-mail	kishinaoto@uec.ac.jp		
Course website	http://www.opt.cei.uec.ac.jp/optc/		
Last updated	2024/02/29 13:58:02	**Status**	Released /now open to public

Course Description

Topic and goals	For the academic year 2024, this class covers optical fiber communications. Optical fiber communication is one of the most recent communication technologies. Since its practical implementation, rapid development has been achieved over the past 40 years. Due to its handling capability of huge amount of information, it is a fundamental technology supporting the information society. This class covers the principle and the most recent technologies of optical fiber communications.
Prerequisites	Fundamental courses in the elementary years such as physics, wave and lightwave, circuit and system, etc..
Recommended prerequisites and preparation	Understanding of Fourier analysis and relation between temporal and spectral signals is recommended.
Course textbooks and materials	
Course outline and weekly schedule	Since this class is opened for foreign students, class documents are written in English.　Followings are the contents of the class. 1. Introduction of optical fiber communications 2. Properties of lightwave as a high-frequency electromagnetic waves 3. Introduction of optical fiber waveguides 4. Linear and nonlinear characteristics of optical fibers which are important to understanding the signal transmission characteristics. 5. Principles of lightsources 6. Structure and operation principles of Semiconductor laser diodes and light-emitting diodes 7. Single-frequency and multi-frequency lightsources for optical communications 8. Various optical devices employed in optical communication systems 9. Operation principles of optical amplifiers/repeaters for long-distance optical communication systems 10. Characteristics of various optical amplifiers 11. Digital modulation schemes for optical communications 12. Architecture of optical communication systems 13. Problems associated with the development of optical communication technologies and the solutions 14. Capacity limit of optical fibers, optical networks, and optical access systems

	15. Optical fiber sensing technologies and optical fiber sensors
Course content utilizing practical experience	
Distance learning information	
Preparation and review outside class	Review with the contents of the class documents and other suitable references Evaluation and grading.
Evaluation and grading	A report on the class is assigned. The credit is given if a minimum of 60% is achieved in the evaluation of the report.
Office hours	from 12:30 to 14:30 on Wednesday, or the time just after the class
Message for students	Optical communication is and will be one of the key technologies in the fundamental of communication networks. Understanding of its principles and technologies is quite useful in the field of information and communication.
Others	
Keyword(s)	information and communication, optical fibers, dispersion characteristics, nonlinearities, intensity modulation, direct detection, optical repeaters, wavelength-division multiplexing, laser diodes, optical amplifiers, optical networks, optical fiber sensors

Introduction to Computational Methods in Science and Engineering

General Information

Course title (Japanese)	Introduction to Computational Methods in Science and Engineering		
Course title (English)	Introduction to Computational Methods in Science and Engineering		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	Hans-Georg Matuttis		
Office	E4-721		
e-mail	hg@mce.uec.ac.jp		
Course website	https://webclass.cdel.uec.ac.jp		
Last updated	2024/03/25 12:45:56	**Status**	Released /now open to public

Course Description

Topic and goals	Computational methods have replaced analytical methods already in many fields of science and engineering, and their importance is still increasing. The aim of the lecture is to provide fundamental criteria for the choice of numerical methods, give an overview about some available methods in some fields, and give ideas about performance-oriented implementation for such methods. Depending on the background and interest of the auditory, some topics may be subject to changes.
Prerequisites	First year Analysis and Linear Algebra, one procedural Programming Language
Recommended prerequisites and preparation	NIL
Course textbooks and materials	Script can be downloaded from http://webclass.cdel.uec.ac.jp/, further reading: A. L. Garcia, Numerical Methods for Physics, Benjamin-Cummings Pub Co,1999 G.J. Borse: Numerical Methods with Matlab, International Thomson Publishing, 1997
Course outline and weekly schedule	In the first half of the semester, the lectures on general topics will be cover the lesson time (90 minutes). In the second half, every student will get a project (topic will be discussed between students and lecturer), and the first half of the lesson will be lecture on more specific and specialized topics, and the second half will be dedicated to the completion of the project. 1. Introduction Interpreters and Compilers, basic MATLAB syntax, interacting with the operating system 2. More advanced Syntax Implicit loops, vector- and matrix commands 3. Stochastic Methods I a) Random numbers and direct Monte Carlo Averages and Variance; Computing Pi with random numbers and the power of Monte Carlo Methods for problems of arbitrary dimension 4. Stochastic Methods I b) Modeling Producing test data, Modeling 5. Numerical analysis I Why bother about errors; integer vs. floating point numbers, precision and rounding errors; Truncation error and strategies to reduce it

	6. Graphics I 2D- and 3D-plots Basic plotting functions and not so basic methods of manipulating the graphs 7. Graphics II More complex Surfaces, overlaying graphics and textures, transparency alpha; From animated graphics to making movies -> End of first part 8. Linear Algebra I: From implicit loops to vectors and matrices How many matrix products are there, Performance and loop ordering; Norms, Matrix inversion and other matrix commands for linear algebra 9. Linear Algebra II Eigenvalue decomposition, Determinants, Landau-Order symbol for computational effort / complexity 10. Linear Algebra III: Non-square matrices Least squares fitting, singular value decomposition, condition number; Overfitting and Underfitting; Difference between fitting and interpolation 11. Stochastic Methods II: Spin Systems From Magnets to Spin systems: Frustration and physics problem with no good solution: Spin glasses, ground states, thermodynamics weights: Form importance Sampling Monte Carlo to Simulated Annealing at zero and finite Temperature 12. Stochastic Methods III: Neural networks as a foot note to spin glasses From infinite range spin glasses to nerve systems; Pattern recognition with Neural Networks; fast Fourier Transform and convoluting the input; the incremental advances from Neural Networks to Deep learning 13. Numerical Analysis II a) Types of numerical ordinary differential Equations Symplectic, non-stiff and stiff ODEs; standard methods with constant step size 14. Numerical Analysis II b) Types of numerical ordinary differential Equations From constant step size to variable step size
Course content utilizing practical experience	There will always be short programming examples during the lecture, so students should always have their MATLAB-environment ready for use.
Distance learning information	
Preparation and review outside class	Exercises will be given as homework.
Evaluation and grading	20% Participation (including punctuality) and activity (asking meaningful questions and giving meaningful answers when asked) in the Lecture 80% Homework exercises
Office hours	you contact me by E-Mail and we organise date and time at the earliest possible moment.
Message for students	A craving to work with "Object orientation" has derailed several students in 2022 in this course: This course is about algorithms (mostly floating point arrays), and the structuring and packaging of the data is irrelevant. You have to work out and implement algorithms, not play around with structures in this course.
Others	Lecture starts after the the introduction to the computer system in the Jusst-Program has been held.
Keyword(s)	Numerical Analysis, Scientific Programming, Computational Science

Advanced Environmental Materials Science

General Information

Course title (Japanese)	環境材料学特論		
Course title (English)	Advanced Environmental Materials Science		
Course Code			
Academic year	2024	**Year offered**	All school year
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program and Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate School Specialized Education Courses - Specialized subjectII		
Cluster/Department	Department of Engineering Science		
Lecturer(s)	FURUKAWA Rei (古川　怜)		
Office	W8-815		
e-mail	furukawa@ee.uec.ac.jp		
Course website	none		
Last updated	2024/03/01 15:31:35	**Status**	Released /now open to public

Course Description

Topic and goals	This course covers how the resources and wastes are handled nowadays and some concerns that still need to be solved.
Prerequisites	none
Recommended prerequisites and preparation	none
Course textbooks and materials	Solid Waste Engineering : Worrell, William A./ Vesilind, P. Aarne/ Gupta, Tarun Introduction to Environmental Engineering : Davis, Mackenzie L./ Cornwell, David A.
Course outline and weekly schedule	1 Introduction, general idea of pollution 2 What to be reminded with the "SDGs" 3 Approaches in environmental chemistry 4 Mass balance 5 Heat energy and the earth 6 Biology and ecosystem 7 Midterm project (topic: writing a proposal) 8 Midterm project (topic: writing a proposal) continued 9 Midterm Presentation and Discussion 10 Plastics 11 Bioplastics 12 Greenplastics 13 Leadership required for an engineer 14 Final Presentation (topic: Being part in a team) 15 Final Presentation and discussion
Course content utilizing practical experience	
Distance learning information	Class will be held fully online via zoom. Please fill the following if you wish to register. https://forms.gle/AjyMzJD94n9SYFTT9
Preparation and review outside class	Students need to take time outside the class for group works for midterm and final presentations.
Evaluation and grading	Weekly in-class quiz 20% (in total) Midterm presentation and report 30% Final presentation and report 50% This course aims to earn ethical points of view as a materials engineer to manage resources and wastes correctly.

Office hours	to be explained in the class
Message for students	Students will have a chance to discuss in groups (English only) in every lesson. They are required to present their idea in front of the class. Please be equipped with computers or tablets to make yourself comfortable taking an online class and also for yourself to present.
Others	This is a "quarter" class.
Keyword(s)	solid wastes, hazardous wastes, collection, separation, resources, SDGs

Advanced Engineering Science I（Polymer Photonics）

General Information

Course title (Japanese)	Advanced Engineering Science I（Polymer Photonics）（学域）		
Course title (English)	Advanced Engineering Science I（Polymer Photonics）		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Specialized subject		
Cluster/Department	Cluster III		
Lecturer(s)	FURUKAWA Rei (古川　怜)		
Office	W8-815		
e-mail	furukawa@ee.uec.ac.jp		
Course website	none		
Last updated	2024/03/01 15:33:13	**Status**	Released /now open to public

Course Description

Topic and goals	This course covers interactions between lightwave and polymeric material in multiple scale.
Prerequisites	Electromagnetics
Recommended prerequisites and preparation	Electromagnetics
Course textbooks and materials	Frank L. Pedrotti, S.J., Leno S. Pedrotti (1993). Introduction to Optics 2nd edition. Prentice-Hall, Inc. Max Born, Emil Wolf (1997). Principles of Optics 7th edition. Cambridge University Press. Yasuhiro　Koike　(2015). Fundamentals of Plastic Opitcal Fibers. Wiley. S.O. Kasap (2001). Optoelectronics and Photonics: Principles and Practices. Prentice-Hall, Inc.
Course outline and weekly schedule	1 Type of interactions between lightwave and matters 2 Interaction with group of atoms 3 Mathematical expression of harmonic waves 4 Interaction with molecular unit 4.1 Matrix treatment of polarization 4.2 Dielectric tensor in an anisotropic medium 4.3 Ellipsoid expression of wave normals 4.4 Intrinsic and stress birefringence 5 Interaction with sub-micron inhomogeneity 5.1 Waveguide condition and propagation modes 5.2 Fiber optic data transmission
Course content utilizing practical experience	Optical characterizations of materials Evaluations on single/multimode fiber-optic transmission
Distance learning information	
Preparation and review outside class	Assignments are given every week
Evaluation and grading	Assignments 30% Final exam 70%
Office hours	To be announced in the class
Message for students	To be announced in the class
Others	none
Keyword(s)	polarization, dielectric tensor, birefringence, waveguides

Advanced Theory of Systems Reliability

General Information

Course title (Japanese)	システム信頼性特論		
Course title (English)	Advanced Theory of Systems Reliability		
Course Code			
Academic year	2024	**Year offered**	All school year
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program and Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate School Specialized Education Courses - Specialized subjectII		
Cluster/Department	Department of Informatics		
Lecturer(s)	JIN Lu (金　路)		
Office	West 5-601		
e-mail	jinlu@inf.uec.ac.jp		
Course website	http://www.rm.inf.uec.ac.jp		
Last updated	2024/02/28 11:34:55	**Status**	Released /now open to public

Course Description

Topic and goals	This lecture deals with Reliability Engineering and its theory which focus on the philosophy, ideas and scientific methods to build　in quality and reliability into systems. Also, recent development of information technology has been changing the methods of Reliability Engineering. These new aspects are also dealt with.
Prerequisites	None
Recommended prerequisites and preparation	It would be helpful if the students have a background of probability and statistic.
Course textbooks and materials	No textbooks, just original material
Course outline and weekly schedule	#1 Guidance #2 Introduction to reliability engineering #2： Lifetime distribution functions and their application in reliability engineering #3 Maintainability and Availability #4 Lifetime Distribution and Hard Time Scheduled Maintenance（１） #5 Hard Time Scheduled Maintenance（２） #6 On Condition Maintenance #7 Stochastic Process and Markov Model #8 Reliability Evaluation of Engineering Systems Using Markov Model #9 Markov Decision Process #10 Condition Monitoring Maintenance (1) #11 Condition Monitoring Maintenance (2) #12 Systems Reliability (1) Series system, parallel system, redundant design #13 Systems Reliability (2) Structure function and reliability assessment #14 Summary of this course
Course content utilizing practical experience	
Distance learning information	The material will be distributed via Google Classroom. Google Classroom code: xh3wuwx
Preparation and review outside class	Please use the handout to review the content and work on the assignments to deepen your understanding.
Evaluation and grading	Assessment will be based on the level of understanding
Office hours	Please take an appointment by email.

Message for students	There are also many foreign student in this class. So it is also a good change to make foreign friends. I will prepare the handout in both English and Japanese, furthermore, the important part will be explained in both languages, so the students do not need to worry about their English.
Others	This lecture will be given in English.
Keyword(s)	Reliability, Quality Control, Maintenance

Topics in Informatics II （Sustainable Supply Chain Management）

General Information

Course title (Japanese)	Topics in Informatics II（Sustainable Supply Chain Management）（学域）		
Course title (English)	Topics in Informatics II（Sustainable Supply Chain Management）		
Course Code			
Academic year	2024	**Year offered**	2/3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Specialized subject		
Cluster/Department	Cluster I/Cluster II		
Lecturer(s)	YAMADA Tetsuo (山田 哲男)		
Office	Room #507 in Building West 5		
e-mail	tyamada@uec.ac.jp		
Course website	http://webclass.cdel.uec.ac.jp/webclass/ Note: Before the first class, let you login webclass and join this course by yourself!		
Last updated	2024/03/11 16:08:38	**Status**	Released /now open to public

Course Description

Topic and goals	Supply Chain is that product and information flows among suppliers, factories, distribution centers and markets by manufacturing and logistics. This supply chain is now globally networked consisting of not only domestic but also overseas suppliers, factories and markets. Thus, the global supply chain management is required to pursue higher profit for companies. On the other hand, the environmental issues such as global warming and material starvation have been more serious because manufacturing and logistics inevitably consume natural resources for materials and energy and emit Greenhouse Gases (GHG) including CO2 throughout their product lifecycle and supply chain. In order to not to become more serious for the environmental issues, it is necessary for the supply chain to minimize the material and energy consumptions during the whole product lifecycle economically. This course gives variety topics in supply chain management and sustainability, and acquire how to harmonize the supply chain and sustainability simultaneously.
Prerequisites	None
Recommended prerequisites and preparation	Production Management, Operations Research, Introduction to Operations Research
Course textbooks and materials	No textbook, Handouts will be used as a guide for the class.
Course outline and weekly schedule	1. Guidance and Making teams 2. Sustainable Manufacturing 3. Supply Chain Management 4. Global Supply Chain 5. Low-carbon Supply Chain 6. Life Cycle Assessment 7. Renewable Energy 8. Carbon Trading and Tax 9. Disassembly, Reuse and Recycling 10. Reverse and Closed-loop Supply Chain 11. SNS Analysis for Manufactures by Text Mining 12. Health Care Systems Engineering 13. Work Life Balance 14. AI Application 15. Summary
Course content utilizing practical experience	

Distance learning information	Before the first class, let you login webclass and join this course by yourself.
Preparation and review outside class	Several assignments will be conducted.
Evaluation and grading	Evaluation: Presentations (30%), Activities (40%) and Assignments (30%). The presentations and assignments are qualitatively evaluated while the activities mean your self-motivated opinions delivered quantitatively.
Office hours	Mondays at the 4th class. Make an appointment by e-mail in advance.
Message for students	Let’s discuss how to harmonize supply chain and sustainability and enjoy it!
Others	No assignments and self-motivated opinions, No success. This course is taught in English, and Japanese is also added as the need arises.
Keyword(s)	Global Supply Chain, Sustainable Manufacturing, Reuse and Recycling, Low-carbon and Closed-loop Supply Chain, Sustainable Product Design, Assembly/Disassembly, Renewable Energy, Health Care Systems Engineering, Work Life Balance

Advanced Engineering Science III
(Exercises in Advanced Computational Science)

General Information

Course title (Japanese)	上級コンピュータ演習		
Course title (English)	Advanced Engineering Science III (Exercises in Advanced Computational Science)		
Course Code			
Academic year	2024	**Year offered**	3
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture/Exercise (drill)	**Credits**	2
Category	Specialized subject		
Cluster/Department	Cluster III		
Lecturer(s)	MORISHITA Toru (森下 亨)		
Office	East6-528（森下）		
e-mail	NIL		
Course website	https://www.edu.cc.uec.ac.jp/pc/toru/adv_comp/		
Last updated	2024/03/18 18:26:55	**Status**	Released /now open to public

Course Description

Topic and goals	Topic: In today's advanced information society, advanced computer programming knowledge and skills are important in any industrial field. In this class, students will select a teacher from among several teachers and set their own assignments in consultation with that teacher. Students then construct a program code and examine the obtained results to acquire a wide range of knowledge and skills in computer programming. This course is also offered as an international course, so that students who take it as an international course can give presentations in English and acquire international knowledge and skills. Goals: To set assignments. To accomplish the tasks set by the students. To examine the results obtained. To enhance each student's computer programming knowledge and skills by discussing these issues with each instructor.
Prerequisites	Computer literacy, basic programming and Exercise (drill)
Recommended prerequisites and preparation	Numerical Analysis, Programming Exercise, Computational Mathematical Engineering
Course textbooks and materials	NIL
Course outline and weekly schedule	Students should consult with the instructor directly by e-mail to determine the theme, referring to the examples of themes and contents provided by each instructor on the web page related to the class. Programming language, operating system, and other details will also be decided in consultation with the instructor in charge. Several plenary meetings (possibly online) will be held to report on progress. At the end of the semester, students will give a presentation (possibly online) on their assignments. 1. Guidance 2. Explanation from the instructor and Computer Exercise (drill)1 3. Explanation from the instructor and Computer Exercise (drill) 2 4. Explanation from the instructor and computer exercise (drill) 3 5. Explanation from the instructor and computer exercise (drill)4 6. General meeting 7. Explanation from the teacher in charge and Computer Exercise (drill)5

	8. Teacher's explanation and Computer Exercise (drill)6 9. Explanation from the instructor and Computer Exercise (drill)7 10. Explanation from the teacher and Computer Exercise (drill)8 11. Explanation from the teacher and Computer Exercise (drill) 9 12. Explanation from the teacher and Computer Exercise (drill)10 13. Explanation from the teacher and Computer Exercise (drill)11 14. Explanation from the teacher and Computer Exercise (drill)12 15. Comprehensive Presentation The contents of the Advanced Computer Exercise (drill) will be decided in consultation with each instructor.
Course content utilizing practical experience	
Distance learning information	
Preparation and review outside class	To be decided in consultation with each faculty member in charge.
Evaluation and grading	Based on the oral presentation in the comprehensive presentation. The contents, setting, execution, and results of the assignment will be judged comprehensively.
Office hours	To be decided after consultation with each teacher.
Message for students	As long as it enhances your knowledge and skills in computer programming, you are not restricted by programming language, operating system, etc., and can proceed with what you want to do in consultation with the faculty. This course is offered as an international course, so students can acquire an international mindset as well.
Others	Please select one faculty member by referring to the examples of themes and contents of each faculty member on the web page related to the class. Then, please contact the selected faculty member directly by e-mail to discuss and decide on the theme.
Keyword(s)	Advanced Computer Exercise

Classes for FY2024!

Exercises in Advanced Computational Sciences

Course Guidance Date and Time (ZOOM)

Friday, April 11, 4:15 p.m.

at Bldg East-6, Rm 803

Google classroom class code

wfvmptf

Exercise Contents

Anything to do with computers!

Try anything you want to do.

Note

It is required to attend and provide a presentation at the final presentation in the end of September to get an S, A, B, or C grade.

Teachers in charge

Endo, Ozeki, Ohfuchi, Saito, Shirakawa, Nakamura (Jun), Hasegawa, Morishita

URL(UEC account is required)

https://www.edu.cc.uec.ac.jp/pc/toru/adv_comp

Examples of tasks

Any other computer-related projects are also welcome!

Opticals

- FDTD electromagnetic wave analysis

Electronics

- Robot control by microcomputer

Physics

- Let's get familiar with quantum mechanics through simulations
- Monte Carlo simulation
- Basic computational physics

Chemistry and Biology

- Simulation of biological systems

Others

- The basics of deep learning through “Tic-Tac-Toe” games
- TVML Creative content
- Easy life with Python

The course is also offered as an International Course

- Engage in English with international students!
- Of course, in Japanese also OK!

Advanced Engineering Science II（Photonics and Opto-electronics）

General Information

Course title (Japanese)	Advanced Engineering Science II（Photonics and Opto-electronics）（学域）		
Course title (English)	Advanced Engineering Science II（Photonics and Opto-electronics）		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Specialized subject		
Cluster/Department	Cluster III		
Lecturer(s)	UENO Yoshiyasu (上野　芳康)		
Office	Room no. 313, Building no. West-2 (W2-313).		
e-mail	uenoy@ultrafast.ee.uec.ac.jp		
Course website	http://www.ultrafast.ee.uec.ac.jp/ueno-classes.html		
Last updated	2024/03/12 15:15:26	**Status**	Released /now open to public

Course Description

Topic and goals	Modern photonics and electronics have been deeply spread to both academy and industry of our Real World, without country borders. It is because photonics and opto-electronics have realized terabit-per-second network infrastructures, optical-disk memories (DVD&CD's), compact and accurate laser diodes (from infrared to blue), and flat displays, in industry uses and home uses. In these science and technology, particle-based photonic properties of representative materials are almost always fully combined with their wave-based optical properties, in "bright" manners. In this course, typically 15 weeks, participants are expected to study and understand the scientific fundamentals of these photonic technology, and also to develop interests to on-going, long-term (i.e. large-scale) R&D activities in our world.
Prerequisites	fundamentals of electro-magnetic waves (propagating in speed of light). fundamentals of electronics such as basic diodes and transistors.
Recommended prerequisites and preparation	fundamentals of quantum mechanics (particles and waves). fundamentals of crystalline materials and their basic, electronic properties.
Course textbooks and materials	1) Saleh and Teich, Fundamentals of Photonics, 2nd edition, Wiley, 2007. 2) Amnon Yariv and Pochi Yeh, Photonics: Optical Electronics in Modern Communications, 6th edition, Oxford, 2006.
Course outline and weekly schedule	1st-5th weeks: (1) Areas of science and technology where photonics and opto-electronics play particularly important roles in our world. (2) Representative photonic devices and materials that many of us must use and rely on, in these areas of science and technology. (3) Fundamental properties of silicon and other few important types of semiconductor crystals. Basics of direct transition (for light-emitting diodes and lasers), in contrast to indirect transition (for sensors and solar cells, for example). Then, basics of quantum-particle-based properties such as conservation laws in unit of electron-volts, in contrast to quantum-wave-based properties. (All of these are well understood and designed in all LED's, laser diodes, optical sensors, solar cells, for example.) 6th-10th weeks: (4) General relationship from electrons to electron waves. That from lightwaves (em waves) to photons. (5) Device's internal structures (of light-emitting diodes and light-absorbing sensors), and their working principles. (6) Energy conversion law and general limits in energy-conversion efficiency, from electronic energy to photonic energy. That in the opposite direction, that is, from photonic energy to electronic energy.

	11th-15th weeks: (7) advanced groups of lasers, consisting of cavities and waveguides, which are deeply and broadly used in advanced systems such as network infrastructures (terabit per second), optical-disk memories (DVD&CD's), compact and accurate laser diodes (from infrared to blue). (8) high-density light energy in time and 3D-space dimensions (total four dimensions), that is rather simply generated by laser oscillators in particular. (Several kinds of experimental research are going on in our UEC campus, as well.)
Course content utilizing practical experience	
Distance learning information	
Preparation and review outside class	Both personal and group studies, efficiently before and after each weekly classroom, are encouraged.
Evaluation and grading	Understanding level of each student is evaluated, in the final test in the end of the 15-week course.
Office hours	6th period, Tuesdays. (Notify me Ueno by email, when I was not available in the period of tuesday.)
Message for students	The number of participants to this course will be around 10, too, and, could be slightly less. So, this lecturer Ueno welcomes questions from participants sometimes in the middle of 90 minutes, rather than after it. Your asking good questions to lecturer inspires the other participants, too, basically.
Others	Lecturer Ueno's international activities: http://www.ultrafast.ee.uec.ac.jp/ueno-cv.html
Keyword(s)	photonics, opto-electronics, quantum mechanics, electro-magnetic waves, light-emitting diodes (spontaneous emission), lasers (stimulated emission), optical sensors, solar batteries, silicon, galium arsenide, semiconductor.

Information and Communications Technologies for SDGs

General Information

Course title (Japanese)	SDGsを支える情報通信論		
Course title (English)	Information and Communications Technologies for SDGs		
Course Code			
Academic year	2024	**Year offered**	All school year
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program and Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate School Practical Education Subjects		
Cluster/Department	For all departments		
Lecturer(s)	MATSUURA Motoharu (松浦　基晴)、TAKAHASHI Hiroki (髙橋　裕樹)		
Office	East 3-1027 (Matsuura), West 6-509 (Takahashi)		
e-mail	m.matsuura@uec.ac.jp, rocky@inf.uec.ac.jp		
Course website	BHN Kuwabara Foundation Donation Course		
Last updated	2024/03/27 8:27:02	**Status**	Released /now open to public

Course Description

Topic and goals	Topic: SDGs (Sustainable Development Goals) means the international goal of "The Sustainable Development Agenda" adopted at the United Nations summit in Sep 2015, are a universal concern not only for developing countries but also for developed countries., and Japan is actively engaged in wide fields. In this course, students will understand the purpose of the SDGs and ICT (Information and Communications Technologies) that support the SDGs, and learn the energy, information security and ICT policy that are important for achieving SDGs. Then, students will study several specific fields where ICT are contributing to SDGs, through lectures and on-the-spot tours. Goals: 1) Understand the establishment and meaning of the SDGs, and key issues regarding ICT for SDGs, i.e. energy, information security and ICT policy. 2) Study how ICTs are contributing to realize SDGs. 3) Cultivating engineers' readiness and foresight toward the realization of SDGs.
Prerequisites	None
Recommended prerequisites and preparation	None
Course textbooks and materials	None
Course outline and weekly schedule	This course is <English Type II>; All lectures will be given mainly in English. #1 April 12 (Fri), 5th period “Introduction” Prof. MATSUURA Motoharu “About SDGs including BHN activities” Mr. TOMINO Takeshi (BHN) #2 April 19 (Fri), 5th period “ICT policy to realize SDGs” Mr. SAKAMOTO Yasuo (ex MIC) #3 April 28(Fri), 5th period “Energy as key issue to achieve SDGs” Assoc. Prof. SOGABE Touma

	#4 May 12 (Fri), 5th period “Information security as key issues to achieve SDGs” Dr. HARADA Yonosuke (Emer. Prof. of Institute of Information Security) #5 May 19 (Fri), 5th period “ICT for healthcare” Mr. KUREMATSU Hachihei (BHN) #6 May 26 (Fri), 5th period “ICT for welfare” Prof. TAKAHASHI Hiroki #8 May 31 (Fri), 5th period “ICT for disaster prevention and mitigation” Mr. UMINO Shinobu (BHN) #8 June 7 (Fri), 5th period “ICT for car driving/transportation” Dr. INOUE Yuji (BHN) #9 June 14 (Fri), 5th period “ICT for agriculture and fishery” Emer. Prof. ISHIBASHI Koichiro #10 June 21 (Fri), 5th period “ICT for regional revitalization” Emer. Prof. MIKI Tetsuya #11 June 28 (Fri), 5th period “ICT for earth environment” Mr. KUBOTA Takuji (JAXA) #12, #13 July 5 (Fri), 5th and 6th period “Presentation and discussion about the exercise theme, Part 1” (Note) Prof. MATSUURA, Prof. TAKAHASHI, Prof. YURA, Prof. MIKI, Mr. KUREMATSU #14, #15 July 12 (Fri), 5th and 6th period “Presentation and discussion about the exercise theme, Part 2” (Note) Prof. MATSUURA, Prof. TAKAHASHI, Prof. YURA, Prof. MIKI, Mr. KUREMATSU (Note) Exercise Theme Please create your proposals to solve SDGs issues using ICT in your home region/ home country. “Technical tour” will be held in early August.
Course content utilizing practical experience	The faculty members for this course have a lot of experiences in joint research with enterprises. In addition, lecturers from outside have enough practical business knowledge in the ICT related industrial world. This course is given by these lecturers in an omnibus method, providing knowledge of diverse international science and technology communication.
Distance learning information	• Classroom: East 3-301 (3rd Floor) • If you cannot attend the classroom due to unavoidable circumstances, you can attend online. On-demand learning is also available. • To access online class or on-demand learning, please connect to the e-learning site at URL bellow and the "e-learning user manual" is available there. (ID and Password will be announced) URL: http://www.super-program.jp/bhn_moodle/
Preparation and review outside class	Read the lecture materials provided in advance so that you can ask questions during class.
Evaluation and grading	Evaluation method The contents of the presentations and discussions at the exercise and the reports on the final assignments will be evaluated comprehensively. Evaluation criteria The level of understanding of learning goals 1) and 2) and the attitude toward learning goal 3)

	based on the following evaluation criteria; A (80-100 points): It is recognized that goals 1) and 2) are sufficient l y achieve d, and goal 3) has been fully cultivated. B (70-79 points): It is recognized most of goals 1) and 2) are achieved, and goal 3) has been cultivated. C (60-69 points): It is recognized most of goals 2) and 2) are achieved fairly, and goal 3) has been cultivated to some extent. D (59 points or less, rejected): Goals 1) and 2) are not fully achieved and goal 3) has not been cultivated.
Office hours	Take appointments by email in advance.
Message for students	This course holds technical tours related to SDG. But, it depend s on the status of COVID-19.
Others	This subject is one of the BHN Kuwahara Foundation Donation Courses. It is also a subject for the Joint Innovative PhD Program, and is offered online to students of other universities.
Keyword(s)	SDGs, ICT, information security, energy, medical and welfare, disaster prevention, regional revitalization, earth environment

UEC Academic Skills I (Computer Literacy)

General Information

Course title (Japanese)	UEC Academic Skills I (Computer Literacy) （上級科目）		
Course title (English)	UEC Academic Skills I (Computer Literacy)		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as1@fedu.uec.ac.jp		
Course website	http://www.fedu.uec.ac.jp/skills		
Last updated	2024/03/08 10:47:35	**Status**	Released /now open to public

Course Description

Topic and goals	This course gives the students the intermediate-advanced knowledge of computer systems and computer networks in a typical academic environment. The lecture stresses fundamental tools and techniques that are applicable to a broad reach of systems such as the use of primitive, but powerful tools as UNIX shell, HTML, LaTeX and Git/GitHub. Note: Please bring a laptop or tablet that can access WiFi to class.
Prerequisites	NIL
Recommended prerequisites and preparation	コンピューターリテラシー Computer literacy
Course textbooks and materials	NIL
Course outline and weekly schedule	* Remember to bring a laptop PC to use in class. 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 and LaTeX (Basic Unix Editor 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. Introduction to Git and GitHub (Git Basic, Website project) 12. HTML (Basic; Structure, Tag, color, typesetting) 13. HTML (Links and Multimedia; Images, Sound, and Movies) 14. HTML (List, Tables and Interactivity, Cascading Style Sheet; CSS) 15. HTML (Website Project Work) ========== This is a lecture-lab course in which the instructor presents the topics, and the students complete the assignments during lab periods or outside of class. The content is intended to be a lecture in

	combination with a practical exercise ("learn, practice, implement and apply") that will cover the basic usage of the UNIX system, and including how to write in LaTeX and HTML. Note that the lecture schedule is subject to constant revisions throughout the course.
Course content utilizing practical experience	
Distance learning information	This course is designed for the classroom, however, can be delivered remotely; if necessary.
Preparation and review outside class	Students are required to create/design a homepage and present it in class at the end of the semester. Thus, student may need some extra time to create the homepage.
Evaluation and grading	Evaluation is given as follows; (Tasks 50%, Mid-Semester presentation 30%, Final presentation 20%) Since this course provides the student with hands-on experience, classroom attendance and participation are thus mandatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted all assignments, and 3) made their mid-semester and final presentations may get the credits.
Office hours	12:00-13:00, for just-in-case, schedule an appointment before walking in.
Message for students	We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class.
Others	Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences.
Keyword(s)	Unix, HTML, Latex, Website, Git/GitHub

UEC Academic Skills II (Information Literacy and Research)

General Information

Course title (Japanese)	UEC Academic Skills II (Information Literacy and Research) （上級科目）		
Course title (English)	UEC Academic Skills II (Information Literacy and Research)		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as2@fedu.uec.ac.jp		
Course website	http://www.fedu.uec.ac.jp/skills		
Last updated	2024/03/08 11:15:54	**Status**	Released /now open to public

Course Description

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

	software and the basic research procedures. Note that the lecture schedule is subject to constant revisions throughout the course.
Course content utilizing practical experience	
Distance learning information	This course is designed for the classroom, however, can be delivered remotely; if necessary.
Preparation and review outside class	Students have to read 1 to 3 articles about varied topics, and at the end of the semester, the students are expected to make a poster presentation.
Evaluation and grading	Evaluation is given as follows; (Assignments 50%, midterm presentation 20%, Poster 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 all the assignments and 3) made their poster presentations can obtain the credits. Since this course provides the student with hands-on experience, classroom attendance and participation are thus mandatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted all assignments, and 3) made their poster presentations may get the credits.
Office hours	12:00-13:00, for just-in-case, schedule an appointment before walking in.
Message for students	We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class.
Others	Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences.
Keyword(s)	Research, library, Desktop publishing, poster presentation

UEC Academic Skills III (Publishing Literacy and Research)

General Information

Course title (Japanese)	UEC Academic Skills III (Publishing Literacy and Research)		
Course title (English)	UEC Academic Skills III (Publishing Literacy and Research)		
Course Code			
Academic year	2024	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	General culture subjects		
Cluster/Department	School of Informatics and Engineering		
Lecturer(s)	Choo Cheow Keong		
Office	E2-305		
e-mail	uec-as3@fedu.uec.ac.jp		
Course website	http://www.fedu.uec.ac.jp/skills		
Last updated	2024/03/08 10:52:16	**Status**	Released /now open to public

Course Description

Topic and goals	This course focuses attention on the exercise of strategic research project. Students are required to carry out a study/research project for more than a half of year with a specific topic. Then, they have to proceed their own project after they choose their own topic and make a monthly plan. At the end of the semester, there will be an international mini-conference that has participants of all the JUSST Exchange Students and other regular UEC Students. Note: Please bring a laptop or tablet that can access WiFi to class.
Prerequisites	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
Recommended prerequisites and preparation	UEC Academic Skills II (Information Literacy and Research)
Course textbooks and materials	NIL
Course outline and weekly schedule	Course schedule and topics that will be covered ========== 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, brainstorming etc.) 5. Proposing and Reporting on Research 6. Making 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 ========== The lecture is designed to support the pursuit of writing research paper and share the skills of quality publishing. All the lectures are linked with practical activities, and at the end of the course, the students are required to write a paper and give a presentation on their research-based projects.

	Note that the lecture schedule is subject to constant revisions throughout the course.
Course content utilizing practical experience	
Distance learning information	This course is designed for the classroom, however, can be delivered remotely; if necessary.
Preparation and review outside class	Students have to read 2 to 3 articles about varied topics and at the mid and end of the semester, the students are expected to give an oral presentation. For laboratory assigned students, the essential project hours are estimated for more than 8 hours a week, where this is the same standard of graduate thesis project.
Evaluation and grading	Evaluation is given as follows; (Assignments 40%, Writing paper 30%, Oral presentation 30%) Since this course provides the student with hands-on experience, classroom attendance and participation are thus mandatory. Only students who have 1) maintained at least 70% of attendance, 2) submitted all assignments, and 3) made their presentations may get the credits.
Office hours	12:00-13:00, for just-in-case, schedule an appointment before walking in.
Message for students	We expect students to be the active part of the learning process. We encourage the students' participation in class discussions, asking questions and interacting with others. If you have any comments on the topics covered, please feel free to share with the others in class.
Others	Students are expected to come to class on time. Absences are excused in case of emergency, illness, or trips to conferences.
Keyword(s)	Research, Publishing paper, oral presentation