Course Description

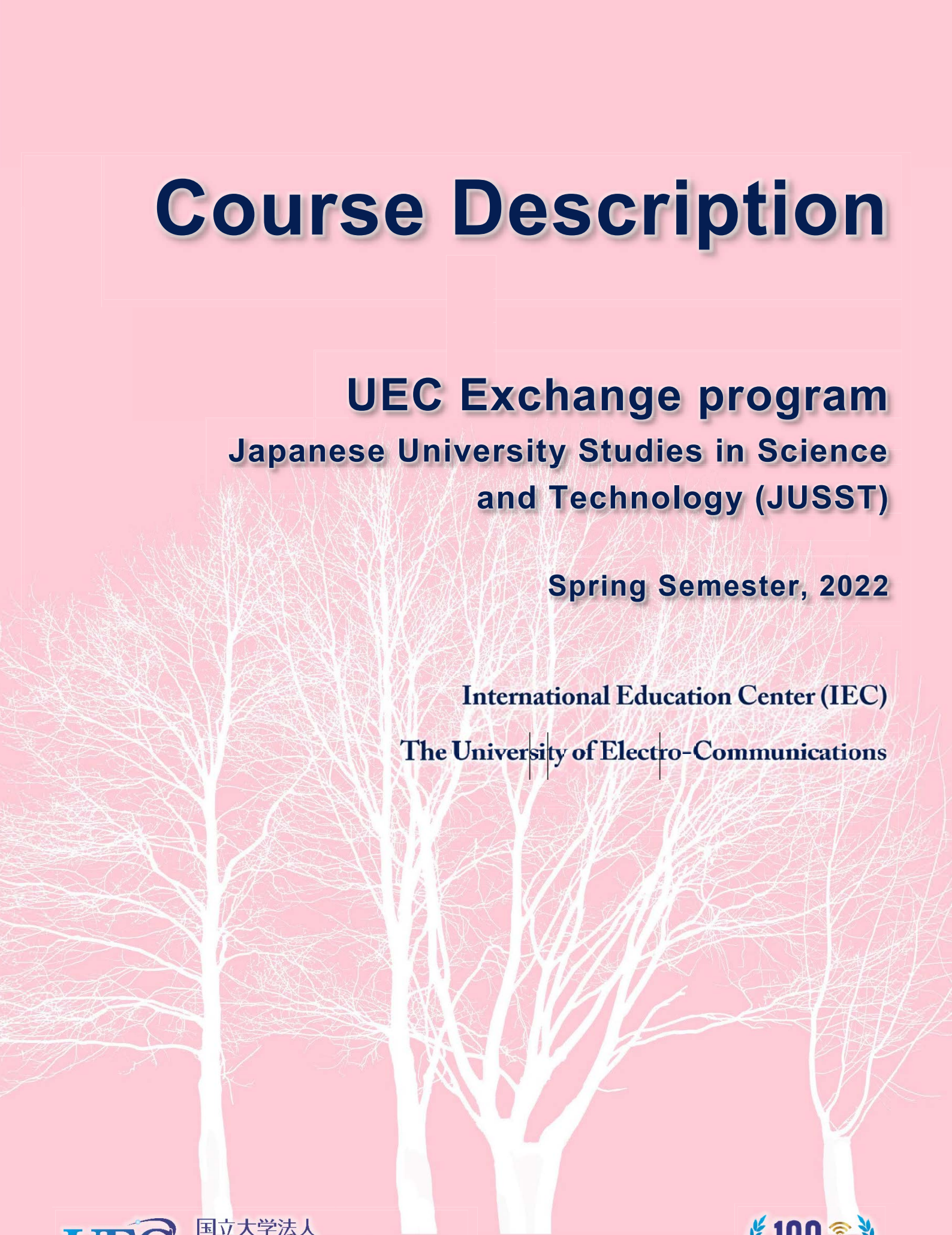
UEC Exchange program

Japanese University Studies in Science and Technology (JUSST)

Spring Semester, 2022

International Education Center (IEC)

The University of Electro-Communications



UEC TOKYO 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
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JUSST Program Course Requirements

<table>
<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">LAB 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 *
8 - 14 hours/week (6 - 7 Credits)</td></tr>
<tr><td rowspan="3">Science and Engineering Subjects
(ELECTIVE)</td><td colspan="2">[UNDERGRADUATE STUDENTS]
Need to pass <u>3 subjects</u> at minimum **
in Each Semester</td></tr>
<tr><td colspan="2">[GRADUATE STUDENTS]
Need to pass <u>3 subjects</u> at minimum **
in One Academic Year</td></tr>
<tr><td colspan="2">Electronic Experiment Lab.
4 hours/week (2 Credits)
Required for all Undergraduate Students
Only offered in the FALL Semester</td></tr>
<tr><td rowspan="4">FREE ELECTIVE</td><td>Reading Scientific Research
Research Presentation</td><td colspan="2">2 hours/week (2 Credits)
Offered in the SPRING Semester only</td></tr>
<tr><td>Preparation for Graduate School
English for Interpersonal Communication</td><td colspan="2">2 hours/week (2 Credits)
Offered in the FALL Semester only</td></tr>
<tr><td>Sports Classes</td><td>–</td><td>2 hours/week (1 Credit)</td></tr>
</table>

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

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

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

2022 SPRING SEMESTER CALENDAR

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon
APR						1 New Students Arrival	2	3	4 4th to 7th Orientation	5	6	7	8 Classes Begin	9	10	11	12	13	14	15	16	17	18 14th to 21nd Course registration period	19	20	21	22	23	24	25	26	27	28	29 Showa Day	30			
MAY	1	2	3 Constitution Day	4 Greenery Day	5 Children's Day	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						
JUN				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				
JUL						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 Marine Day	19 Preparing for The mini-Conference (Presetation)	20	21	22	23	24	25	26	27	28	29	30	31	
AUG		1	2	3	4	5	6	7	8	9	10	11 Mountain's Day	12	13	14	15	16	17	18	19	20	21	22 13th Aug to 30th Sep Summer Break for the regular student (no class day)	23	24	25	26	27	28	29	30	31					
SEP					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19 Respect for the Aged Day	20	21	22 JUSST Completes Vacate Deadline	23 Autumnal Equinox Day	24	25	26	27	28	29	30 Summer Break End			
OCT							1	2	3	4	5	6	7	8	9	10 Sports Day	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

13th Aug to 30th Sep
Summer Break for the regular student (no class day)

1st to 6th Examination Period

JUSST mini-Conference and Closing Ceremony
All JUSST student have to attend
(to be announced)

2nd-semester begin
All students have to attend

National holiday

Entrance examination for UEC graduate school

@ JUSST students Weekly Meeting on every Wed (start from 16:30)

2022/3/17

Time-Table for Spring Semester, 2022

令和4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）		*
	3	Advanced Communication Engineering and Informatics I (Information and Communication Network)	I	Kitsuwan NATTAPONG		*
	4					
	5	Advanced Communication Engineering and Informatics II (Optical Communication Engineering)	I	KISHI Naoto (來住 直人)		
		Reading Scientific Research	HLSS	UEHARA Suwako (上原 寿和子)		
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)		2nd semester students only
	3	Japanese Language (日本語)	CIPE			
	4	Japanese Language (日本語)	CIPE			
	5	Research Presentation	HLSS	JEFFREYS Atsuko Marie		
Wed 水	1	Introduction to Computational Methods in Science and Engineering	M	MATUTTIS Hans-Georg		Old C building (Computer room)
	2	Japanese Language (日本語)	CIPE			
	3	Japanese Language (日本語)	CIPE			
	4	Japanese Language (日本語)	CIPE			
	5					
Thu 木	1	UEC Academic Skills III (Publishing Literacy and Research)	CIPE	CHOO	E3-1st floor	Computer Room (2nd Semester Students only)
	2	Advanced Theory of Systems Reliability	J	JIN Lu (金 路)		*
	3	Advanced Engineering Science I （Polymer Photonics）	S	FURUKARA Rei (古川 怜)		
	4	Topics in Informatics II (Sustainable Supply Chain Management)	J	YAMADA Tetsuo (山田 哲男)		
		Advanced Environmental Materials Science	S	FURUKARA Rei (古川 怜)		*
	5					
Fri 金	1	Japanese Language (日本語)	CIPE			
	2	Japanese Language (日本語)	CIPE			
	3	Advanced Engineering Science II (Photonics and Opto-electronics)	S	UENO Yoshiyasu (上野 芳康)		
	4					
	5	Advanced Engineering Science III (Exercises in Advanced Computational Sciences)	S	MORISHITA Toru (森下 亨)		
		Information and Communications Technologies for SDGs	I	ISHIBASHI Koichiro （石橋 孝一郎） MATSUURA Motoharu (松浦 基晴)	E3-301	*

* 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)
CIPE: Center for International Programs and Exchange (国際教育センター)
SPORTS: UEC Physical Education Division (健康・スポーツ科学部会)
HLSS: The Division of Humanities Languages and Social Sciences (総合文化部会)

Period 授業時間 (JST)

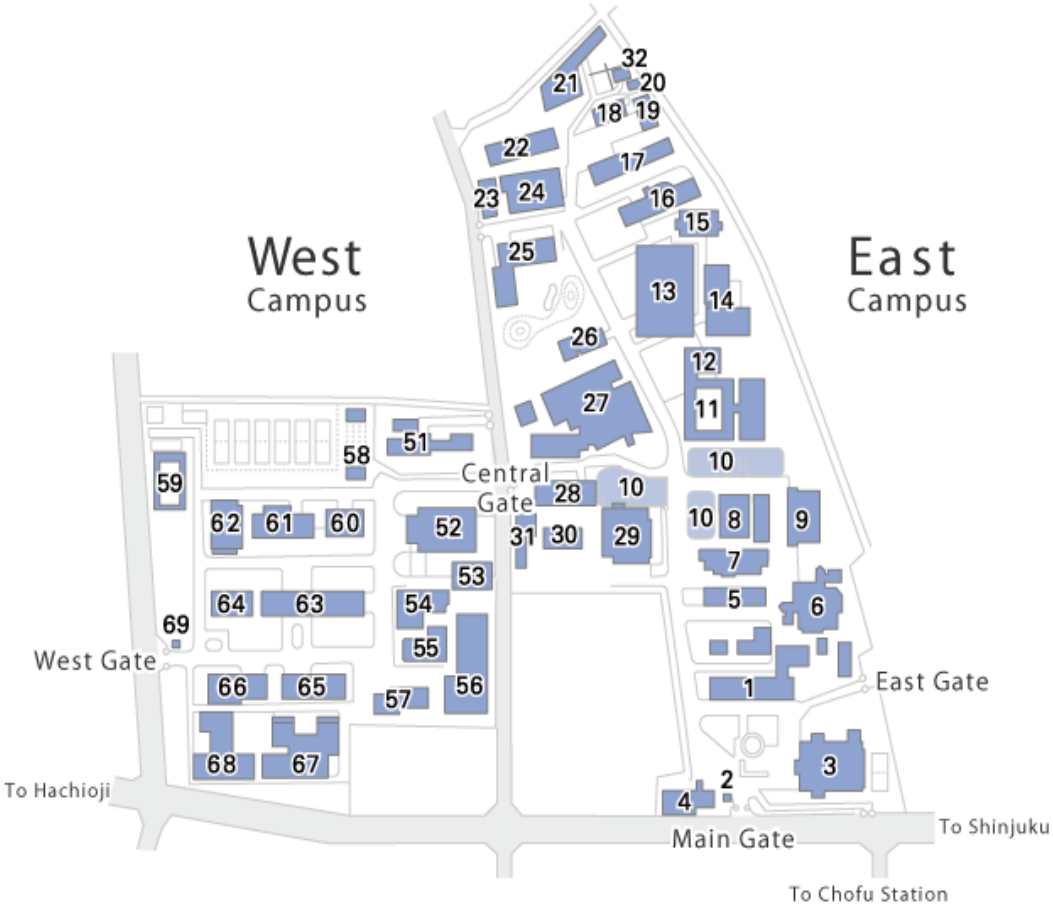
1:	9:00-10:30
2:	10:40-12:10
3:	13:00-14:30
4:	14:40-16:10
5:	16:15-17:45
6:	17:50-19:20
7:	19:30-21:00

Home University's Time Zone

Tokyo (JST)	Korea	China, Taiwan, Malaysia	Thailand, Vietnam, Indonesia	Sweden	Angola, France, Gabon	Mauritania	Mexico
UEC's Time Period	JST +0	JST -1	JST -2	JST -8（～ Mar. 26） JST -7（Mar. 27～）	JST -8	JST -9	JST -15（～ Apr. 2） JST -14（Apr. 3～）
9:00-10:30 **1st Period**	9:00-10:30	8:00-9:30	7:00-8:30	1:00-2:30 2:00-3:30	1:00-2:30	0:00-1:30	18:00-19:30 19:00-20:30
10:40-12:10 **2nd Period**	10:40-12:10	9:40-11:10	8:40-10:10	2:40-4:10 3:40-5:10	2:40-4:10	1:40-3:10	19:40-21:10 20:40-22:10
13:00-14:30 **3rd Period**	13:00-14:30	12:00-13:30	11:00-12:30	5:00-6:30 6:00-7:30	5:00-6:30	4:00-5:30	22:00-23:30 23:00-0:30
14:40-16:10 **4th Period**	14:40-16:10	13:40-15:10	12:40-14:10	6:40-8:10 7:40-9:10	6:40-8:10	5:40-7:10	23:40-1:10 0:40-2:10
16:15-17:45 **5th Period**	16:15-17:45	15:15-16:45	14:15-15:45	8:15-9:45 9:15-10:45	8:15-9:45	7:15-8:45	1:15-2:45 2:15-3:45
17:50-19:20 **6th Period**	17:50-19:20	16:50-18:20	15:50-17:20	9:50-11:20 10:50-12:20	9:50-11:20	8:80-10:20	2:50-4:20 3:50-5:20

The time zones that are not recommended to attend a real-time course

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）

Reading Scientific Research

Tentative and will be updated

General Information

Course title (Japanese)	Reading Scientific Research		
Course title (English)	Reading Scientific Research		
Course Code	ENG501z		
Academic year	2020	**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)	OOISHI Yukiko (大石　由紀子)		
Office	East １－６１５		
e-mail	yukiko@uec.ac.jp		
Course website	WebClass		
Last updated	2020/03/02 17:35:00	**Update status**	Released

Course Description

Topic and goals	This class will explore various types of scientific writing to develop students' abilities to understand the role of the articles and logically evaluate their validity and importance. Students will gain an understanding of how various publications and different target audiences determine the style, vocabulary and content of the articles.
Prerequisites	None
Recommended prerequisites and preparation	Academic Written English I & II Academic Spoken English I & II Academic English for the Second Year I/II
Course textbooks and materials	None. All materials will be distributed in class.
Course outline and weekly schedule	Week 1: Class Introduction Week 2: Introduction to reading scientific articles Week 3: Reading scientific articles Week 4: Reading scientific articles Week 5: Audience Week 6: Presentations Week 7: Reading research articles Week 8: Reading research articles Week 9: Presenting general ideas and summaries Week 10: Technical writing Week 11: Literature search Week 12: Writing comparisons Week 13: Writing comparisons Week 14: Presentations & self-evaluations Week 15: Presentations & self-evaluations
Course content utilizing practical experience	
Preparation and review outside class	All assigned readings and other preparation must be done outside of class. Students are expected to spend about one hour each week preparing for the upcoming class, as well as reviewing materials from the previous lesson.
Evaluation and grading	Class Participation (includes attendance, peer-evaluation, self-evaluation) = 35% Presentations = 30% Homework = 35%
Office hours	By appointment.
Message for students	This class will be taught entirely in English.

Others	None
Keyword(s)	reading, discussions, presentations, academic English

Research Presentation

General Information

Course title (Japanese)	Research Presentation		
Course title (English)	Research Presentation		
Course Code	ENG502z		
Academic year	2022	**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	https://www.edmodo.com/		
Last updated	2022/03/07 2:01:11	**Update status**	Released

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: Preliminary presentation (midterm) 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
Distance learning information	To be announced

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 class activities 30% Midterm presentation 35% Final presentation 35% ---------- Total 100% S≧90%, A≧80%, B≧70%, C≧60%, Fail<60%
Office hours	Email me to set up an appointment to meet for consultation.
Message for students	What does not kill you makes you stronger. -- This is true.
Others	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	2021/04/20 14:54:54	**Update status**	Released

Course Description

Topic and goals	Students will learn the basic grammar, daily use vocabulary and comprehensive in an intensive manner (自分の考えや情報が的確に伝えられる日本語を習得する).
Prerequisites	NIL
Recommended prerequisites and preparation	NIL
Course textbooks and materials	Texts and materials will be provided
Course outline and weekly schedule	A placement test will be taken before courses begin and students will be assigned to a class, as shown below, based on their Japanese language level. Japanese Language Elementary I Japanese Language Elementary II Japanese Language Intermediate I Japanese Language Intermediate II Japanese Language Advanced The course content, schedule and other information will be provided after the class assigning.
Preparation and review outside class	Nil
Evaluation and grading	Evaluation method 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, Webclass, 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	2022	**Year offered**	All years
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program
Teaching method	Lecture	**Credits**	2
Category	Graduate school core education subjects - Core subjectsI		
Cluster/Department	Department of Communication Engineering and Informatics		
Lecturer(s)	ISHIBASHI Koichiro (石橋　孝一郎)		
Office	W2-306		
e-mail	ishibashi(at)uec.ac.jp		
Course website	http://mtm.es.uec.ac.jp/index.html		
Last updated	2022/03/07 16:27:47	**Update status**	Released

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	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) Power on CMOS LSI 5) Moore?s law and Scaling law 6) Low power digital circuit design techniques - AC power reduction techniques - DC power reduction techniques 7) VLSI Varieties 8) Practice of Circuit Simulation Final exam will be done during the course.
Course content utilizing practical experience	Circuit simulation practice is done.
Distance learning information	Will be informed.
Preparation and review outside class	Review for the last lecture is recommended before the lectures.
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 Ishibashi (W2-306)

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	The lecture in this course, typeI, is mostly offered in English; PPT slides and handouts are also given in English.
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	2022	**Year offered**	All years
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program
Teaching method	Lecture	**Credits**	2
Category	Graduate school core education subjects - Core subjectsI		
Cluster/Department	Department of Communication Engineering and Informatics		
Lecturer(s)	KITSUWAN　NATTAPONG		
Office	East 3-1022		
e-mail	kitsuwan@uec.ac.jp		
Course website	http://www.kitsuwan.cei.uec.ac.jp/lecture/icn/		
Last updated	2022/03/14 12:51:14	**Update status**	Released

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: 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. 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
Distance learning information	Will be informed.

Preparation and review outside class	Reading the textbook or material before the class is preferred.
Evaluation and grading	Methods: Homework, report, and final presentation Criteria: Fundamentals and theories (50%) Practices (50%)
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 allowable 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）		
Course title (English)	Advanced Communication Engineering and Informatics II （Optical Communication Engineering）		
Course Code	INT002c INT002d INT002f INT002g		
Academic year	2022	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Core subjects		
Cluster/Department	Cluster I （Informatics and Computer Engineering)/Cluster II （Emerging Multi-interdisciplinary Engineering）		
Lecturer(s)	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	2022/02/24 16:03:54	**Update status**	Released

Course Description

Topic and goals	The main subject of this course is "Optical Communication". Optical communication is one of the key technologies for the contemporary information society. The history is still young, just about 30 years after being practically used, but it is developing rapidly nowadays, the communication ability is extremely outstanding and which is a communication technology that will be used in all parts of the society in the future. The goal of the course is to learn the fundamental principle and technical element of communication system, as well as introduce you to some of the latest communication technologies.
Prerequisites	Introduction to physics (wave and optics), Electromagnetism related subjects, Circuit and system (Electric curcuit)
Recommended prerequisites and preparation	Knowledge of Fourier analysis, Fourier and concept of time- and frequency-domain, Spectrum.
Course textbooks and materials	No textbooks needed. All course materials will be provided on-line via the URL listed above. (Password is required to access from off-campus)
Course outline and weekly schedule	Course materials and handouts will be provided in both English and Japanese. The course content is as follows: 1. Introduction to optical fiber communication. 2. Characteristic of light transmission medium of the optical communication and the difference with the low frequency electromagnetic wave. 1. Introduction to optical fiber communication. 2. Characteristic of light the transmission medium of optical communication,and the difference with the low frequency electromagnetic wave. 3. Structure of the optical fiber transmission channel and optical waveguide principle. 4. The main characteristic of optical fibers, i.e. the linear and non-linear characteristics and the relationship with signal transmission characteristics. 5. Principle of the basic optical signal source, i.e. the principle of photogeneration. 6. Optical signal source: Semiconductor laser, light emitting diode structure, and the characteristic and application. 7. Single frequency or a multi-wavelength source and pulse light source that specialized in optical communication. 8. Theory of optical amplifier in a long-distance optical communication system. 9. Characteristic of various optical amplifiers.

	10. Light elements required in an optical communication system. 11. Encoding of the digital light signal, the quality evaluation system of the signal reception. 12. The forms of the optical communication system. 13. Characteristic and the development of the optical communication system. 14. End uses optical fiber communication system. 15. Optical fiber sensor, light and optical fiber measurements.
Distance learning information	Will be informed.
Preparation and review outside class	All should go through the online material and other texts.
Evaluation and grading	Submission of a written report will be required at the end of the course. Assessment of this course (pass) will be made over the report at a minimum of 60%.
Office hours	Wed (12:30 to 14:30) or after class.
Message for students	Optical communications play a vital role and came to be indispensable for a nowadays information and communication network. Gained knowledge of the technology and the principle, will come in useful for all aspects in information and communication fields.
Others	For regular students: 1) "Cluster II & III", "Department of Communication Engineering" and "Department of Engineering Science" students are not permitted to select the course (there is a Optical communication engineering course offered in the 3rd year). 2) Double enroll in Optical communication engineering course is not pemitted.
Keyword(s)	Telecommunications opticalfibers, dispersion properties, non-linear intensity modulation, direct detection, opticalrepeater, wavelength division multiplexing, laser diode, photo diode, opticalamplifiers, optical network, opticalfiber sensor.

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	INT505z		
Academic year	2022	**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	2022/02/28 18:00:18	**Update status**	Released

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	Scriptum 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	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 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
Distance learning information	Will be informed.
Preparation and review outside class	NIL
Evaluation and grading	- Participation and activity in the Lecture - Depending on the number of students and their proficiency, Homework in the E-Learning System or weekly programming homework exercises
Office hours	you contact me by E-Mail and we organise date and time
Message for students	
Others	Lecture starts after the the introduction to the computer system in the Jusst-Program has been held.
Keyword(s)	Numerical Analysis, Scientific Programming

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	2022	**Year offered**	All years
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program, Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate school core education subjects - Core subjectsII		
Cluster/Department	Department of Informatics		
Lecturer(s)	JIN Lu (金　路)		
Office	West 5-607（金）		
e-mail	jinlu@inf.uec.ac.jp		
Course website	http://www.rm.inf.uec.ac.jp		
Last updated	2022/03/07 10:52:50	**Update status**	Released

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	Course Outline: #0 Guidance #1： 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
Distance learning information	Will be informed.
Preparation and review outside class	None
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

Advanced Engineering Science I (Polymer Photonics)

General Information

Course title (Japanese)	Polymer Photonics（学部）		
Course title (English)	Polymer Photonics		
Course Code			
Academic year	2022	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	Faculty of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Core subjects		
Cluster/Department	Department of Engineering Science		
Lecturer(s)	FURUKARA Rei (古川　怜)		
Office	W1-207		
e-mail	furukawa@ee.uec.ac.jp		
Course website	none		
Last updated	2022/03/10 16:52:58	**Update status**	Released

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	First few classes will be held in the traditional onsite style. Will be switched to online after the end of course registration period.
Preparation and review outside class	Assignments are given every week
Evaluation and grading	Assignments 14% Exams 86%
Office hours	To be announced in the class
Message for students	First few classes will be held in the traditional onsite style. Will be switched to online after the end of course registration period.
Others	none
Keyword(s)	polarization, dielectric tensor, birefringence, waveguides

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	INT002a INT002b INT002e		
Academic year	2022	**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	Core subjects		
Cluster/Department	Cluster I （Informatics and Computer Engineering)/Cluster II （Emerging Multi-interdisciplinary Engineering）		
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	2022/03/05 12:03:17	**Update status**	Released

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 2. Sustainable Manufacturing 3. Supply Chain Management 4. Global Supply Chain 5. Assembly Line System 6. Innovation Analysis for Manufactures by Text Mining 7. SNS Analysis for Manufactures by Text Mining 8. Closed-loop Supply Chain 9. Disassembly, Reuse and Recycling 10. Low-carbon Supply Chain 11. Life Cycle Assessment 12. Carbon Tax 13. Health Care Systems Engineering 14. Work Life Balance 15. Summary

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%)
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 assignment, 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, Scheduling, Health Care Systems Engineering, Work Life Balance

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	2022	**Year offered**	All years
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program, Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate school core education subjects - Core subjectsII		
Cluster/Department	Department of Engineering Science		
Lecturer(s)	FURUKARA Rei (古川　怜)		
Office	W8-815		
e-mail	furukawa@ee.uec.ac.jp		
Course website	none		
Last updated	2022/03/10 16:40:57	**Update status**	Released

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, Integrated Solid Waste Management 2 Municipal Solid Waste Characteristics and Quantities 3 Refuse Collection Systems 4 Collection of Recyclable Materials 5 Mechanical Process 6 Early Sorting Process 7 Material Separation 8 Biological Process 9 Midterm Presentation and Discussion 10 Thermal Processes 11 Landfills 12 Integrated Resources Management: Life Cycle Analysis 13 Integrated Resources Management: Flow control and Hazardous Materials 14 Integrated Resources Management: Requirement for Engineers 15 Final Presentation and discussion
Distance learning information	Class will be held in the real classroom. Will be switched online depending on the situation.
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	An ethical point of view is becoming essential for materials research nowadays.

Others	none
Keyword(s)	solid wastes, hazardous wastes, collection, separation, resources, SDGs

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	INT002k INT002m INT002n INT002p		
Academic year	2022	**Year offered**	3/4
Semester(s) offered	Spring semester	**Faculty offering the course**	School of Informatics and Engineering
Teaching method	Lecture	**Credits**	2
Category	Core subjects		
Cluster/Department	Cluster III (Fundamental Science and Engineering)		
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	2022/03/08 19:17:34	**Update status**	Released

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.)
Distance learning information	Will be informed.
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.

Advanced Engineering Science III (Exercises in Advanced Computational Science)

General Information

Course title (Japanese)	Advanced Engineering Science III (Exercises in Advanced Computational Science)		
Course title (English)	Advanced Engineering Science III (Exercises in Advanced Computational Science)		
Course Code	INT004k INT004m INT004n INT004p		
Academic year	2022	**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	Core subjects		
Cluster/Department	Cluster III (Fundamental Science and Engineering)		
Lecturer(s)	MORISHITA Toru (森下　亨)		
Office	East 6-528		
e-mail	NIL		
Course website	https://www.edu.cc.uec.ac.jp/pc/toru/adv_comp/		
Last updated	2022/02/28 22:03:35	**Update status**	Released

Course Description

Topic and goals	[Topic] In the modern information society, advanced computer programming knowledge and technology are important in any industrial field. In this lesson, the instructor is selected from a plurality of lectures, and the students themselves have to set the assignments while consulting with the instructor. Then, the students are asked to construct the program code and examining results that aim to acquire a wide range of knowledge and skills in computer programming. In addition, since the course is offered as an international subject, when taking the course as an international subject, you are required to give a presentation in English and acquire international background. [Goals] Assignment/task setting Execute the task Examine the results Discuss the results with lecture to build and develop the computer programming knowledge and skills
Prerequisites	Computer Literacy, Fundamental Programming
Recommended prerequisites and preparation	Numerical Analysis, Computer Programming and Applications, Numerical Calculus for Science and Engineering
Course textbooks and materials	NIL
Course outline and weekly schedule	Guidance is held on the 1st class and students will be divided into groups. Each group will appoint an instructor (lecturer). Students will receive the explanations and the basic knowledge from the lecturer and set the assignments accordingly. The programming language, OS, etc. will be decided in consultation with the lecturer. Several meetings and report on progress will be held. Give a final presentation about the assignment at the end of the semester. 1. Guidance 2. Assignment 1 3. Assignment 2 4. Assignment 3 5. Assignment 4 6. General Meeting 7. Assignment 5 8. Assignment 6 9. Assignment 7

	10. Assignment 8 11. Assignment 9 12. Assignment 10 13. Assignment 11 14. Assignment 12 15. Final Presentation The assignments/contents are decided in consultation with the instructor.
Distance learning information	Will be informed.
Preparation and review outside class	Consult with the lecturer for more information.
Evaluation and grading	Comprehensively evaluate by 1) the assignment's setting, performance and the examine of the results, and 2) the final presentation.
Office hours	Consult with the lecturer.
Message for students	As long as you work and develop your knowledge and programming skills, in consultation with the lecturer, you may proceed with what you want to do regardless the programming language and OS. Since the courses are offered as an international course, you can also acquire the international/global skills.
Others	Refer to the each lecturer's theme and contents on the Webpage, then choose a lecturer and contact the lecturer directly by email to decide the project/assignment.
Keyword(s)	Exercises in Advanced Computational Science

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	2022	**Year offered**	All years
Semester(s) offered	Spring semester	**Faculty offering the course**	Master's Program, Doctoral Program
Teaching method	Lecture	**Credits**	2
Category	Graduate school practical education subjects		
Cluster/Department	Offered for all departments		
Lecturer(s)	ISHIBASHI Koichiro (石橋　孝一郎), MATSUURA Motoharu (松浦　基晴)		
Office	West ２-306(石橋）West 2-306(Ishibashi), East 3-1028（松浦） East 3-1027(Matsuura)		
e-mail	< ishibashi@uec.ac.jp > < m.matsuura@uec.ac.jp >		
Course website	BHN桑原基金寄付講座/ BHN Kuwabara Foundation Donation Course http://bhn-uec.net/		
Last updated	2022/03/07 17:01:28	**Update status**	Released

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	NIL None
Recommended prerequisites and preparation	NIL None
Course textbooks and materials	Documents for lectures can be downloaded on Noodle system
Course outline and weekly schedule	All lectures will be given mainly in English. #1 April 15 (Fri), 5th period “Introduction” Prof. ISHIBASHI Koichiro “How ICT is related to SDGs” Lecturer KANO Sadahiko (BHN, Emer. Prof. of Waseda Univ.) #2 April 22 (Fri), 5th period “About SDGs including BHN activities” Lecturer TOMINO Takeshi (BHN) #3 May 13 (Fri), 5th period “Energy as key issue to achieve SDGs” Emer. Prof. ICHIKAWA Haruhisa #4 May 20 (Fri), 5th period “Information security as key issues to achieve SDGs” Lecturer HARADA Yonosuke (Emer. Prof. of Institute of Information Security) #5 May 27 (Fri), 5th period “ICT policy to realize SDGs” Lecturer SAKAMOTO Yasuo (ex MIC) #6 June 3 (Fri), 5th period “ICT for regional revitalization”

	Emer. Prof. MIKI Tetsuya #7 June 10 (Fri), 5th period “ICT for healthcare” Lecturer KUREMATSU Hachihei (BHN) #8 June 17 (Fri), 5th period “ICT for welfare” Prof. YOKOI Hiroshi #9 June 24 (Fri), 5th period “ICT for disaster prevention and mitigation” Lecturer UMINO Shinobu (BHN) #10 July 1 (Fri), 5th period “ICT for earth environment” Lecturer KUBOTA Takuji (JAXA) #11 July 8 (Fri), 5th period “ICT for agriculture and fishery” Prof. ISHIBASHI Koichiro #12, #13 July 15 (Fri), 5th and 6th period “Presentation and discussion about the exercise theme (Note 1)” Prof. ISHIBASHI, Prof. MATSUURA, Prof. MIKI, Lecturer KUREMATSU #14, #15 Late August or Early September “Technical tour (Note2)” in the area of Sendai and Ishinomaki, Miyagi Prefecture (Note 1) Exercise Theme Please create your proposals to solve SDGs issues using ICT in your hometown / home country. (Note 2) Technical tour Subject to cancellation, depending on the infection status of COVID-19.
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 includes very practical contents, since it is provided in an omnibus format by these members.
Distance learning information	Will be informed.
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 ① 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 to SDGs related sites during the summer vacation. However, it may be canceled depending on the infection status of COVID-19.
Others	This subject is one of the BHN Kuwahara Foundation Donation Courses （http://bhn-uec.net/）. It is also a subject for the Joint Innovative PhD Program （http://www.super-daigakuin.jp/）, and is offered online to students of other universities.
Keyword(s)	SDGs, ICT, information security, energy, medical and welfare, disaster prevention, 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	INT001z INT101z		
Academic year	2022	**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		
	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.		
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	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 (Overview; applications, 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.		
Distance learning information	Will be informed.		
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	INT002z		
Academic year	2022	**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	2022/03/08 16:01:44	**Update status**	Released

Course Description

Topic and goals	This course is designed to foster students' ability to identify, evaluate and use diverse information sources effectively in science and engineering studies. It involves the knowledge of information technology tools and their application to research. Students are required to give a poster presentation on their major study or research at the end of the semester.
Prerequisites	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
Recommended prerequisites and preparation	NIL
Course textbooks and materials	NIL
Course outline and weekly schedule	Course schedule and topics that will be covered ========== 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.
Distance learning information	Will be informed.

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 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	INT003z		
Academic year	2022	**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	2022/03/08 16:03:07	**Update status**	Released

Course Description

Topic and goals	This course focuses attention on the exercise of strategic research project. Students are required to carry out a study/research project for more than a half of year with a specific topic. Then, they have to proceed their own project after they choose their own topic and make a monthly plan. At the end of the semester, there will be an international mini-conference that has participants of all the JUSST Exchange Students and other regular UEC Students.
Prerequisites	UEC Academic Skills I (Computer Literacy) or コンピューターリテラシー
Recommended prerequisites and preparation	UEC Academic Skills II (Information Literacy and Research)
Course textbooks and materials	NIL
Course outline and weekly schedule	Course schedule and topics that will be covered ========== 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.

Distance learning information	Will be informed.
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