科目コード (Code)	科目名 (Course title)	Course title (English)
10H649	高分子合成	Polymer Synthesis
10D652	高分子物性	Polymer Physical Properties
10H662	先端機能高分子	Developments in Polymer Assembly and Functionality
10H607	高分子生成論	Design of Polymerization Reactions
10H610	反応性高分子	Reactive Polymers
10H611	生体機能高分子	Biomacromolecular Science
10H613	高分子機能学	Polymer Structure and Function
10H643	高分子溶液学	Polymer Solution Science
10H622	高分子基礎物理化学	Fundamental Physical Chemistry of Polymers
10H616	高分子集合体構造	Polymer Supermolecular Structure
10H628	高分子材料設計	Design of Polymer Materials
10H647	高分子制御合成	Polymer Controlled Synthesis
10H636	医薬用高分子設計学	Polymer Design for Biomedical
10H663	生命医科学	Life and Medical Sciences
10D640	高分子化学特別実験及演習	Polymer Chemistry Laboratory & Exercise
10i061	先端マテリアルサイエンス通論（4回コース）	Introduction to Advanced Material Science and Technology(4 times course)
10i062	先端マテリアルサイエンス通論（8回コース）	Introduction to Advanced Material Science and Technology(8 times course)
10i063	先端マテリアルサイエンス通論（12回コース）	Introduction to Advanced Material Science and Technology(12 times course)
10i055	現代科学技術特論（4回コース）	Advanced Modern Science and Technology(4 times course)
10i056	現代科学技術特論（8回コース）	Advanced Modern Science and Technology(8 times course)
10i060	現代科学技術特論（12回コース）	Advanced Modern Science and Technology(12 times course)
10H042	有機金属化学２	Organotransition Metal Chemistry 2
10H818	先端有機化学	Advanced Organic Chemistry
10D837	Supramolecular Chemistry	Supramolecular Chemistry
10D043	先端科学機器分析及び実習I	Instrumental Analysis,Adv.I
10D046	先端科学機器分析及び実習II	Instrumental Analysis,Adv.II
10i045	実践的科学英語演習Ｉ	Exercise in Practical Scientific English I
10i010	工学研究科国際インターンシップ１	International Internship in Engineering 1
10i011	工学研究科国際インターンシップ２	International Internship in Engineering 2
10i049	エンジニアリングプロジェクトマネジメント	Project Management in Engineering
10i059	エンジニアリングプロジェクトマネジメント演習	Exercise on Project Management in Engineering
88G101	研究倫理・研究公正（理工系）	Research Ethics and Integrity(Scienceand Technology)
88G103	研究倫理・研究公正（生命系）	Research Ethics and Integrity(LifeScience)
88G201	学術研究のための情報リテラシー基礎	Basics of Academic Information Literacy
88G301	大学院生のための英語プレゼンテーション	Presentation for Graduate Students

未更新

Numbering code			
Course title <English>	高分子合成 Polymer Synthesis	Affiliated department, Job title,Name	Graduate School of Engineering Professor,AKIYOSHI KAZUNARI Graduate School of Engineering Professor,OOUCHI MAKOTO Graduate School of Engineering Professor,TANAKA KAZUO Graduate School of Engineering Associate Professor,TERASHIMA TAKAYA Graduate School of Engineering Assistant Professor,SAWADA SHINICHI Graduate School of Engineering Associate Professor,YOSHIHIRO SASAKI Graduate School of Engineering Assistant Professor,GON MASAYUKI Graduate School of Engineering Senior Lecturer,LANDENBERGER, Kira Beth

Target year		Number of credits	1.5	Course offered year/period	2019/First semester
Day/period	Wed.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,

[Class requirement]

None

Continue to 高分子合成(2)↓↓↓

高分子合成(2)

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子物性 Polymer Physical Properties	Affiliated department, Job title,Name	Graduate School of Engineering Professor,NAKAMURA YOU Graduate School of Engineering Professor,TAKENAKA MIKIHITO Graduate School of Engineering Professor,KOGA TSUYOSHI Graduate School of Engineering Assistant Professor,TAMAI YASUNARI

Target year		Number of credits	3	Course offered year/period	2019/First semester
Day/period	Thu.1,2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

A concise explanation is given of physical properties of polymer solutions and polymeric solids along with relevant basic theories.

[Course Goals]

Fundamental knowledge of physical properties of polymer materials.

[Course Schedule and Contents]

Polymer Chain Conformation in Dilute Solutions,4times,After a clarification of basic factors which determine the conformations of real polymer chains in dilute solutions, some polymer chain models are introduced to describe the equilibrium conformational behavior of the real chains. Further, behavior of average chain dimensions as a functions of molecular weight is considered based on the chain models.
Thermodynamics and Phase Behavior of Polymer Solutions,4times,Various phase transition phenomena in polymer solutions (phase separation, hydration, association, gelation, etc.) are systematically explained from thermodynamic and statistical-mechanical viewpoints. Phase separation of polymer solutions, Aqueous polymer solutions, and Association and gelation of polymers are discussed in the lectures.
Exercise,1time,Exercise in polymer solutions.
Structure and Mechanical Properties of Polymeric Solids,5times,Polymeric solids such as rubber and plastics, especially thermodynamics of rubber elasticity, polymer crystallization and crystalline/amorphous higher-order structures, are discussed. Moreover, fundamentals of viscoelastic properties of polymers are introduced to provide the understandings of relaxation phenomena such as glass transition.
Electronic and Optical Properties of Polymeric Solids,5times,The electronic and optical properties of polymers is reviewed. The application of polymer materials in the opto-electronics and display devices is also presented.
Exercise,1time,Exercise in polymeric solids.

[Class requirement]

Fundamental knowledge of physical chemistry.

Continue to 高分子物性(2)↓↓↓

高分子物性(2)

[Method, Point of view, and Attainment levels of Evaluation]

Final grades will be evaluated in a comprehensive manner on the basis of attendance, reports, and examinations.

[Textbook]

Lecture notes distributed in the class.

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	先端機能高分子 Developments in Polymer Assembly and Functionality	Affiliated department, Job title,Name	Graduate School of Engineering Associate Professor,MATSUOKA HIDEKI Graduate School of Engineering Senior Lecturer,LANDENBERGER, Kira Beth

Target year		Number of credits	1.5	Course offered year/period	2019/First semester
Day/period	Mon.4	Class style	Lecture	Language	Japanese and English

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,1time,
,2times,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子生成論 Design of Polymerization Reactions	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOUCHI MAKOTO

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester
Day/period	Wed.3	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,2times,
,2times,
,2times,
,2times,
,3times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	反応性高分子 Reactive Polymers	Affiliated department, Job title,Name	Graduate School of Engineering Professor,TANAKA KAZUO

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester
Day/period	Wed.4	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,1time,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	生体機能高分子 Biomacromolecular Science	Affiliated department, Job title,Name	Graduate School of Engineering Professor,AKIYOSHI KAZUNARI Graduate School of Engineering Associate Professor,YOSHIHIRO SASAKI

Target year		Number of credits	1.5	Course offered year/period	2019/First semester
Day/period	Tue.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

, 5 times,
, 3 times,
, 3 times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	高分子機能学 Polymer Structure and Function	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOKITA HIDEO

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester

Day/period	Thu.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

In this class, optoelectronic functions of polymeric materials are discussed on the basis of photochemistry and photophysics. In particular, the importance of designing nanostructures of polymer assembly is highlighted by explaining examples of state-of-the-art applications, which include optical fibers, organic light-emitting diode, and organic solar cells.

[Course Goals]

Students will gain an understanding of the importance of polymer materials and nano-assembled structures that support polymer functions. Students will also foster their abilities to consider advanced functional materials on the basis of fundamental knowledge of polymer chemistry and photochemistry.

[Course Schedule and Contents]

Course overview (1 class)
Explanation is made of fields in contemporary society in which polymeric functional materials are actively utilized. The overall orientation of this course is also overviewed.

Conductive functions of polymers (3 classes)
Detailed explanation is made of the basic electronic properties of polymers, including conductive polymers, polymer semiconductors, etc. Functions of such polymer materials are found in the organic electronics field, including photoconductive materials and thin-film transistors.

Optical functions of polymers (3 classes)
Explanation is made of the development of optical function polymers, photoexcitation dynamics, and basic processes of photochemistry, together with optical functions used in related applications. Fundamentals concerning the optical properties of polymer materials are discussed, as well as polymer-related developments in the optics field.

Photovoltaic conversion functions of polymers (4 classes)
The importance of electron transfer is explained using as an example energy conversion in photosynthesis systems. Also described are application developments in organic photovoltaics (OPV) and organic light-emitting diodes (OLED), etc., which convert light into electricity, and electricity into light.

[Class requirement]

As prerequisites for this course, students are to have completed courses in physical chemistry and polymer chemistry in the faculty of engineering chemistry.

[Method, Point of view, and Attainment levels of Evaluation]

Reports or tests will comprise 80% of student grades, with regular class attendance and participation

Continue to 高分子機能学(2)↓↓↓

高分子機能学(2)

comprising 20%.
- Those who are absent more than half will not be credited.

[Textbook]

Copies of lecture notes will be distributed and used in classes.

[Reference books, etc.]

（Reference books）

None:

[Regarding studies out of class (preparation and review)]

Students are to review distributed copies of lecture materials and perform review study in relevant domains.

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子溶液学 Polymer Solution Science	Affiliated department, Job title,Name	Graduate School of Engineering Professor,NAKAMURA YOU

Target year		Number of credits	1.5	Course offered year/period	2019/First semester
Day/period	Fri.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

Effects of stiffness and local conformations of polymer chains on polymer solution properties observed in the light scattering and viscosity experiments are considered based on appropriate polymer chain models.

[Course Goals]

[Course Schedule and Contents]

Review,1time,Definitions of physical quantities determined from the light scattering and viscosity measurements and the theoretical formulations of those quantities.
Experiments in dilute polymer solutions,2times,Principles of the light scattering and viscosity experiments.
Polymer chain models and their statistics,2times,Static models for polymer chains: the Gaussian chain, the wormlike chain, and the helical wormlike chain. A comparison of experimental data for the mean-square radius of gyration with relevant theories.
Excluded-volume effects,2times,Intra- and intermolecular excluded-volume effects represented by the expansion factors and the second virial coefficient, respectively.
Steady-state transport properties,2times,A comparison of experimental data for the intrinsic viscosity and diffusion coefficient with relevant theories.
Dynamic properties,2times,Dynamic models for polymer chains: the Rouse-Zimm spring-bead model and the dynamic helical wormlike chain. A comparison of experimental data for the first cumulant of the dynamic structure factor with relevant theories.

[Class requirement]

Basic knowledge of polymer solutions given in the lecture Polymer Physical Properties (10D651).

[Method, Point of view, and Attainment levels of Evaluation]

Term-end examination.

[Textbook]

Lecture note distributed in the class.

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子基礎物理化学 Fundamental Physical Chemistry of Polymers	Affiliated department, Job title,Name	Graduate School of Engineering Professor,KOGA TSUYOSHI Graduate School of Engineering Associate Professor,NISHIDA KOUJI

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester

Day/period	Fri.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

Molecular mechanism of characteristic physical properties of polymeric systems is lectured on the basis of the equilibrium and non-equilibrium statistical mechanics. Main topics are phase separation of polymer solutions and mixtures, microphase separation of block copolymers, gelation, rubber elasticity, and rheology of physical gels.

[Course Goals]

Understanding the molecular mechanism of characteristic physical properties of polymeric systems based on the equilibrium and non-equilibrium statistical mechanics.

[Course Schedule and Contents]

phase separation of polymer solutions and mixtures,3times,phase diagram, Flory-Huggins theory, mean-field theory, phase separation, spinodal decomposition
microphase separation of block copolymers,3times,microphase separation, density functional theory, directed self-assembly
structure and property of polyelectrolyte solution,2times,electrostatic interaction between polyions, screening effects, dilute and semi-dilute solutions
vibrational mode and spectroscopy of polymer solid,2times,vibration of continuous medium, vibration of polymer chain, spectroscopic experiment

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

P.J. Flory, Principles of Polymer Chemistry (Cornell Univ. Press, New York, 1955)\ M. Rubinstein, R.H. Colby, Polymer Physics (Oxford Univ. Press, New York, 2003)

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子集合体構造 Polymer Supermolecular Structure	Affiliated department, Job title,Name	Graduate School of Engineering Professor,TAKENAKA MIKIHITO

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester
Day/period	Tue.3	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

Polymers self-assemble or self-organize by intra- and/or intermolecular interaction to form assembled structures of polymer molecules. Such structures are closely related to the properties of the polymeric materials, it is necessary to control the assembled structures of the constituent polymer molecules in order to control the properties of polymeric materials, especially solid materials. In this lecture particularly, formation mechanisms, analytical techniques, and elucidated structures of crystalline polymers, phase-separated structures of polymer mixtures, microphase-separated structures of block and graft copolymers will be discussed.

[Course Goals]

This course aims for the development of the faculty to infer the properties of polymeric materials from their morphology based on the knowledge of structure-property relationships of higher-order structures of crystalline polymers, phase-separated structures of polymer mixtures (blends), microdomain stuctures of block copolymers, etc.

[Course Schedule and Contents]

Self-assembly and Self-organization,1time,The differences between self-assembly and self-organization will be discussed by referring the examples in natural phenomena and polymeric systems.
Crystalline Polymers,3times,In the lectures, unit cell structures and hierarchical higher-order structures of polymer crystals such as folded-chain lamellar crystals and spherulites, as well as deformation and thermal behavior of polymer crystals will be discussed.
Polymer Blends,3times,Miscibility, phase-diagrams, mechanisms and dynamics of phase transitions, relationships between phase-separated structures and properties, methods to control the phase-separated structures will be discussed.
Block and Graft Copolymers,3times,The lectures include nano-scale domain formation of block copolymers by microphase-separation, miscibility and phase diagrams, order-disorder and order-order transitions, bicontinuous structures, structure formation in thin films, blends with homopolymers or other block copolymers, multi-component multi-block copolymers, miktoarm star block copolymers, and more.
Evaluation of Degree of Understandings,1time,Degree of understandings of the lectures will be evaluated by means of a short test and group discussions.

[Class requirement]

Thermodynamics preferable.

Continue to 高分子集合体構造(2)↓↓↓

高分子集合体構造(2)

[Method, Point of view, and Attainment levels of Evaluation]

The grading is based on the short tests and report assignments.

[Textbook]

Not used.

[Reference books, etc.]

（Reference books）

Introduced in the lectures.

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子材料設計 Design of Polymer Materials	Affiliated department, Job title,Name	Institute for Chemical Research Professor,TSUJII YOSHINOBU Institute for Chemical Research Associate Professor,OONO KOUJI

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester

Day/period	Tue.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

This course aims at better understanding of fundamentals on living radical polymerization and describes its application to graft polymerization for novel surface modification as well as its related matters.

[Course Goals]

[Course Schedule and Contents]

Introduction to radical polymerization,1time,radical polymerization, mechanism, kinetics, elementary reaction
Fundamentals on living radical polymerization and its application to material design,2times,living radical polymerization, mechanism, kinetics, functional polymer, material design
Physical chemistry on surfaces and polymer brushes,2times,Surface, interface, physical chemistry, polymer brush, theory, structure, property
Living radical polymerization and polymer particles,2times,Living radical polymerization, surface-initiated polymerization, polymer brush, hairy particle, star polymer
Synthesis of polymer particles by radical polymerizations,2times,Emulsion polymerization, suspension polymerization, dispersion polymerization, precipitation polymerization, self-organized precipitation, nonspherical particle
Applications of polymer particles,2times,Self-assembly, dispersion and aggregation, depletion force, pickering emulsion, composites, biochemical and biomedical applications

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

Continue to 高分子材料設計(2)↓↓↓

高分子材料設計(2)

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子制御合成 Polymer Controlled Synthesis	Affiliated department, Job title,Name	Institute for Chemical Research Professor,YAMAGO SHIGERU Institute for Chemical Research Associate Professor,TOSAKA MASATOSHI

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester
Day/period	Tue.4	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,2times,
,2times,
,1time,
,1time,
,4times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

Numbering code	G-ENG15 6H636 LJ61		
Course title <English>	医薬用高分子設計学 Polymer Design for Biomedical	Affiliated department, Job title,Name	Institute for Frontier Life and Medical Sciences Professor,TABATA YASUHIKO

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester

Day/period	Mon.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

外科および薬物治療、予防、診断など、現在の医療現場では、種々の生体吸収性および非吸収性の高分子材料が用いられている。本講では、これらの材料を設計する上で必要となる材料学的基礎と生物、薬学、医学的な基礎事項について講述する。さらに、高分子材料を用いたドラッグデリバリーシステム(DDS)あるいは再生医療への応用についても概説する。

[Course Goals]

バイオマテリアルとは何か、医薬用高分子設計学におけるバイオマテリアル技術の役割が理解できる。

[Course Schedule and Contents]

概論(1回)
現在の外科・内科治療で用いられている材料について、具体例を示しながら概説するとともに、授業全体の流れと扱う内容について説明する。人工血管、人工腎臓、人工肝臓、創傷被覆材、生体吸収性縫合糸などの実物を見ることによって、高分子材料が大きく医療に貢献していることを実感してもらう。

生体吸収性および非吸収性材料(2回)
医療に用いられている生体吸収性および非吸収性高分子、ならびに金属やセラミックスなどの材料について説明する。

医薬用高分子設計のための生物医学の基礎知識(2回)
医薬用高分子材料を設計する上で必要となる材料と生体との相互作用を理解するための最低限の基礎知識、すなわちタンパク質、細胞、組織などについて説明する。

抗血栓性材料(1回)
血液がかたまらない性質（抗血栓性）をもつ材料を説明することによって、生体と材料との相互作用についての理解を深めるとともに、材料の研究方法と設計方法を学ぶ。

生体適合性材料(1回)
細胞がなじむ（細胞親和性）や組織になじむ（組織適合性）をもつ材料を説明することによって、生体と材料との相互作用についての理解を深め、材料の研究方法と設計方法を学ぶ。

ドラッグデリバリーシステム(DDS)のための生物薬学の基礎知識(1回)
ドラッグデリバリーシステム(DDS)のための材料設計を行う上で必要となる最低限の医学、薬学知識について説明する。

ドラッグデリバリーシステム(DDS)(2回)
薬の徐放化、薬の安定化、薬の吸収促進、および薬のターゲティングなどのDDSの具体例を示しな

Continue to 医薬用高分子設計学(2)↓↓↓

医薬用高分子設計学(2)

がら、DDSのための材料の必要性を理解させ、材料の研究方法や設計方法を学ぶ。

再生医療(1回)
再生誘導治療（一般には再生医療と呼ばれる）の最前線について説明する。再生医療には細胞移植による生体組織の再生誘導と生体吸収性材料とDDSとを組み合わせて生体組織の再生を誘導する（生体組織工学、Tissue Engineering）の2つがある。この2つの再生医療における材料学の重要な役割について説明する。

[Class requirement]

京都大学工学部工業化学科「高分子化学基礎I（創成化学）」程度の高分子合成と物性に関する入門的講義の履修を前提としている.

[Method, Point of view, and Attainment levels of Evaluation]

授業の出席回数と期末試験の結果に基づいて判定する.

[Textbook]

授業で配布する講義プリントを使用する.

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

特になし

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	生命医科学 Life and Medical Sciences	Affiliated department, Job title,Name	Institute for Frontier Life and Medical Sciences Professor,EIRAKU GENJI Institute for Frontier Life and Medical Sciences Associate Professor,OHGUSHI MASATOSHI

Target year		Number of credits	1.5	Course offered year/period	2019/First semester

Day/period	Mon.2	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,3times,
,4times,
,2times,
,1time,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	高分子化学特別実験及演習 Polymer Chemistry Laboratory & Exercise	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOUCHI MAKOTO

Target year		Number of credits	8	Course offered year/period	2019/Intensive, year-round
Day/period	Intensive	Class style	Experiment	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,60times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	先端マテリアルサイエンス通論（4回コース） Introduction to Advanced Material Science and Technology (4 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	0.5	Course offered year/period	2019/First semester

Day/period	Fri.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

The various technologies used in the field of material science serve as bases for so-called high technologies, and, in turn, the high technologies develop material science. These relate to each other very closely and contribute to the development of modern industries. In this class, recent progresses in material science are briefly introduced, along with selected current topics on new biomaterials, nuclear engineering materials, new metal materials and natural raw materials. The methods of material analysis and future developments in material science are also discussed.

[Course Goals]

To expand your field of vision for material science and to acquire accomplishments to identify the importance of technologies through the classes for developments in material science.

[Course Schedule and Contents]

Topic I Organic Materials
Week 1, Tumor imaging and therapy through photoirradiation
Week 2, Carbon nanorings
Week 3, Synthesis of novel pai-conjugated molecules with main group elements
Week 4, Chemistry of asymmetric catalysis - stereoselective synthesis of opically active pharmaceutical compounds -
Topic II Inorganic Materials
Week 5, Properties of cementitious materials and the future
Week 6, Application of electrical discharge to material and environmental technology
Week 7, Theory of precision cuting, grinding, polishing and related properties of materials
Week 8, Fabrication of inorganic nanofiber by electrospinning
Topic III Polymeric Materials
Week 9-10, Electrical conductivity of conjugated polymers and application to organic Electronics
Week 11-12, An introduction to smart shape changing materials

[Class requirement]

Each topic consists of four lectures.
This course requests to choose one topic from provided three topics in advance.
It is prohibited to change the topic after registration.
We may select students who can attend the class before starting the class.
Students who intend to join the course are required to submit the application form through the web site which will be informed in the advance.

Continue to 先端マテリアルサイエンス通論（4回コース）(2)↓↓↓

先端マテリアルサイエンス通論（4回コース）(2)

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments is employed.
For the topic which the students chose, they must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

[Textbook]

Course materials will be provided.

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.
It is prohibited to attend the lectures of the other topics than the students chose.
All the students are requested to attend the guidance which will be held on the first class.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	先端マテリアルサイエンス通論（8回コース） Introduction to Advanced Material Science and Technology (8 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	1	Course offered year/period	2019/First semester

Day/period	Fri.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

The various technologies used in the field of material science serve as bases for so-called high technologies, and, in turn, the high technologies develop material science. These relate to each other very closely and contribute to the development of modern industries. In this class, recent progresses in material science are briefly introduced, along with selected current topics on new biomaterials, nuclear engineering materials, new metal materials and natural raw materials. The methods of material analysis and future developments in material science are also discussed.

[Course Goals]

To expand your field of vision for material science and to acquire accomplishments to identify the importance of technologies through the classes for developments in material science.

[Course Schedule and Contents]

Topic I Organic Materials
Week 1, Tumor imaging and therapy through photoirradiation
Week 2, Carbon nanorings
Week 3, Synthesis of novel pai-conjugated molecules with main group elements
Week 4, Chemistry of asymmetric catalysis - stereoselective synthesis of opically active pharmaceutical compounds -
Topic II Inorganic Materials
Week 5, Properties of cementitious materials and the future
Week 6, Application of electrical discharge to material and environmental technology
Week 7, Theory of precision cuting, grinding, polishing and related properties of materials
Week 8, Fabrication of inorganic nanofiber by electrospinning
Topic III Polymeric Materials
Week 9-10, Electrical conductivity of conjugated polymers and application to organic Electronics
Week 11-12, An introduction to smart shape changing materials

[Class requirement]

Each topic consists of four lectures.
This course requests to choose two topics from provided three topics in advance.
It is prohibited to change the topics after registration.
We may select students who can attend the class before starting the class.
Students who intend to join the course are required to submit the application form through the web site which will be informed in the advance.

Continue to 先端マテリアルサイエンス通論（8回コース）(2)↓↓↓

先端マテリアルサイエンス通論（8回コース）(2)

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments for each topic is employed.
For each topic which the students chose, they must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

[Textbook]

Not used

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.
It is prohibited to attend the lectures of the other topic than the students chose.
All the students are requested to attend the guidance which will be held on the first class.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	先端マテリアルサイエンス通論（12回コース） Introduction to Advanced Material Science and Technology (12 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	1.5	Course offered year/period	2019/First semester

Day/period	Fri.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

The various technologies used in the field of material science serve as bases for so-called high technologies, and, in turn, the high technologies develop material science. These relate to each other very closely and contribute to the development of modern industries. In this class, recent progresses in material science are briefly introduced, along with selected current topics on new biomaterials, nuclear engineering materials, new metal materials and natural raw materials. The methods of material analysis and future developments in material science are also discussed.

[Course Goals]

To expand your field of vision for material science and to acquire accomplishments to identify the importance of technologies through the classes for developments in material science.

[Course Schedule and Contents]

Topic I Organic Materials
Week 1, Tumor imaging and therapy through photoirradiation
Week 2, Carbon nanorings
Week 3, Synthesis of novel pai-conjugated molecules with main group elements
Week 4, Chemistry of asymmetric catalysis - stereoselective synthesis of opically active pharmaceutical compounds -
Topic II Inorganic Materials
Week 5, Properties of cementitious materials and the future
Week 6, Application of electrical discharge to material and environmental technology
Week 7, Theory of precision cuting, grinding, polishing and related properties of materials
Week 8, Fabrication of inorganic nanofiber by electrospinning
Topic III Polymeric Materials
Week 9-10, Electrical conductivity of conjugated polymers and application to organic Electronics
Week 11-12, An introduction to smart shape changing materials

[Class requirement]

Each topic consists of four lectures.
This course requests to take all provided three topics.
We may select students who can attend the class before starting the class.
Students who intend to join the course are required to submit the application form through the web site which will be informed in the advance.

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments for each topics is employed.
For each topic, the students must attend minimum three lectures and submit minimum two assignments

Continue to 先端マテリアルサイエンス通論（12回コース）(2)↓↓↓

evaluated as "passed".

[Textbook]

Not used

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	現代科学技術特論（4回コース） Advanced Modern Science and Technology (4 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	0.5	Course offered year/period	2019/Second semester
Day/period	Thu.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

Engineering/Engineers have been expected to fulfill key roles among social issues and others, such as energy, environment and resource. This class introduces cutting edge science and technologies from their backgrounds, research and development, to problems for the practical applications. Group discussions will be done for further understanding of the topics of the course.

[Course Goals]

The students understand of each technology towards social issues to be solved by engineers. In addition, the students learn the importance for engineers to have multidisciplinary mind and understand the significance of engineering to realize sustainable development.

[Course Schedule and Contents]

Topic I Computer-Aided Analyses for Fluid
Week 1-2, Lagrangian Meshfree Methods as New Generation Computational Tools
Week 3, CFD in Process Systems Engineering
Week 4, CFD in Hydraulic Engineering
Topic II Utilization of Light Energy
Week 5-6, Photochemistry of Organic Molecules
Week 7, Solar Energy Conversion Using Semiconductor Photocatalysts
Week 8, Efficiency Improvement in Solar Cells by Photonic Nano Structures
Topic III Materials Analysis
Week 9-10,Crystal Structure Analysis by Power X-ray Diffraction Measurement
Week 11-12, Principles and Applications of Fluorescence Spectroscopy

[Class requirement]

Each topic consists of four lectures.
This course requests to choose one topic from provided three topics in advance.
It is prohibited to change the topic after registration.

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments is employed.
For the topic which the students chose, they must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

Continue to 現代科学技術特論（4回コース）(2)↓↓↓

現代科学技術特論（4回コース）(2)

[Textbook]

Course materials will be provided.

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.
It is prohibited to attend the lectures of the other topics than the students chose.
All the students are requested to attend the guidance which will be held on the first class.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	現代科学技術特論（8回コース） Advanced Modern Science and Technology (8 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	1	Course offered year/period	2019/Second semester
Day/period	Thu.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

Engineering/Engineers have been expected to fulfill key roles among social issues and others, such as energy, environment and resource. This class introduces cutting edge science and technologies from their backgrounds, research and development, to problems for the practical applications. Group discussions will be done for further understanding of the topics of the course.

[Course Goals]

The students understand of each technology towards social issues to be solved by engineers. In addition, the students learn the importance for engineers to have multidisciplinary mind and understand the significance of engineering to realize sustainable development.

[Course Schedule and Contents]

Topic I Computer-Aided Analyses for Fluid
Week 1-2, Lagrangian Meshfree Methods as New Generation Computational Tools
Week 3, CFD in Process Systems Engineering
Week 4, CFD in Hydraulic Engineering
Topic II Utilization of Light Energy
Week 5-6, Photochemistry of Organic Molecules
Week 7, Solar Energy Conversion Using Semiconductor Photocatalysts
Week 8, Efficiency Improvement in Solar Cells by Photonic Nano Structures
Topic III Materials Analysis
Week 9-10,Crystal Structure Analysis by Power X-ray Diffraction Measurement
Week 11-12, Principles and Applications of Fluorescence Spectroscopy

[Class requirement]

Each topic consists of four lectures.
This course requests to choose two topics from provided three topics in advance.
It is prohibited to change the topics after registration.

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments for each topic is employed.
For each topic which the students chose, they must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

Continue to 現代科学技術特論（8回コース）(2)↓↓↓

現代科学技術特論（8回コース）(2)

[Textbook]

Course materials will be provided.

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.
It is prohibited to attend the lectures of the other topic than the students chose.
All the students are requested to attend the guidance which will be held on the first class.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	現代科学技術特論（12回コース） Advanced Modern Science and Technology (12 times course)	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	1.5	Course offered year/period	2019/Second semester
Day/period	Thu.5	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

Engineering/Engineers have been expected to fulfill key roles among social issues and others, such as energy, environment and resource. This class introduces cutting edge science and technologies from their backgrounds, research and development, to problems for the practical applications. Group discussions will be done for further understanding of the topics of the course.

[Course Goals]

The students understand of each technology towards social issues to be solved by engineers. In addition, the students learn the importance for engineers to have multidisciplinary mind and understand the significance of engineering to realize sustainable development.

[Course Schedule and Contents]

Topic I Computer-Aided Analyses for Fluid
Week 1-2, Lagrangian Meshfree Methods as New Generation Computational Tools
Week 3, CFD in Process Systems Engineering
Week 4, CFD in Hydraulic Engineering
Topic II Utilization of Light Energy
Week 5-6, Photochemistry of Organic Molecules
Week 7, Solar Energy Conversion Using Semiconductor Photocatalysts
Week 8, Efficiency Improvement in Solar Cells by Photonic Nano Structures
Topic III Materials Analysis
Week 9-10,Crystal Structure Analysis by Power X-ray Diffraction Measurement
Week 11-12, Principles and Applications of Fluorescence Spectroscopy

[Class requirement]

Each topic consists of four lectures.
This course requests to take all provided three topics.

Continue to 現代科学技術特論（12回コース）(2)↓↓↓

現代科学技術特論（12回コース）(2)

[Method, Point of view, and Attainment levels of Evaluation]

The average score of the best two assignments for each topics is employed.
For each topic, the students must attend minimum three lectures and submit minimum two assignments evaluated as "passed".

[Textbook]

Course materials will be provided.

[Reference books, etc.]

（Reference books）

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

It is prohibited to change the registered course.

*Please visit KULASIS to find out about office hours.

Numbering code	G-ENG13 6H042 LJ60　G-ENG12 6H042 LJ60　G-ENG15 6H042 LJ60

Course title <English>	有機金属化学２ Organotransition Metal Chemistry 2	Affiliated department, Job title,Name	Graduate School of Engineering Professor,NAKAO YOSHIAKI Graduate School of Engineering Professor,MURAKAMI MASAHIRO Graduate School of Engineering Professor,KONDOU TERUYUKI Graduate School of Engineering Professor,OOUCHI MAKOTO Graduate School of Engineering Associate Professor,MIKI KOUJI Graduate School of Engineering Associate Professor,KURAHASHI TAKUYA Graduate School of Engineering Associate Professor,FUJIHARA TETSUAKI

Target year		Number of credits	1.5	Course offered year/period	2019/First semester

Day/period	Fri.1	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

遷移金属錯体の合成法、構造的特徴、および重要な素反応と、それらの反応機構について解説する。また、隔年開講の「有機金属化学１」と連続的に講義を進め、遷移金属錯体を用いる触媒反応の有機合成化学、有機工業プロセスへの応用について解説する。

[Course Goals]

遷移金属錯体の化学についての基礎知識を習得する。また、それぞれの遷移金属錯体に特徴的な触媒反応の有機合成化学、有機工業プロセスへの応用について理解する。

[Course Schedule and Contents]

遷移金属錯体 I～III(3回)
① 遷移金属錯体の構造（形式酸化数、１８電子則、配位子の種類、ハプト数など），② 遷移金属錯体の反応（配位子置換反応、酸化的付加、還元的脱離、トランスメタル化など）
③ 遷移金属錯体の反応（挿入、脱離、配位子に対する求核剤の反応、酸化的環化など）

不飽和結合の反応 I～III(3回)
① ヒドロシアノ化、ヒドロアミノ化、ヒドロメタル化、カルボメタル化反応など。
② アルキン多量化、Pauson-Khand 反応、骨格異性化など
③ アルキンやアルケンの求電子的活性化を経る反応、カルベン錯体の反応、メタセシス

カップリング反応 I,II(2回)
① C-C 結合形成（酸化的カップリング、還元的カップリング、クロスカップリング、辻ートロスト型反応）、C-ヘテロ元素結合形成（C-O, C-N, C-B, C-Si 形成,
② C-C 結合形成（ヘック反応、藤原-守谷反応、C-H アリール化）

不活性結合活性化(1回)
C-H活性化（村井反応、ホウ素化、ヒドロアシル化、カルベン・ナイトレン挿入など）、C-C 活性化

重合(1回)

Continue to 有機金属化学２ (2)↓↓↓

有機金属化学２ (2)

配位重合、メタセシス重合、リビングラジカル重合、クロスカップリング重合

工業的反応(1回)
Reppe **反応、ヒドロホルミル化、**Fischer-Tropsch **法、**Monsant **法、アルコールの空気酸化、ワッカー酸化など**

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

学期末に行う筆記試験にて評価する。

[Textbook]

Not used

[Reference books, etc.]

（Reference books）
山本明夫『有機金属化学－基礎と応用』（裳華房 (1982)）
From Bonding to Catalysis, John F『Organotransition Metal Chemistry』（Hartwig, University Science Books (2010)）
山本明夫『有機金属化学－基礎から触媒反応まで』（東京化学同人 (2015)）
小澤文幸，西山久雄『有機遷移金属化学』（朝倉書店 (2016)）

[Regarding studies out of class (preparation and review)]

必要に応じて指示する

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	先端有機化学 Advanced Organic Chemistry	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOE KOUICHI Graduate School of Engineering Associate Professor,MIURA TOMOYA Graduate School of Engineering Associate Professor,NAGAKI AIICHIROU Institute for Chemical Research Associate Professor,TAKAYA HIKARU Graduate School of Engineering Associate Professor,KIMURA YUU

Target year		Number of credits	1.5	Course offered year/period	2019/First semester
Day/period	Tue.1	Class style	Lecture	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

Chemoselectivity,2times,Introduction and chemoselectivity
Regioselectivity,2times,Controlled Aldol Reactions
Stereoselectivity,2times,Stereoselective Aldol Rections
Strategies ,2times,Alternative Strategies for Enone Synthesis
Choosing a Strategy,2times,The Synthesis of Cyclopentenones
Summary ,2times,Summary and outlook

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

Numbering code	G-ENG15 6D837 LJ61 G-ENG16 6D837 LJ61		
Course title <English>	Supramolecular Chemistry Supramolecular Chemistry	Affiliated department, Job title,Name	Graduate School of Engineering Associate Professor,Juha Lintuluoto Graduate School of Engineering Senior Lecturer,LANDENBERGER, Kira Beth

Target year		Number of credits	2	Course offered year/period	2019/Second semester
Day/period	Tue.4	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

This course is open to all master and doctoral engineering students. The aim is to enhance students' knowledge of non-covalent molecular interactions found in both synthetic and natural chemical compounds and materials. Additionally, students learn how to choose methods to study and observe non-covalent molecular interactions, and how to measure and evaluate them quantitatively. Throughout the course feedback will be given by instructors. The course will also improve students to gain confidence in studying English of supramolecular topics. The course contents are suitable for a wide variety of chemistry students.

[Course Goals]

Understanding the nature and types of supramolecular interactions, and applying them into various chemical, biological and other materials applications.

[Course Schedule and Contents]

1.Course Introduction & Interactions and methods in Supramolecular Chemistry: Non covalent interactions (H-bonding, pi-pi;lone-pairs and metals, ionic), spectrometric methods (NMR, UV-vis, Fluorescence, CD, Mass) Oct.1

2.Binding Constants, Cooperativity, Complementarity, Preorganization Equilibrium systems, enthalpy and entropy upon binding, quantitative analysis Oct.8

3.Cation Binding with Current Examples Cation binding, binding into anionic host molecules and neutral host molecules Oct.15

4.Anion Binding with Current Examples Anion binding, binding into cationic host molecules, and neutral host molecules Oct.29

5.Neutral molecule binding and Self-Assembly with Current Examples Neutral molecule binding into neutral or charged host molecules, self-binding molecules Nov.5

6.Supramolecular Devices, Sensors and Catalysis with Current Examples Electron transfer, energy transfer, information transfer in supramolecules Nov.12

7. Microcalorimetry Isothermal titration calorimetry to analyze binding thermodynamics of biomolecules. Differential scanning calorimetry to analyze folding thermodynamics of proteins. Nov.19* Lecturer Prof. Oda, Kyoto Prefectural University

8. Crystal Engineering I Crystal engineering, crystal classes, crystal nucleation and growth, commonly found

Continue to Supramolecular Chemistry (2)↓↓↓

Supramolecular Chemistry (2)

intermolecular interactions Nov.26

9. Crystal Engineering II Polymorphism, hydrates and solvates, cocrystals, crystal structure prediction Dec.3

10. Network Solids Zeolites, intercalates, coordination polymers (e.g. MOFs or COFs) Dec.10

11,12. Solid State Inclusion Compounds 1& II Clathrates (structures and applications), catenanes, rotaxanes, cyclodextrins, helicates and helical assemblies, molecular knots and beyond Dec.17* Douple lecture

13. Liquid Crystals Nature and structure of liquid crystals, applications and design, polymeric liquid crystals Jan.7

14.Supramolecular Polymers, Gels and Fibers Supramolecular polymer structure and design, properties, kinetics and reaction mechanics of supramolecular polymers, applications Jan.21

[Class requirement]

Active engagement in lectures, which provide basis for the reports required in this course. Each student is required to submit 4 chosen reports on any given topics during the course.

If you have any concerns or questions regarding the course, please do not hesitate to contact (075)- 383-7065 or landenberger.kirabeth.2x@kyoto-u.ac.jp or (075)-383-2876 or lintuluoto.juhamikael.7u@kyoto-u.ac.jp .

[Method, Point of view, and Attainment levels of Evaluation]

Evaluation: 20% participation (engaging the classes and activity), 80% reports.
*More than 3 unexcused absence can result in course failure.

[Textbook]

Not fixed

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

Students should fulfill the report tasks out of class time (home work).

Continue to Supramolecular Chemistry (3)↓↓↓

Supramolecular Chemistry (3)

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	先端科学機器分析及び実習Ⅰ Instrumental Analysis,Adv.I	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOE KOUICHI

Target year		Number of credits	1	Course offered year/period	2019/First semester
Day/period	Thu.4,5	Class style	Seminar	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,1time,
,1time,
,1time,
,1time,
,1time,
,2times,
,2times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	先端科学機器分析及び実習II Instrumental Analysis,Adv.II	Affiliated department, Job title,Name	Graduate School of Engineering Professor,OOE KOUICHI

Target year		Number of credits	1	Course offered year/period	2019/Second semester
Day/period	Thu.4,5	Class style	Seminar	Language	Japanese

[Outline and Purpose of the Course]

[Course Goals]

[Course Schedule and Contents]

,1time,
,2times,
,2times,
,2times,
,2times,
,2times,

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

[Textbook]

[Reference books, etc.]

（Reference books）

[Regarding studies out of class (preparation and review)]

（Others (office hour, etc.)）

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	実践的科学英語演習Ⅰ Exercise in Practical Scientific English I	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,NISHIKAWA MIKAKO Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU

Target year		Number of credits	1	Course offered year/period	2019/First semester
Day/period	Thu.4,5	Class style	Seminar	Language	Japanese and English

[Outline and Purpose of the Course]

This course is open to all master and doctoral engineering students.
It is designed to help students understand how to write a research paper step by step.
In this course, the students will write a short research paper (i.e. Extended Research Abstract for Proceeding. approx. 1000 -1500 words) on a topic drawn from assigned readings.

[Course Goals]

The primary goal of this course is to deepen an understanding of the main features of each part of a scientific paper (IMRaD).
Throughout the course, students will develop the core competencies required for language, grammar, and style to produce a research manuscript in English.

[Course Schedule and Contents]

Unit 1. Course Overview
Introduction to writing scientific research articles

Unit 2. Introduction
Raising awareness of the register of scientific research articles (genre, audience, purpose)

Unit 3. Preparing to Write (1)
Writing a proposal for a research paper, using corpus-based approach (Exercise: Creating own Corpus)

Unit 4. Preparing to Write (2)
Paraphrasing ideas from source texts, using citations and references in formal writing

Unit 5. Writing Processes (1) Abstract
Identifying the moves for an Abstract section by hint expressions

Unit 6. Writing Processes (2) Abstract-continued
Writing an Abstract (Title), Peer Feedback

Unit 7. Writing Processes (3) Introduction

Continue to 実践的科学英語演習Ⅰ(2)↓↓↓

実践的科学英語演習Ⅰ(2)

Identifying the moves for an Introduction section by hint expressions

Unit 8. Writing Processes (4) Introduction-continued
Writing an Introduction section, Peer Feedback

Unit 9. Writing Processes (5) Method
Writing a Method section, Peer Feedback

Unit 10. Writing Processes (6) Results
Writing a Result section, Peer Feedback

Unit 11. Writing Processes (7) Discussions and Conclusion
Writing a Discussion and a Conclusion section

Unit 12. Cover letter to reviewers
Writing a cover letter to reviewers and how to respond to reviewers

Unit 13. Monitoring and Revising (1)
Submitting the paper online to receive feedback from instructors

Unit 14. Monitoring and Revising (2)
Revising a paper based on peer feedback

Unit 15. Submission of the Final Paper

[Class requirement]

Students who intend to join this course must attend the first class.

[Method, Point of view, and Attainment levels of Evaluation]

Evaluation based on 30% participation, 40% reports, 30% final paper *More than twice unexcused absence can result in course failure

[Textbook]

Handout materials will be supplied by the instructor.

[Reference books, etc.]

（Reference books）
Textbooks (for reference)

ALESS (2012). Active English for Science-英語で科学する-レポート、論文、プレゼンテーション. The University of Tokyo Press.

野口ジュディー・深山晶子・岡本真由美.（2007）.『理系英語のライティング』. アルク

Continue to 実践的科学英語演習Ⅰ(3)↓↓↓

実践的科学英語演習Ⅰ(3)

[Regarding studies out of class (preparation and review)]

Students will need to spend a reasonable amount of time to complete their own piece of writing for the course.

（Others (office hour, etc.)）

We may restrict the class size to enhance students' learning.
Students who intend to join the course are required to attend the first-day guidance.

Office Hours: (by appointment) nishikawa.mikako7w@kyoto-u.ac.jp (Ext. 2052)

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	工学研究科国際インターンシップ１ International Internship in Engineering 1	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,NISHIKAWA MIKAKO

Target year		Number of credits	1	Course offered year/period	2019/Intensive, year-round
Day/period	Intensive	Class style	Practical training	Language	English

[Outline and Purpose of the Course]

Acquisition of international skills with the training of foreign language through the internship programs hosted by the University, the Graduate School of Engineering, or The Department the registrant belongs to.

[Course Goals]

Acquisition of international skills with the training of foreign language.

[Course Schedule and Contents]

Overseas Internship, **1** times,The contents to be acquired should be described in the brochure of each internship program.
Final Presentation, **1** times,A presentation by the student is required followed by discussion among participants.

[Class requirement]

Described in the application booklet for each internship program. The registrant is requested to have enough language skills for the participation.

[Method, Point of view, and Attainment levels of Evaluation]

Merit rating is performed based on the presentation or the report(s) after the participation in each internship program. Each department is responsible to identify the number of credits to be granted to the student of the department, if the credits are included in the mandatory ones. The Global Leadership Engineering Education Center takes the role to evaluate the credits if the department the student belongs to deals the credits as optional ones. The number of credits to be earned is 1 and 2, respectively to the subjects International Internship in Engineering 1 and 2 depending on the period and the contents of the internship program the students has participated in.

[Textbook]

Not Applicable

[Reference books, etc.]

（Reference books）
Not Applicable

Continue to 工学研究科国際インターンシップ１(2)↓↓↓

工学研究科国際インターンシップ１(2)

（Related URLs）

(Not Applicable)

[Regarding studies out of class (preparation and review)]

Not Applicable

（Others (office hour, etc.)）

It is required for students to check if the internship program to participate in could be evaluated as part of mandatory credits or not and could earn how many credits before the participation to the department or educational program the student in enrolled. If the credit could not be treated as mandatory ones, get in touch with the Global Leadership Engineering Education Center.

*Please visit KULASIS to find out about office hours.

未更新

Numbering code			
Course title <English>	工学研究科国際インターンシップ２ International Internship in Engineering 2	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,NISHIKAWA MIKAKO

Target year		Number of credits	2	Course offered year/period	2019/Intensive, year-round

Day/period	Intensive	Class style	Practical training	Language	English

[Outline and Purpose of the Course]

Acquisition of international skills with the training of foreign language through the internship programs hosted by the University, the Graduate School of Engineering, or The Department the registrant belongs to.

[Course Goals]

Acquisition of international skills with the training of foreign language. Detailed objectives should be described in each program.

[Course Schedule and Contents]

Overseas Internship, **1** times,The contents to be acquired should be described in the brochure of each internship program.
Final Presentation, **1** times,A presentation by the student is required followed by discussion among participants.

[Class requirement]

Described in the application booklet for each internship program. The registrant is requested to have enough language skills for the participation.

[Method, Point of view, and Attainment levels of Evaluation]

Merit rating is performed based on the presentation or the report(s) after the participation in each internship program. Each department is responsible to identify the number of credits to be granted to the student of the department, if the credits are included in the mandatory ones. The Global Leadership Engineering Education Center takes the role to evaluate the credits if the department the student belongs to deals the credits as optional ones. The number of credits to be earned is 1 and 2, respectively to the subjects International Internship in Engineering 1 and 2 depending on the period and the contents of the internship program the students has participated in.

[Textbook]

Not Applicable.

Continue to 工学研究科国際インターンシップ２(2)↓↓↓

工学研究科国際インターンシップ２(2)

[Reference books, etc.]

（Reference books）

Not Applicable.

（Related URLs）

(Not Applicable.)

[Regarding studies out of class (preparation and review)]

Not Applicable.

（Others (office hour, etc.)）

It is required for students to check if the internship program to participate in could be evaluated as part of mandatory credits or not and could earn how many credits before the participation to the department or educational program the student in enrolled. If the credit could not be treated as mandatory ones, get in touch with the Global Leadership Engineering Education Center.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	エンジニアリングプロジェクトマネジメント Project Management in Engineering	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU Graduate School of Engineering Associate Professor,Juha Lintuluoto

Target year		Number of credits	2	Course offered year/period	2019/First semester
Day/period	Fri.4	Class style	Lecture	Language	English

[Outline and Purpose of the Course]

This course provides a basic knowledge required for the project management in various engineering fields such as process design, plant design, construction, and R&D project. Some lectures are provided by visiting lecturers from industry and public works who have many experiences on actual engineering projects.

[Course Goals]

This course will help students gain a fundamental knowledge of what project management in engineering is. Throughout the course, students will learn various tools applied in project management. Students will also understand the importance of costs and money, risks, leadership, and environmental assessment in managing engineering projects. This course is followed with the course Exercise on Project Management in Engineering in the second semester.

[Course Schedule and Contents]

Week 1, Course guidance
Week 2-3, Introduction to project management
Week 4, Project scheduling
Week 5-7, Tools for project management, cost, and cash flows
Week 8-9, Team organization and administration
Week 10, Negotiation skills/tactics/examples in business marketing
Week 11, Environmental impact assessment
Week 12-13, Risk management
Week 14, Project management for engineering procurement construction business
Week 15, Feedback

[Class requirement]

We may restrict the class size to enhance students' learning.
Students who intend to join the course are required to attend the first class.

Continue to エンジニアリングプロジェクトマネジメント(2)↓↓↓

エンジニアリングプロジェクトマネジメント(2)

[Method, Point of view, and Attainment levels of Evaluation]

Evaluated by class contribution (or level of understanding) at each class (60%) and assignments (40%)

[Textbook]

Course materials will be provided.

[Reference books, etc.]

（Reference books）

Lock, Dennis 『Project Management, 10th edition』 （Gower Publishing Ltd.）ISBN:1409452697
Cleland, David L., and Ireland, Lewis R. 『Project Management: Strategic Design and Implementation, 5th edition』 （McGraw-Hill Professional）ISBN:007147160X
Miller, Roger and Lessard, Donald R. 『The strategic management of large engineering projects, Shaping Institutions, Risks, and Governance』 （The MIT Press）ISBN:9780262526982

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

This course requests students to prepare a class in advance becouse some classes will be done by an interactive style as necessary.

（Others (office hour, etc.)）

We may restrict the class size to enhance students' learning.
Students who intend to join the course are required to attend the first class.

*Please visit KULASIS to find out about office hours.

Numbering code			
Course title <English>	エンジニアリングプロジェクトマネジメント演習 Exercise on Project Management in Engineering	Affiliated department, Job title,Name	Graduate School of Engineering Senior Lecturer,MATSUMOTO RIYOUSUKE Graduate School of Engineering Senior Lecturer,ASHIDA RIYUUICHI Graduate School of Engineering Senior Lecturer,MAEDA MASAHIRO Graduate School of Engineering Senior Lecturer,YOROZU KAZUAKI Graduate School of Engineering Senior Lecturer,KANEKO KENTAROU Graduate School of Engineering Associate Professor,Juha Lintuluoto

Target year		Number of credits	2	Course offered year/period	2019/Second semester
Day/period	Fri.4,5	Class style	Seminar	Language	English

[Outline and Purpose of the Course]

In this course, students will apply the engineering know-how and the skills of management, and group leadership which they learned in the course of Project Management in Engineering to build and carry out a virtual inter-engineering project. This course provides a forum where students' team-plan based on ideas and theories, decision making, and leadership should produce realistic engineering project outcomes. The course consists of intensive group work, presentations, and a few intermediate discussions. A final report will be required.

[Course Goals]

This course prepares engineering students to work with other engineers within a large international engineering project. In particular this course will focus on leadership and management of projects along with applied engineering skills where the students learn various compromises, co-operation, responsibility, and ethics.

[Course Schedule and Contents]

Week 1, Introduction to Exercise on Project Management in Engineering, Lecture on tools for the Project management in engineering, Practice and Project proposal.
Week 2, Group finalizations & Project selections.
Week 3-7, Group work, Project preliminary structures, Task list, WBS, Cost, Gant chart.
Week 8, Mid-term presentation.
Week 9-11, Group work, Leadership structuring, Risk Management, Environmental Impact Assessment.
Week 12, Presentation.
Each project group may freely schedule the group works within given time frame. The course instructors are available if any need is required.
Some lectures will be provided such as Task list, WBS, Cost, Gant chart, Leadership structuring, Risk Management, Environmental Impact Assessment, and more.

Continue to エンジニアリングプロジェクトマネジメント演習(2)↓↓↓

エンジニアリングプロジェクトマネジメント演習(2)

[Class requirement]

Fundamental skills about group leading and communication, scientific presentation.
We may restrict the class size to enhance students' learning.
Students who intend to join the course are required to attend the first class.

[Method, Point of view, and Attainment levels of Evaluation]

Report, presentations, class activity (at least 10 times attendance including mid-term and final presentations).

[Textbook]

Course materials will be provided if necessary.

[Reference books, etc.]

（Reference books）

Will be informed if necessary.

（Related URLs）

http://www.glc.t.kyoto-u.ac.jp/grad(The home page of the engineering education research center)

[Regarding studies out of class (preparation and review)]

Students are requested to prepare for group work, mid-term presentation and finel presentation.

（Others (office hour, etc.)）

We may restrict the class size to enhance students' learning.
Students who intend to join the course are required to attend the first class.

*Please visit KULASIS to find out about office hours.

Numbering code	G-LAS00 80001 LJ20		
Course title <English>	研究倫理・研究公正（理工系） Research Ethics and Integrity(Science and Technology)	Affiliated department, Job title,Name	Institute for Liberal Arts and Sciences Program-Specific Professor,ITO SHINZABUROU Institute for Liberal Arts and Sciences Program-Specific Professor,SATOU TOORU Graduate School of Engineering Professor,KAWAKAMI YOUICHI

Group	Common Graduate Courses	Field(Classification)	Social Responsibility and Profitability

Language	Japanese	Old group		Number of credits	0.5

Hours	7.5	Class style	Lecture	Course offered year/period	2019・ Intensive, First semester

Day/period	Intensive	Target year	Graduate students	Eligible students	For science students

[Outline and Purpose of the Course]

研究をこれから始める大学院生に責任ある行動をする研究者として身につけておくべき心構えを講述する。研究者としての規範を保っていかに研究を進めるか、また研究成果の適切な発表方法など、研究倫理・研究公正についてさまざまな例を示しながら、科学研究における不正行為がいかに健全な科学の発展の妨げになるか、またデータの正しい取扱いや誠実な研究態度、発表の仕方が、自らの立場を守るためにもいかに重要かを講義する。さらに、研究費の適切な使用と知的財産や利益相反について学ぶ。講義に続いてグループワークを行い、与えられた仮想課題を自らの問題として考え、解決方法のディスカッションを行う。

[Course Goals]

第１講～第４講を通じて、研究者としての責任ある行動とは何かを修得する。科学研究における不正行為の事例学習、討論を通じて、誠実な研究活動を遂行する研究者の心得を身につけ、最後に研究倫理・研究公正についてのe-ラーニングコースを受講し、理解度を確認する。

[Course Schedule and Contents)]

第１講　科学研究における心構え－研究者の責任ある行動とは－
１．研究者の責任ある行動とは（学術活動に参加する者としての義務）
２．不正の可能性と対応
３．実験室の安全対策と環境への配慮
４．データの収集と管理－実験データの正しい取扱い方－
５．科学上の間違いと手抜き行為の戒め
６．誠実な研究活動中の間違いとの区別
７．科学研究における不正行為
第２講　研究成果を発表する際の研究倫理公正
１．研究成果の共有
２．論文発表の方法とプロセス
３．科学研究における不正行為（典型的な不正）
４．データの取扱い（データの保存・公開・機密）
５．その他の逸脱行為（好ましくない研究行為）
６．研究不正事件（シェーン捏造事件）
７．不適切な発表方法（オーサーシップ、二重投稿）
第３講　知的財産と研究費の適正使用
１．知的財産の考え方（知的財産の確保と研究発表）
２．研究資金と契約

Continue to 研究倫理・研究公正（理工系）(2)↓↓↓

研究倫理・研究公正（理工系）(2)

３．利益相反（利害の衝突と回避）
４．公的研究費の適切な取扱い
５．研究者・研究機関へのペナルティー
６．事例紹介（ビデオ：分野共通４件）
７．結語
第４講　グループワーク
１．例示された課題についてグループ・ディスカッションと発表
２．日本学術振興会「研究倫理ラーニングコース」の受講と修了証書の提出

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

第１～４講の全てに出席と参加の状況、ならびに学術振興会e-learningの修了証の提出をもって合格を判定する。

[Textbook]

日本学術振興会「科学の健全な発展のために」編集委員会 『科学の健全な発展のために－ 誠実な科学者の心得－』（丸善出版）ISBN:978-4621089149（学術振興会のHP（https://www.jsps.go.jp/j-kousei/data/rinri.pdf）より、テキスト版をダウンロード可能）

[Reference book, etc.]

（Reference book）
米国科学アカデミー 編、池内 了 訳 『科学者をめざす君たちへ―研究者の責任ある行動とは』（化学同人）ISBN:978-4759814286
眞嶋俊造、奥田太郎、河野哲也編著 『人文・社会科学のための研究倫理ガイドブック』（慶応義塾大学出版会）ISBN:978-4766422559
神里彩子、武藤香織編 『医学・生命科学の研究倫理ハンドブック』（東京大学出版会）ISBN:978-4130624138
野島高彦著 『誰も教えてくれなかった実験ノートの書き方』（化学同人）ISBN:978-4759819335
須田桃子著 『捏造の科学者 STAP細胞事件』（文藝春秋）ISBN:978-4163901916

[Regarding studies out of class (preparation and review)]

日本学術振興会「研究倫理ラーニングコース」の受講

[Others (office hour, etc.)]

第１～３講は土曜２，３，４限に行う。第４講はグループワークを中心として講義の翌週または翌々週の土曜１，２または３，４限に実施する。

Numbering code	G-LAS00 80003 LJ20		
Course title <English>	研究倫理・研究公正（生命系） Research Ethics and Integrity(Life Science)	Affiliated department, Job title,Name	Graduate School of Agriculture Professor,MIYAGAWA HISASHI Graduate School of Science Professor,HIRANO TOMOO Graduate School of Human and Environmental Studies Professor,FUNABIKI YASUKO

Group	Common Graduate Courses	Field(Classification)	Social Responsibility and Profitability

Language	Japanese	Old group		Number of credits	0.5

Hours	7.5	Class style	Lecture	Course offered year/period	2019・ Intensive, First semester

Day/period	Intensive	Target year	Graduate students	Eligible students	For science students

[Outline and Purpose of the Course]

研究をこれから始める大学院生に責任ある行動をする研究者として身につけておくべき心構えを学ばせる。生命科学研究者として生命にどう向き合うか、研究者としての規範を保っていかに研究を進めるか、また研究成果の適切な発表方法など、研究倫理・研究公正を教示する。特に、科学研究における不正行為がいかに健全な科学の発展の妨げになるかを例示しつつ、データの正しい取扱い方と適正な研究成果の発表の仕方等を講義する。さらに、研究費の適切な使用と知的財産や利益相反について学ぶ。講義に加えて、グループワークとして、与えられた課題についてディスカッションを行う。

[Course Goals]

第１講～第４講を通じて、生命科学系研究者としての責任ある行動とは何かを修得させる。生命を研究対象とするに際の倫理的な問題を理解するとともに、科学研究における不正行為の事例学習を通じて、誠実な研究活動を遂行する研究者の心得を身につけさせる。最後に研究倫理・研究公正についてのe-ラーニングコースの受講で理解度を確認する。

[Course Schedule and Contents)]

第１講　医学・生命科学に関連する倫理的問題
１．生命倫理
２．人を対象とする研究の倫理
３．生物実験材料の取扱い
４．研究者の責任ある行動とは（社会の中の研究者）
第２講　研究を進めるにあたっての倫理公正
１．データの収集と管理－実験データの正しい取扱い方－
２．科学上の間違いと手抜き行為の戒め
３．研究成果の共有
４．論文発表の方法とプロセス
５．実験終了後のデータの取扱い（データの保存・公開・機密）
６．科学研究における不正行為（典型的な不正）
７．その他の逸脱行為（好ましくない研究行為）
８．適切な発表方法
第３講　知的財産と研究費の適正使用
１．知的財産の考え方（知的財産の保護と活用）
２．研究資金と契約
３．問題事例紹介

Continue to 研究倫理・研究公正（生命系）(2)↓↓↓

研究倫理・研究公正（生命系）(2)

４．利益相反（利害の衝突と回避）
５．公的研究費の適切な取扱い
６．事例紹介（ビデオ：分野共通４件）
７．結語
第４講　グループワーク
１．例示された課題についてグループ・ディスカッション
２．日本学術振興会「研究倫理ラーニングコース」の受講と修了証書の提出

[Class requirement]

None

[Method, Point of view, and Attainment levels of Evaluation]

第１～４講の全出席と参加の状況と、学術振興会e-learningの修了証の提出をもって合格を判定する。

[Textbook]

「科学の健全な発展のために― 誠実な科学者の心得―」日本学術振興会「科学の健全な発展のために」編集委員会　丸善出版　ISBN978-4621089149　学術振興会のHP（https://www.jsps.go.jp/j-kousei/data/rinri.pdf）より、テキスト版をダウンロード

[Reference book, etc.]

（Reference book）
「科学者をめざす君たちへ―研究者の責任ある行動とは」米国科学アカデミー 編、池内 了 訳　化学同人　ISBN978-4759814286
「医学・生命科学の研究倫理ハンドブック」神里彩子、武藤香織、東京大学出版会　ISBN978-4130624138

[Regarding studies out of class (preparation and review)]

日本学術振興会「研究倫理ラーニングコース」の受講

[Others (office hour, etc.)]

講義は土曜２，３，４限、グループワークは講義の翌週土曜１，２または３，４限に実施する。

Numbering code	G-LAS01 80001 LJ10		
Course title <English>	学術研究のための情報リテラシー基礎 Basics of Academic Information Literacy	Affiliated department, Job title,Name	Institute for Liberal Arts and Sciences Professor,KITA HAJIME Kyoto University Library Associate Professor,KITAMURA YUMI Academic Center for Computing and Media Studies Program-Specific Senior Lecturer,FLANAGAN, BrendanJohn Academic Center for Computing and Media Studies Professor,Ogata Hiroaki

Group	Common Graduate Courses	Field(Classification)	Computer Science and Information Technology
Language	Japanese	Old group	
Number of credits	0.5		
Hours	7.5	Class style	Lecture
Course offered year/period	2019・ Intensive, First semester		
Day/period	Intensive	Target year	Graduate students
Eligible students	For all majors		

[Outline and Purpose of the Course]

本科目では大学院生として研究室などでの研究活動を本格化させるための基礎的な知識・スキルとして、大学図書館などを活用した学術情報の探索と発信、本学が提供する情報通信サービスの理解とその適正な運用、その基礎となる情報ネットワークやコンピュータについての実践的事項、情報セキュリティと情報倫理などを学習する。

[Course Goals]

大学図書館などを利用した学術目的の情報探索、情報発信について、効果的な文献の探索・収集・活用の手法と、論文として発表する際のマナーを知る。

研究活動でコンピュータや LAN、インターネットを適切に利用するための技術的な基礎知識を知る。

研究室でのネットワーク利用のために本学が提供しているKUINS 等の情報通信サービスについて知り、適切に利用できるようになる。

研究活動でコンピュータやネットワークを利用する際の本学での遵守事項や情報セキュリティ・情報倫理上の留意点を知り、実践できるようになる。

[Course Schedule and Contents)]

以下、４回の授業を集中講義形式で実施する。

・学術研究のための大学図書館利用と情報探索、情報発信(1回)
・ネットワークの基礎(1回)
・大学の情報基盤の利活用(１回)
・情報セキュリティと情報倫理（1回）

[Class requirement]

None

Continue to 学術研究のための情報リテラシー基礎(2)↓↓↓

学術研究のための情報リテラシー基礎(2)

[Method, Point of view, and Attainment levels of Evaluation]

授業への参加（課題の提出）により評価する。情報環境機構が提供する情報セキュリティ e-learning の修了は合格の要件である。

[Textbook]

プリント等を電子的に配布する。

[Regarding studies out of class (preparation and review)]

情報セキュリティ e-learning についてはあらかじめ修了しておくこと。授業外学習として課題を課す。

[Others (office hour, etc.)]

受講時に、受講前に持っている情報リテラシーについての知識・スキル等を調査する予定である。授業資料は電子的に配布するので、ノートPC などを持参して受講することが望ましい。

Numbering code	G-LAS02 80001 SE48		
Course title <English>	大学院生のための英語プレゼンテーション Presentation for Graduate Students	Affiliated department, Job title,Name	Institute for Liberal Arts and Sciences Senior Lecturer,RYLANDER, John William
Group	Common Graduate Courses	Field(Classification)	Language and Communication
Language	English	Old group	Number of credits: 1
Hours: 15	Class style: Seminar	Course offered year/period	2019・ Intensive, First semester
Day/period	Intensive	Target year: Graduate students	Eligible students: For all majors

[Outline and Purpose of the Course]

This course is designed to provide graduate students with an opportunity to develop their ability and confidence when presenting field-specific content to an informed audience. Giving presentations in an academic setting, whether it is in a classroom, laboratory context, or at a conference, has become increasingly necessary for students at the graduate level. Course content extends from how to greet the audience to how to answer audience questions.

[Course Goals]

Students successfully completing this course will be able to do the following:

- Create an appropriate presentation slideshow for a conference or a research laboratory presentation;
- Clearly introduce and provide an overview of the talk through appropriate signposting;
- Properly display visual aids to enhance audience understanding of research data;
- Use posture and movement to engage the audience;
- Use gestures and gaze to emphasize information and connect with the audience;
- Produce a presentation; and
- Answer audience questions.

[Course Schedule and Contents)]

Session 1: Purpose and structure of academic presentations
Session 2: Topic selection and development
Session 3: Information organization: From greetings to goodbyes
Session 4: Creating effective slideshows and displaying research data
Session 5: Body language and gestures
Session 6: Answering audience questions
Session 7: A special focus on data significance
Session 8: Student presentations and instructor feedback

[Class requirement]

This course has a limit set on student enrollment. In the case where many students wish to enroll in class, a lottery system will decide inclusion.

Continue to 大学院生のための英語プレゼンテーション(2)↓↓↓

大学院生のための英語プレゼンテーション(2)

[Method, Point of view, and Attainment levels of Evaluation]

30% Active Participation
30% Slideshow Creation
40% Main and Minor Presentations

[Textbook]

Not used

[Reference book, etc.]

（Reference book）
All course materials will be provided to the students by the teacher.

[Regarding studies out of class (preparation and review)]

Students will be asked to work on several smaller in-class talks and one larger presentation as their primary out-of-class homework assignment.

[Others (office hour, etc.)]