2024年度
Institute of Integrated Science and Technology (IIST)
講義概要（シラバス）

法政大学

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凡例　その他属性

〈他〉：他学部公開科目
〈優〉：成績優秀者の他学部科目履修制度対象科目
〈S〉：サーティフィケートプログラム_SDGs
〈ダ〉：サーティフィケートプログラム_ダイバーシティ
〈カ〉：サーティフィケートプログラム_カーボンニュートラル
〈グ〉：グローバル・オープン科目
〈実〉：実務経験のある教員による授業科目
〈ア〉：サーティフィケートプログラム_アーバンデザイン
〈未〉：サーティフィケートプログラム_未来教室

GNM500D1（ゲノム科学 / Genome science 500）

Introduction to Bioinformatics

常重　アントニオ

Subtitle：バイオインフォマティクス入門
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：木2/Thu.2 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
This introductory course is offered to students in general, with diverse background. No previous knowledge of molecular biology or chemistry, although recommended, is not required, as most basic topics will be presented in a concise manner at the beginning of the course. Processes covering from gathering scientific information, to sequencing of genomic material will be presented.

【Goal】
After the completion of this course, the student should be able:
(1) to understand the basic concepts and principles of bioinformatics, and how they are applied routinely;
(2) to acquire basic and relevant information in the literature by cross-referencing;
(3) to retrieve and analyze genomic and protein sequences from their respective databases; and
(4) to interpret the processed data;
(5) to understand the basic concepts of evolution, and the assessment of current times.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
This course consists of fourteen lectures. Relevant material (personal notes, scientific articles, all in English) for the lectures will be provided as needed using the Hoppii system. Part of the classes
will emphasize on problem-solving situations with guidance.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
なし / No

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	What is bioinformatics? -Part 1	Why is bioinformatics so relevant nowadays? Introduction to NCBI, Expasy, and other resource sites of bioinformatics.
2	What is bioinformatics? -Part 2	Understanding the span and imitations of bioinformatics. Pending issues.
3	What is Life? Living organisms.	Introduction to basic concepts in biology. Chemistry of Life.
4	Rules of the Game. Part 1	Variety of life forms. Basic concepts in molecular biology.
5	Rules of the Game. Part 2	Basic concepts in molecular biology (continued).
6	Rules of the Game. Part 3	Basic concepts in molecular biology (continued). Terminology and processes.
7	Nucleotide sequences. Part 1	Chemistry of DNA and RNA molecules (I).
8	Nucleotide sequences. Part 2	Chemistry of DNA and RNA molecules (II).
9	Analyzing a protein sequence. Part 1	Retrieval of a protein sequence.
10	Analyzing a protein sequence. Part 2	Pairwise and Multiple sequence alignment. BLAST and Clustal Omega. PAM and BLOSUM scoring systems.
11	Evolution and phylogenetic trees. Part 1.	Biological basis of evolution and phylogenetics at molecular level.
12	Evolution and phylogenetic trees. Part 2.	Phylogenetic tree construction methods. Distance-based methods.
13	Evolution and phylogenetic trees. Part 3.	Interpretation of phylogenetic trees.
14	Role of Bioinformatics in the COVID-19 era.	A case study. How SARS-CoV-2 evolves and attempts to persist in our world.

【Work to be done outside of class (preparation, etc.)】
Standard study time outside of class for preparation and review: approximately 5 hours. Please note that the first lectures are of introductory level.
During classes, a personal computer will be required to login and access database sites, retrieve specific information, or to perform computation. Also, you will be asked to work using specific analysis software (available from public servers) on relevant data, and interpret the obtained results.

【Textbooks】
"Bioinformatics for Dummies", J.-M. Claverie, C. Notredame, Wiley Publishing Inc., 2007.
"Essential Bioinformatics", Jin Xiong, Cambridge University Press, 2006.
Purchase of these books is not necessary. Lectures are based on a collection of books and articles from several sources. Therefore, material (prints) will be provided. Information is widely available on the internet.

【References】
Relevant scientific articles will be provided prior or during classes. However, the scope of these will be tailored to the capabilities of the student.

【Grading criteria】
Reports (20%) are to be submitted as requested within deadline limit. Final exam (60%) at the end of course. Active participation in class (20%) is strongly encouraged, especially durinig discussion of topics. Some of the reports require the student to link to a server to retrieve data and perform the appropriate analysis.

【Changes following student comments】
Due to the manageable number or students in each session, a one-on-one interaction during classes has been always possible. This provides a real-time feedback to adjust the content of each lecture, to overcome the wide diversity of backgrounds of the students. In a such a way, this course, although introductory, can be offered to any student holding any background, and personal interest stands as the only requirement.

【Equipment student needs to prepare】
A personal computer with audiovisual capabilities, and internet access is highly recommended. All handouts, study material, assignments will be uploaded, and reports will be submitted via the Hoppii system.

【Others】
None

FRI500D1（情報学フロンティア / Frontiers of informatics 500）

Cryptography and its Applications

真鍋　義文

Subtitle：**暗号とその応用**
Term：**秋 学 期 授 業**/Fall ｜ Term：**秋 学 期 授 業**/Fall ｜
Credit(s)：2
Day/Period：**水**1/Wed.1 ｜ Campus：**小金井** / Koganei
Grade：
Notes：

その他属性：

【Outline and objectives】
Modern cryptography is widely used on the Internet and in many IT applications. Cryptocurrencies and blockchains are one of the applications of cryptography. This course will introduce the basic concepts and techniques of modern cryptography and cryptocurrencies. It will also provide some advanced topics of modern cryptography such as post-quantum cryptography and homomorphic encryption.

【Goal】
The students will understand the key concepts and techniques in modern cryptography such as symmetric-key encryption, public-key encryption, digital signatures, Bitcoin, blockchains, and some advanced cryptography concepts.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
Following the lectures, the students will learn the concepts and understand the basis of modern cryptography and cryptocurrencies. This course provides opportunities for students to learn the basic knowledge, methods, and techniques.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
なし / No

【Schedule】授業形態：オンライン/online

No.	Theme	Contents
1st class	Introduction	Background of modern cryptography. Course overview.
2nd class	Symmetric-key cryptosystems (1)	One-time pad cipher and block ciphers
3rd class	Symmetric-key cryptosystems (2)	DES, AES, and block cipher modes of operation
4th class	Public-key cryptosystems(1)	Concepts of public-key cryptography, RSA encryption
5th class	Public-key cryptosystems(2)	ElGamal encryption and security requirements of public-key cryptosystems
6th class	Hash functions and digital signatures	Hash function and its security requirements. RSA signature, DSA, and security requirements
7th class	Authentication(1): password authentication	Password authentication and password attacks
8th class	Authentication(2)	Challenge-response and biometric authentication
9th class	Message authentication and key generation	Message authentication code and random number generation
10th class	Public key infrastructure (PKI)	Certificate authorities (CA)
11th class	Key-sharing and key-recovery	Quantum key distribution and secret sharing
12th class	Internet protocols and blockchain	TLS, VPN, and blockchain
13th class	Zero-knowledge proof and cryptography with advanced functionality	Zero-knowledge proof protocol and fully homomorphic encryption
14th class	Post-quantum cryptography and advanced cryptography	Quantum computers and lattice-based cryptography

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】
Before the first lecture, please check:
https://en.wikipedia.org/wiki/Cryptograph

【Textbooks】
None

【References】
Jonathan Katz and Yehuda Lindell: "Introduction to Modern Cryptography: Third Edition", Chapman and Hall/CRC.

【Grading criteria】
1. Reports in every class: 100%

【Changes following student comments】
None

【Equipment student needs to prepare】
The students need to bring a laptop computer for some reports.

BSP500D1（初年次教育、学部導入教育及びリテラシー教育 / Basic study practice 500）

Technical Writing Workshop 1

早舩　由紀見

Subtitle：テクニカルライティングワークショップ 1
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：水1/Wed.1 ｜ Campus：小金井 / Koganei
Grade：
Notes：

その他属性：

【Outline and objectives】
Getting your work published in top conferences and journals requires not only great science, but also a well-written document. This course helps students develop effective writing skills for publication in English.

【Goal】
This course aims to cultivate the ability of writing technical papers.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The students will apply what they have learned in their own writing, slowly constructing a full-research paper by the end of the course. The lectures will be given in a highly interactive manner. The students will be asked to join the discussions on their written paper.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
なし / No

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	Technical writing overview. Course overview.
2	Investigate how the research paper is constructed	Reading and learning constructions of some of the research papers the lecturer hand out
3	Plagiarism	Learning about the issue of plagiarism
4	Preparing to write. Reference survey	Principles of audience analysis and structure of research papers. Learning how to survey the reference papers.
5	Reference survey (1)	The students will choose a topic and report their survey results.
6	Reference survey (2)	The students will report their survey results.
7	Abstract and introduction sections	Learning how to write the abstract and introduction sections.
8	Proposal section	Learning how to write the proposal section.
9	Results and comparison sections	Learning how to write the results and conclusion sections.
10	Conclusion, acknowledgement, and reference	Learning how to write the conclusion, acknowledgement, and reference sections.
11	Figures, tables, and pseudo code	Learning how to draw figures, tables, and pseudo code.
12	Revising and reviewing	Revising and reviewing manuscripts written by the other students. The students will present their written paper.
13	Paper submission	Learning the process of submitting a conference paper.
14	Case study	Writing a full paper. The students will present their paper.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 1 hours each.】 Homework (reports and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
English for Writing Research Papers, A. Wallwork, Springer.

【Grading criteria】
Active participation in class: 40%
In class writing: 30%
Final writing:30%

【Changes following student comments】
Teacher will try to give students more time to do pair and group works.
Also, will make an atmosphere comfortable for students to tell their opinions in the class.

【Equipment student needs to prepare】
Notebook PC

【Others】
If the course is offered online, changes in online class methods, plans, and grading methods will be presented on a case-by-case basis in the Learning support system (Hoppii). Please check carefully on a daily basis to see if your instructor contacts you via the learning support system.

BSP500D1（初年次教育、学部導入教育及びリテラシー教育 / Basic study practice 500）

Technical Presentation Workshop 1

早舩　由紀見

Subtitle：テクニカルプレゼンテーションワークショップ 1
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：金1/Fri.1 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
In this course, students will develop the oral presentation skills which are helpful to present their research results at international conferences.

【Goal】
This course aims to cultivate the ability to give technical presentations.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
Students first learn how to make an effective presentation and then actually make two presentations. One is to introduce their research fields and the other is to introduce a research paper related to their study fields after searching it on the Internet.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
なし / No

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	Technical presentation overview. Course overview.
2	Oral presentation skills	Introduction to basic oral presentation skills.
3	Introduction to Power Point	Learning how to use Power Point and how to make effective slides
4	Watch and learn from 3 minutes presentations	Learning from talks on 3min. presentation on YouTube.
5	Practice presentation (1) 3-min presentation	Every students gives 3-min presentations in the class.
6	Poster presentation	Learning what the poster presentation is and how to create an effective poster.
7	Useful phrases	Learning useful phrases to give presentation
8	Pronunciation and Intonation	Learning pronunciation and intonation
9	Handling your nerves	Learning how to handle your nerves
10	Writing and Editing the text of the slides	Learning the skills for writing and editing the text of the slides.
11	Getting and keeping the audience's attention	Learning how to get and keep the audience's attention.
12	Questions and answers	Learning the skills of answering questions.
13	Practice presentation (2)	Every student gives 10-minus presentation and 2-minus Q/A. In-class discussion.
14	Practice presentation (2)	Every student gives 10-minus presentation and 2-minus Q/A. In-class discussion.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 1 hour each.】 Preparation of presentations.

【Textbooks】
Handouts and prints will be distributed.

【References】
English for Presentations at International Conferences, Second Edition
by A. Wallwork, Springer.

【Grading criteria】
Active participation in class:40%
3-min. presentation:30%
10-min. presentation:30%

【Changes following student comments】
Teacher will try to give students more time to do pair and group works.
Also, will make an atmosphere comfortable for students to tell their opinions in the class.

【Equipment student needs to prepare】
Notebook PC

【Others】
Please check carefully on a daily basis to see if your instructor contacts you via the learning support system (Hoppii).

BSP500D1（初年次教育、学部導入教育及びリテラシー教育 / Basic study practice 500）

Technical Writing Workshop 2

余　恪平

Subtitle：テクニカルライティングワークショップ 2
Term：春学期授業/Spring ｜ Term：春学期授業/Spring ｜
Credit(s)：2
Day/Period：火3/Tue.3 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Getting your work published in top conferences and journals requires not only great science but also a well-written document. This course helps students develop effective writing skills for publication in English.

【Goal】
For this semester, the Technical Writing Workshop 2 aims to cultivate the ability to write journal papers.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
It will be given in the Learning Management System.
Please confirm the announcement from the Learning Management System.
The students will apply what they have learned in their own writing, slowly constructing a full research paper by the end of the course. The lectures will be given in a highly interactive manner. The students will be asked to submit their written papers and their comments to other papers.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	Technical writing overview. Introduction to the lecturer. Course overview.
2	Reference survey	Learning how to survey the reference papers. Study the high-ranked journals in the related research area.
3	Introduction to journal papers	Learning the difference between conference and journal papers. Learning how to expand a conference paper to a journal paper.
4	Introduction section	Learning how to write the introduction section of a journal paper.
5	Proposal section	Learning how to write the proposal section of a journal paper.
6	Result section	Learning how to write the result section of a journal paper.
7	Comparison section	Learning how to write the comparison section of a journal paper.
8	Conclusion, acknowledgement, and reference	Learning how to write the conclusion, acknowledgement, and reference sections.
9	Paper submission	Learning the process of submitting a journal paper.
10	Case study	Writing a full paper. The students will present their paper.
11	Case study 2	Based on the presented paper, we will have a group discussion.
12	Review	Learning the review process of a journal paper. Learning how to evaluate a journal paper.
13	Reply letter	Learning how to write a reply letter for a conditional accepted journal paper.
14	Summary of course	Summary. Question and answers.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework (reports, paper writing and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
Science Research Writing: A Guide for Non-Native Speakers of English, H.G. Deal, Imperial College Press.

【Grading criteria】
Homework 60% + in-class discussion 40%.

【Changes following student comments】
None in particular.

BSP500D1（初年次教育、学部導入教育及びリテラシー教育 / Basic study practice 500）

Technical Presentation Workshop 2

余　恪平

Subtitle：テクニカルプレゼンテーションワークショップ 2
Term：春学期授業/Spring ｜ Term：春学期授業/Spring ｜
Credit(s)：2
Day/Period：木3/Thu.3 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
In this course, students will develop oral presentation skills which are helpful to present their research results.

【Goal】
This course aims to cultivate the ability to give technical presentations.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
It will be given in the Learning Management System.
Please confirm the announcement from the Learning Management System.
This course includes group discussion, learning talks on TED, and 2 times oral presentations. The lectures will be given in a highly interactive manner. The students will be encouraged to join the in-class discussions on their presentations.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	Technical presentation overview. Introduction to the lecturer. Course overview.
2	Oral presentation skills	Introduction to basic oral presentation skills.
3	Presentation tools	Introduction to Microsoft PowerPoint.
4	Talks on TED (1)	Learning from talks on TED. The students are divided into several groups. Every group chooses a presentation topic.
5	Talks on TED (2)	Learning from talks on TED. The students are divided into several groups. Every group chooses a presentation topic.
6	Talks on TED (3)	Learning from talks on TED. The students are divided into several groups. Every group chooses a presentation topic.
7	Presentation and discussion for the first topic (1)	Students will give a 10-minus presentation and 5-minus Q/A. In-class discussion.
8	Presentation and discussion for the first topic (2)	Students will give a 10-minus presentation and 5-minus Q/A. In-class discussion.
9	Presentation and discussion for the first topic (3)	Students will give a 10-minus presentation and 5-minus Q/A. In-class discussion.
10	Summary of the presentations	The presentation techniques will be summarized. The students will choose their second presentation topic.
11	Presentation and discussion for the second topic (1)	Students will give a 15-minus presentation and 5-minus Q/A. In-class discussion.
12	Presentation and discussion for the second topic (2)	Students will give a 15-minus presentation and 5-minus Q/A. In-class discussion.
13	Presentation and discussion for the second topic (3)	Students will give a 15-minus presentation and 5-minus Q/A. In-class discussion.
14	Summary of the presentations	The presentation techniques will be summarized.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Preparation of presentations.

【Textbooks】
Handouts and prints will be distributed.

【References】
English for Presentations at International Conferences, A.Wallwork, Springer.

【Grading criteria】
Homework 20% + presentations 80%

【Changes following student comments】
None in particular.

CAR500D1（キャリア教育 / Career education 500）

IIST Seminar

余　恪平

Subtitle：IISTセミナー
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：水4/Wed.4 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
In this course, professors from different departments are invited to introduce their research. Students can acquire comprehensive introductory knowledge and insight on various research fields.

【Goal】
Students can learn advanced research from various fields including robotics, bioscience, applied chemistry, computer vision, plant science, and so on.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
This class is taught in an omnibus style by professors from different research fields. Topics vary from robotics technologies, AI technology to advanced bioscience, chemistry, plant science and so on. The class contents are shown below. The learning support system HOPPII will be used to submit reports and get feedback from lecturers.

【Active learning in class (Group discussion, Debate.etc.)】
なし / No

【Fieldwork in class】
なし / No

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	Overview of the topics which will be taught in the class.
2	Future Internet	Introduce the future Internet including concept, applications, standards, etc.
3	Intelligent robotics	Introduction to real-time robot learning and evolutionary robotics
4	Information in Biological Sciences	From molecules (structure-function relationships) to organism and population
5	Multimedia processing	Introduce the multimedia processing technologies including the video processing, audio processing, 3D computer graphic.
6	Operations Management (1)	Introduction of mathematical engineering
7	Operations Management (2)	Applications of mathematical engineering
8	Clinical Plant Science	Establishment and Activities of the Department of Clinical Plant Science
9	Materials and Color	Color materilas around us
10	Intelligent information processing & Data analysis	Introduce intelligent information processing technologies.
11	Human Augmentation by Robotics	Overview of the technology for robots to co-exist harmonically with humans
12	Activity Recognition	Recognizing daily activities using sensor data
13	Emotion Recognition	Recognizing emotional states using physiological data
14	Robotics	Introduce intelligent systems

【Work to be done outside of class (preparation, etc.)】
[Preparatory study and review time for this class are 4 hours each.] Submission of the short paper is required in each professor's class.

【Textbooks】
Handouts and prints will be distributed.

【References】
References are shown in the handouts provided by each professor.

【Grading criteria】
Reports (80%) + in class activities (20%)

【Changes following student comments】
None in particular.

【Others】
If the class is offered online, the learning support system will provide information about the change in the online lesson method, lesson plan, and grade evaluation method each time. Please regularly check to see if the instructor has contacted you through the learning support system.

LANj500D1（日本語 / Japanese language education 500）

Japanese communication 1

村松　葉子

Subtitle：**日本語コミュニケーション１**
Term：**秋 学 期 授 業**/Fall ｜ Term：**秋 学 期 授 業**/Fall ｜
Credit(s)：2
Day/Period：**金**3/Fri.3 ｜ Campus：**小金井** / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Basic Japanese and Culture(Introductory level)

【Goal】
This class aims to learn Japanese basic structures and expressions in daily life and know Japanese customs to have simple communication with Japanese people.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
This is kind of acting class, so students are required to perform as much as possible. We will learn some new grammar, and then practice speaking and asking each other. Out of class, students will have some writing homework. There will be a few quizzes.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
①	Introduction	Go over syllabus Self-introduction Level check
②	nominal sentence	～は～です。 hiraganga
③	Pronouns and Noun Modifiers	こそあど hiragana
④	Verb	Verb　～ます(non-past tense) hiragana
⑤	expression of inviting someone to do something	expression of inviting someone to do something (some basic te-forms) hiragana
⑥	review	review and culture Review lesson1-3,talking about custom
⑦	Existence of things and people	Existence of things and people(います・あります) katakana
⑧	verb	verb ～ました　(past tense) katakana
⑨	Expression of giving and receiving	あげます・もらいます Expression of giving and receiving. katakana
⑩	adjective	adjective(i-adj na-adj) katakana
⑪	counting	counting
⑫	review	review culture Studying
⑬	te-form	te-form(1) (to know rules and master)
⑭	expressions with te-form	te-form(2) expression of asking someone to do

【Work to be done outside of class (preparation, etc.)】
All students are required to review for quiz and homework.
Standard study time outside of class for preparation and review: 4 hours.

【Textbooks】
Teacher will provide handouts to the students.

【References】
Dictionaries(no google translation)

【Grading criteria】
Participation40%,Homework40%,Quiz20%

【Changes following student comments】
Following the results of the students comments, I'll include more grammar explanation and try to take more time.
I always welcome any comments and suggestions to improve this class anytime.

【Equipment student needs to prepare】
PC

【Others】
· All students are required that they can read Hiragana to register this class.
· in case classes move online, it is possible there will be changes to the syllabus.
· All students are required to fill out the "Japanese Class Registration Questionnaire" sent by the Hosei University Office before attending the first class.
· Google Classroom will be used for handouts and class assignments.
· An off-campus activity will be scheduled on Saturday if the students are able to participate.
· Handouts and assignments in class will be done via google classroom.
One extracurricular activity will be scheduled on Saturday if the students are able to participate.

LANj500D1（日本語 / Japanese language education 500）

Japanese communication 2

村松　葉子

Subtitle：日本語コミュニケーション２
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：金4/Fri.4 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Basic Japanese and Culture (Early-Basic)

【Goal】
This class aims to learn Japanese basic structures and expressions in daily life and know Japanese customs to have simple communication with Japanese people.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
This is kind of acting class, so students are required to perform as much as possible. We will learn some new grammar, and then practice speaking and asking each other. Out of class, students will have some writing homework. There will be a few quizzes. Homework outputs will be reviewed in the classroom.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
①	Presnt progressive and Habitual actions	Presnt progressive and Habitual actions ～ています
②	TE-form	te-form(Adjective)
③	Short form	short form (Verb)
④	Expression of quotation and opinion	Expression of quotation and opinion(with using short form)
⑤	Review	Review and others Japanese custom
⑥	Short form	short form(past tense)
⑦	Qualifying Nouns	Qualifying Nouns with verbs and adjectives
⑧	Comparison	between 2 items among 3 or more items
⑨	Lesson8	Expression of planning Indicating a change
⑩	Review	Review Japanese culture
⑪	TA-form	ta-form
⑫	Expression of experience	Expression of experience with ta-form
⑬	The mode of explaining things	Review short form ～んです。
⑭	Expression of guess or prediction	Expression of guess or prediction with short form

【Work to be done outside of class (preparation, etc.)】
All students are required to review for quiz. And home works. Standard study time outside of class for preparation and review: 4 hours.

【Textbooks】
Teacher will provide handouts to the students.

To be announced.

【References】
Dictionaries(no google translation)
PC

【Grading criteria】
Participation: 40%, Homework: 40%, Quiz: 20%

【Changes following student comments】
Following the results of the students comments, I'll include more grammar explanation and try to take more time.
I always welcome any comments and suggestions to improve this class anytime.

【Equipment student needs to prepare】
PC

【Others】
· Students are required that they can read Hiragana to register this class.
· in case classes move online, it is possible there will be changes to the syllabus.
· All students are required to fill out the "Japanese Class Registration Questionnaire" sent by the Hosei University Office before attending the first class.
· Google Classroom will be used for handouts and class assignments.
· An off-campus activity will be scheduled on Saturday if the students are able to participate.
· Handouts and assignments in class will be done via google classroom.
One extracurricular activity will be scheduled on Saturday if the students are able to participate.

LANj500D1（日本語 / Japanese language education 500）

Japanese communication 3

村松　葉子

Subtitle：日本語コミュニケーション３
Term：春学期授業/Spring　｜　Term：春学期授業/Spring　｜
Credit(s)：2
Day/Period：金3/Fri.3　｜　Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Basic Japanese and Culture (Early basic)

【Goal】
This class aims to learn Japanese basic structures and expressions in daily life and know Japanese customs to have simple communication with Japanese people.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
【The lecture is going to start on zoom on 8th May.】
This is kind of acting class, so students are required to perform as much as possible. We will learn some new grammar, and then practice speaking and asking each other. Out of class, students will have some writing homework. There will be a few quizzes. Homework outputs will be reviewed in the classroom.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
①	Review	review last term
②	Existence	Existence of things and people(います・あります)
③	Giving and receiving	あげます・もらいます Expression of giving and receiving.
④	TE-form(1)	te-form (know rules and master)
⑤	TE-form(2)	te-form(2) expression of asking someone to do
⑥	Presnt progressive and Habitual actions	Presnt progressive and Habitual actions with te-form.
⑦	Expression of permission	Expression of permission with te-form
⑧	Te-form(3)	te-form(Adjective)
⑨	Expression of quotation and opinion	Short form Expression of quotation and opinion
⑩	Review	Review and others Japanese custom
⑪	Qualifying Nouns	Qualifying Nouns with verbs and adjectives
⑫	Comparison(1)	Comparison between 2 items
⑬	Comparison(2)	Comparison among 3 or more items.
⑭	Expression of planning Indicating a change	Review shor forms Expression of planning Indicating a change(adjective)

【Work to be done outside of class (preparation, etc.)】
All students are required to review. And home works.
Standard study time outside of class for preparation and review: 4 hours.

【Textbooks】
Teacher will provide handouts to the students.

【References】
Dictionaries(no google translation)

【Grading criteria】
Participation: 40%, Homework: 40%, Quiz: 20%

【Changes following student comments】
Following the results of the students comments, I'll include more grammar explanation and try to take more time.
I always welcome any comments and suggestions to improve this class anytime.

【Equipment student needs to prepare】
Computer

【Others】
· All students are required that they can read Hiragana to register this class.
· in case classes move online, it is possible there will be changes to the syllabus.
· All students are required to fill out the "Japanese Class Registration Questionnaire" sent by the Hosei University Office before attending the first class.
· Google Classroom will be used for handouts and class assignments.
· One extracurricular activity will be scheduled on Saturday if the students are able to participate.
· Handouts and assignments in class will be done via google classroom.
One extracurricular activity will be scheduled on Saturday if the students are able to participate.

LANj500D1（日本語 / Japanese language education 500）

Japanese communication 4

村松　葉子

Subtitle：日本語コミュニケーション４
Term：春学期授業/Spring　｜　Term：春学期授業/Spring　｜
Credit(s)：2
Day/Period：金4/Fri.4　｜　Campus：小金井 / Koganei
Grade：
Notes：

その他属性：

【Outline and objectives】
Basic Japanese and Culture (Basic)

【Goal】
This class aims to learn Japanese basic structures and expressions in daily life and know Japanese customs to have simple communication with Japanese people.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
【The lecture is going to start on zoom on 8th May.】
This is kind of acting class, so students are required to perform as much as possible. We will learn some new grammar, and then practice speaking and asking each other. Out of class, students will have some writing homework. There will be a few quizzes. Homework outputs will be reviewed in the classroom.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
①	ta-form	ta-form Know rules and get used to
②	Expression of experience	Expression of experience wit ta-form
③	The mode of explaining things	Expression of explanation or enphasis
④	Expression of guess or prediction	Short form Expression of guess or prediction
⑤	Review condjugation of te,ta,and short form	Review condjugation of te,ta,and short form Japanese custom
⑥	NAI-form	nai-form know rules and get used to
⑦	Giving advise	ta-form,nai-form review giving advise
⑧	Necessary	necessary with nai-form
⑨	Potentilal verbs	potential verbs know and get used to the conjugation rules
⑩	Review condjugation ofta,nai,potential form	Review condjugation ofta,nai,potential form Japanese custom
⑪	Possibility	short form possibility
⑫	Volitional form	volitional form know and get used to the conjugation rules
⑬	Giving and receiving action	giving and receiving things(review) giving and receiving action
⑭	Hypothetical condition	Review ta-form hypothetical condition

【Work to be done outside of class (preparation, etc.)】
All students are required to review. And home works.
Standard study time outside of class for preparation and review: 4 hours.

【Textbooks】
Teacher will provide handouts to the students.

【References】
Dictionaries(no google translation)

【Grading criteria】
Participation: 40%, Homework: 40%, Quiz: 20%

【Changes following student comments】
Following the results of the students comments, I'll include more grammar explanation and try to take more time.
I always welcome any comments and suggestions to improve this class anytime.

【Equipment student needs to prepare】
PC

【Others】
· All students are required that they can read Hiragana to register this class.
· in case classes move online, it is possible there will be changes to the syllabus.
· All students are required to fill out the "Japanese Class Registration Questionnaire" sent by the Hosei University Office before attending the first class.
· Google Classroom will be used for handouts and class assignments.
· An off-campus activity will be scheduled on Saturday if the students are able to participate.
· Handouts and assignments in class will be done via google classroom.
· One extracurricular activity will be scheduled on Saturday if the students are able to participate..

COT500D1（計算基盤 / Computing technologies 500）

IIST Special Lecture 1

余　恪平

Subtitle：Next Generation Internet
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：火4/Tue.4 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
The information-centric networking (ICN) is a promising architecture for the future Internet that disseminates content based on named data instead of named hosts. In general, the expected benefits are improved efficiency and security, better scalability concerning information/bandwidth demand, and better robustness in challenging communication scenarios. This course provides a broad introduction to ICN, mainly including (i) ICN design, (ii) ICN Implementation, and (iii) ICN evaluation.

【Goal】
The students will get to understand the key concepts and techniques in the next-generation Internet such as Content-Centric Networking / Named Data Networking.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The lectures will be given in a highly interactive manner. The students will be asked to discuss the fundamental Internet issues and consider their own solutions. Most homework assignments will be on open questions without standard answers. The students will be encouraged not only to learn the knowledge but also to think about how it can be used.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Motivation for ICN: Network history and design goals	The trend of the current Internet. ICN requirements. Design goals.
2	The need for ICN	Overview. Existing network system issues and tendencies.
3	Fundamental of ICN	Naming. Forwarding. In-network Storage. Security. Mobility. QoS.
4	ICN architecture (1)	Data-Oriented Network Architecture (DONA). Content-Centric Networking (CCN) / Named Data Networking (NDN). Publish-Subscribe Internet Technology (PURSUIT).
5	ICN architecture (2)	Scalable and Adaptive Internet Solutions (SAIL). COntent Mediator architecture for content-aware nETworking (COMET). CONVERGENCE. MobilityFirst.
6	ICN Design (1)	Overview. An application consideration for NDN. Naming design. Security concept. Naming resolution. Forwarding and routing.
7	ICN Design (2)	In-network storage. Mobility support. Application interface. Comparison with existing practice.
8	ICN Implementation	Infrastructure Software. NDN Libraries. Evaluation Frameworks.
9	Use cases and applications (1)	Overview. Multimedia content distribution. Disaster Network. IoT.
10	Use cases and applications (2)	Vehicular information network. ICN services over 5G. Scientific Big Data.
11	ICN system evaluation	System evaluation. Mobility evaluation.
12	Standardization of ICN	ICN Standardization Activities in ITU-T, IRTF, etc.
13	Future of the ICN	What the future Internet should be? Challenges of the ICN. Future directions
14	Final Presentation	Every student gives a 10-minus presentation. In-class discussion.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework and final presentation.

【Textbooks】
Handouts and prints will be distributed.

【References】
Gabriel M. Brito, Information Centric Networks: A New Paradigm for the Internet, Wiley, 2013, ISBN: 9781848214491

【Grading criteria】
Homework 50% + Final Presentation 50%

【Changes following student comments】
None in particular.

COT500D1（計算基盤 / Computing technologies 500）

IIST Special Lecture 2

余　恪平

Subtitle：Cyber Security
Term：春学期授業/Spring　｜　Term：春学期授業/Spring　｜
Credit(s)：2
Day/Period：木4/Thu.4　｜　Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
This course provides students with basic knowledge and skills in the fundamental theories and practices of cyber security. A comprehensive introduction to the basic theory and application practice of cyberspace security, covering almost all aspects of the security field, focusing on basic concepts rather than overly in-depth technical details. Through the study of this course, students will be able to recognize security risks, enhance security awareness, and master prevention methods for future study.

【Goal】
1. To understand the basics of cyber security.
2. To outline the framework of cyber security.
3. To recognize the hidden dangers of cyber security, master the methods of cyberspace prevention, and raise awareness of cyber security.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The lectures will be given in a highly interactive manner. The students will be asked to discuss the fundamental cybersecurity issues and consider their own solutions. Most homework assignments will be on open questions without standard answers. The students will be encouraged not only to learn the knowledge but also to think about how it can be used.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction of Cyber Security	What is cyber security? Why is cyber security Important?
2	Toolbox	Fundamentals of authentication, access control, and cryptography.
3	Programs and Programming	Malicious Code—Malware. Countermeasures.
4	The Web—User Side	Browser Attacks. Web Attacks Targeting Users. Obtaining User or Website Data. Email Attacks.
5	Operating System	Security in Operating Systems. Security in the Design of Operating Systems. Rootkit.
6	Networks	Network Concepts. Threats to Network Communications. Wireless Network Security. Denial of Service. Distributed Denial-of-Service Strategic Defenses: Security Countermeasures. Cryptography in Network Security. Firewalls. Intrusion Detection and Prevention Systems. Network Management.
7	Databases	Introduction to Databases. Security Requirements of Databases. Reliability and Integrity. Database Disclosure. Data Mining and Big Data.
8	Cloud Computing	Cloud Computing Concepts. Moving to the Cloud. Cloud Security Tools and Techniques. Cloud Identity Management.
9	Internet of Things	Overview of IoT Security. Security and Privacy Protection in IoT Applications.
10	Privacy	Privacy Concepts. Privacy Principles and Policies. Authentication and Privacy. Data Mining. Privacy on the Web. Email Security. Privacy Impacts of Emerging Technologies. Where is the field headed?
11	Management and Incidents	Security Planning. Business Continuity Planning. Handling Incidents. Risk Analysis. Dealing with Disaster.
12	Physical and Environmental Security	Physical Security and Security Management. Industrial Control Device Security. Chip Security. Trusted Computing.
13	Legal Issues and Ethics	Protecting Programs and Data. Information and the Law. Redress for Software Failures. Computer Crime. Ethical Issues in Computer Security. Incident Analysis with Ethics.
14	Blockchain	Blockchain Concepts. Digital Currency and Cryptocurrency. Consensus Mechanism. Smart Contracts. Blockchain Applications.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework (reports and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
Charles P. Pfleeger, Security in Computing, 5th Edition, Prentice Hall, 2015, ISBN-10: 0134085043

【Grading criteria】
Homework 50% + Final Presentation 50%

【Changes following student comments】
None in particular.

COT500D1（計算基盤 / Computing technologies 500）

IIST Special Lecture 3

余　恪平

Subtitle：Blockchain Technology and Applications
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：木3/Thu.3 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Blockchain is an emerging technology platform for developing decentralized applications and data storage, over and beyond its role as the technology underlying the cryptocurrencies. This course aims to provide a conceptual understanding of the function on blockchains as a method of securing distributed ledgers, how consensus on their contents is achieved, and the new applications that they enable.

【Goal】
(1) To understand the structure of a blockchain and why it is better than a simple distributed database.
(2) To analyze the incentive structure in a blockchain-based system and critically assess its functions, benefits, and vulnerabilities.
(3) Understand what constitutes a “smart” contract, what are its legal implications, and what it can and cannot do, now and in the near future.
(4) To evaluate the setting where a blockchain-based structure may be applied, its potential, and its limitations.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The lectures will be given in a highly interactive manner. The students will be asked to discuss the fundamental distributed database issues and consider their own solutions. Most homework assignments will be on open questions without standard answers. The students will be encouraged not only to learn the knowledge but also to think about how it can be used.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction and class policies	Introduction to current centralized systems. Structure of blockchain. Examples of blockchain.
2	Blockchain technology: Why, What, How	Why use blockchain technology? What are the main barriers to blockchain adoption? How to use blockchain?
3	Cryptographic Elements in Blockchain	Public Key & Private Key. Digital Signature & Hash Value.
4	Cryptographic Technology in Blockchain	Key questions for blockchain. Who can modify transactions? Who will maintain transactions? How to protect our privacy?
5	Consensus Mechanisms	Proof of Work, Proof of Stake, Delegated Proof of Stake, Proof of Authority, etc.
6	Bitcoin	All the technical concepts learned so far will be used to understand the invention and working of Bitcoin. The focus will be on the use of economic incentives, mining, transaction fees, and algorithmic inflation.
7	Smart contracts & Ethereum	It will cover conditional transactions as enabled by the second most prominent blockchain platform, tokens, and the notion of trustless computing.
8	Blockchain Applications (1)	Use cases for blockchain applications.
9	Blockchain Applications (2)	Analysis of 1-2 blockchain applications from a technical perspective.
10	The Limitations, Opportunities, and Challenges of Blockchain	Risks and limitations of blockchain: privacy and security, etc.
11	The “Evil Sides” of Blockchain and Legal Regulations for Blockchain	The “Dark” side of blockchain. Does blockchain need legal regulations?
12	Myths about Blockchain Technology	Blockchain and AI. Blockchain and Digital Transformation.
13	Standardization of Blockchain	Standardization activities for blockchain in ITU-T, ISO, IEEE.
14	Final Presentation	Every student gives a 10-minus presentation. In-class discussion.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework (reports and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
References to scientific papers and book chapters are given in the lecture slides.

【Grading criteria】
Homework 50% + Final Presentation 50%

【Changes following student comments】
None in particular.

HUI500D1（人間情報学 / Human informatics 500）

IIST Special Lecture 4

余　恪平

Subtitle：Machine Learning
Term：春学期授業/Spring ｜ Term：春学期授業/Spring ｜ Credit(s)：2
Day/Period：水3/Wed.3 ｜ Campus：小金井 / Koganei
Grade：
Notes：

その他属性：

【Outline and objectives】
This course provides a broad introduction to machine learning. Topics include regression, classification, meta learning, reinforcement learning, network compression, and so on.

【Goal】
The students will get to understand the key techniques in machine learning and gain practice implementing them and getting them to work for themselves.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
It will be given in the Learning Management System. Please confirm the announcement from the Learning Management System.
The students will be asked to submit projects on the basic machine learning problems and consider their own solutions. The students will be encouraged not only to learn the knowledge but also to think about how it can be used to solve real problems.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction	What is machine learning? What is supervised learning? What is unsupervised learning?
2	Linear regression with one variable	Model representation, cost function, gradient descent for linear regression.
3	Linear regression with multiple variables	Multiple features, gradient descent for multiple variables.
4	Logistic regression	Classification, hypothesis representation, cost function,
5	Regularization	The problem of overfitting, regularized linear regression.
6	Neural networks	Non-linear hypotheses, neurons and the brain, model representation.
7	Back-propagation algorithm.	Back-propagation algorithm, gradient checking, random initialization.
8	Machine learning system design	Examples of implementing machine learning system.
9	Meta learning	Introduction and case study of meta learning
10	Reinforcement learning	Introduction of reinforcement learning
11	Anomaly detection	Introduction and case study of anomaly detection
12	Network compression	Introduction and examples of network compression
13	More examples and summary	Introduce more examples and summarize the lecture
14	Project presentation	Students report their projects.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework and final presentation.

【Textbooks】
Handouts and prints will be distributed.

【References】
Ian Goodfellow, "Deep learning".

【Grading criteria】
Homeworks 30% + Final report 70%

【Changes following student comments】
None in particular.

COT500D1（計算基盤 / Computing technologies 500）

Special Lecture on Advanced Integrated Science and Technology 1

余　恪平

Subtitle：Smart Grid Communications
Term：秋 学 期 授 業/Fall ｜ Term：秋 学 期 授 業/Fall ｜
Credit(s)：2
Day/Period：火3/Tue.3 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
The smart grid will transform the way power is delivered, consumed, and accounted for. Adding intelligence through the newly networked grid will increase reliability and power quality, improve responsiveness, increase efficiency, and provide a platform for new applications. The objective of this course is to provide useful background on advanced data communication and networking mechanisms, models for networked control, and security mechanisms for the smart grid.

【Goal】
It is intended that students acquire some concepts of communications in the smart grid. Therefore, some relevant topics in the context of communication networks will be studied, along with some relevant topics in the generation, transmission, and distribution of energy. Students will become aware of the characteristics of smart grid applications supported by communication networks, as well as the communication infrastructure in the smart grid. The students will be able to select the relevant access technology according to the envisaged application. They should also acquire knowledge about the most relevant communication protocols, including those that support the communications necessary for smart metering and distribution automation.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The syllabus topics will be presented in detail, in terms of fundamental concepts and principles, complemented by the resolution of practical exercises to help students consolidate their knowledge. Different work themes will be proposed to students, depending on their specialization, to carry out during the semester. The outcome of those works should be a report and oral presentation at the end of the semester, followed by a group discussion in which the student's participation will be duly considered.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Communication networks in smart grid: an architectural view	Smart grid conceptual model. Smart grid communication infrastructures. Security and privacy in the communications infrastructure for smart grid. Open issues and future research directions.
2	New models for networked control in smart grid	Information in today's power system management operations. Enhanced smart grid measuring functionalities. Demand-side management and demand response: the key to distribute cheap and green electrons.
3	Demand-side management for smart grid: opportunities and challenges	System model. Energy-consumption scheduling model. Energy-consumption control model using utility functions.
4	Vehicle-to-grid systems: ancillary services and communications	Ancillary services in V2G systems. V2G system architectures. V2G systems communications. Challenges and open research problems.
5	Communications and access technologies for smart grid	Communications media. Power-line communication standards. Wireless standards. Networking solutions.
6	Machine-to-machine communications in smart grid	M2M communications technologies. M2M applications. M2M architectural standards bodies. M2M application in smart grid.
7	Bad-data detection in smart grid: a distributed approach	Distributed state estimation and bad-data processing: state-of-the-art. Fully distributed bad-data detection. Case study.
8	Distributed state estimation: a learning-based framework	Background. State estimation model. Learning-based state estimation.
9	Networking technologies for wide-area measurement applications	Components of a wide-area measurement system. Communication networks for WAMS. WAMS applications. WAMS modelling and network simulations.
10	Wireless networks for smart grid applications	Smart grid application requirements. Network topologies. Deployment factors. Performance metrics and tradeoffs.
11	Wireless sensor networks for smart grid: research challenges and potential applications	WSN-based smart grid applications. Research challenges for WSN-based smart grid applications.
12	Sensor techniques and network protocols for smart grid	Sensors and sensing principles. Communication protocols for smart grid. Challenges for WSN protocol design in smart grid.
13	Potential methods for sensor and actuator networks for smart grid	Energy and information flow in smart grid. SANET in smart grid. Proposed mechanisms. Home energy–management system – case study of SANET in SG.

14	Implementation and performance evaluation of wireless sensor networks for smart grid	Constrained protocol stack for smart grid. Implementation. Performance evaluation.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework (reports and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
Ekram Hossain, Zhu Han, H. Vincent Poor, Smart Grid Communications and Networking, Cambridge University Press, 2012, ISBN: 9781107014138.

【Grading criteria】
Homework 50% + Final Presentation 50%

【Changes following student comments】
None in particular.

COT500D1（計算基盤 / Computing technologies 500）

Special Lecture on Advanced Integrated Science and Technology 2

余　恪平

Subtitle：Info-Telecommunication and International Standardization
Term：春学期授業/Spring ｜ Term：春学期授業/Spring ｜ Credit(s)：2
Day/Period：火4/Tue.4 ｜ Campus：小金井 / Koganei
Grade：
Notes：
その他属性：

【Outline and objectives】
Standardization has become a key business process in the ICT industry. It enables common components, provides the platform technologies, unlocks a global market with all the attendant economies of scale. This course is introduced first to the key concepts of standards and standardization, different elements of the ecosystem and how they interact, as well as the procedures required for the production of standardization documents. Then, students are taken to the next level by addressing aspects related to standardization such as innovation, strategy, business, and economics. Finally, it will prospect the standardization of ICN.

【Goal】
This course is an attempt to make ICT standardization accessible and understandable to students.

【Which item of the diploma policy will be obtained by taking this class?】

【Method(s)】
The lectures will be given in a highly interactive manner. The students will be asked to discuss the fundamental ICT standardization principles and practices. Most homework assignments will be on open questions without standard answers. The students will be encouraged not only to learn the knowledge but also to think about how it can be used.

【Active learning in class (Group discussion, Debate.etc.)】
あり / Yes

【Fieldwork in class】
あり / Yes

【Schedule】授業形態：対面/face to face

No.	Theme	Contents
1	Introduction to Standards	Basics of standardization. Benefits and risks of standardization. Standardization landscape. The standardization process at a glance. Using standards.
2	The Standards Ecosystem	Types of organizations and standardization documents. National, regional and international standardization. Adoption/Transposition of standards. Types of documents produced by SDOS. Naming conventions for standardization documents.
3	The Production of Standards	The standardization scene. Roles and competencies of a standardization expert. Activities of a standardization expert. Case study.
4	Standardization and Innovation	Interdependencies between standardization and innovation. Research and standardization. Formal standardization: a driver for innovation.
5	A Strategic Perspective on Standardization	Different strategies for participation. Conditions and external influences. Communication within standardization activities. Choosing your standards.
6	A Business Perspective: IPR and Standardization	IPR and SDO-supported standardization: two valuable instruments. A decision-making tool: IPR vs standardization. Case study: to standardize or to patent?
7	An Economic Perspective on Standardization	The economic contribution of standards. The economic effects of standardization. Public procurement and standardization.
8	Case Study: ICN Standardization (1)	Origination and development history of ICN.
9	Case Study: ICN Standardization (2)	ICN basics.
10	Case Study: ICN Standardization (3)	Requirements and research status for ICN standardizations.
11	Case Study: ICN Standardization (4)	ICN standardizations related organizations and related activities: ITU, IRTF.
12	Case Study: ICN Standardization (5)	Draft ITU-T standardization.
13	Case Study: ICN Standardization (6)	Mock ITU-T Meeting.
14	Final Presentation	Every student gives a 10-minus presentation. In-class discussion.

【Work to be done outside of class (preparation, etc.)】
【Preparatory study and review time for this class are 4 hours each.】Homework (reports and presentation).

【Textbooks】
Handouts and prints will be distributed.

【References】
Nizar Abdelkafi, et al. Understanding ICT Standardization: Principles and Practice, tradition, 2019, ISBN-10: 3748247427.

【Grading criteria】
1. Class participation: 50%
2. Final report: 50%

【Changes following student comments】
None in particular.


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