Cross-Graduate School Subjects for AY 2025

Classification:

① Advanced liberal arts education at the graduate level ② Cultivation of skills necessary in modern society, such as AI, mathematics, and data education

③ Education to improve research skills such as English and presentations ④ Cultivation of wide-ranging skills such as transferable skills ⑤ Education on ethical, legal, and social issues (ELSI)

No.	Courses offered Graduate School	Course Title	Credits	Instructors	Course Code	Curricula	Grade						Terms	Day of the week	lecture period	Course method	Course method	Language used in courses	Classification ①～⑤	Object and Summary of Class	対象 (全学向け・文系向け・理系向け)	Note
							M1	M2	D1	D2	D3	D4										
1	Economics and Management	Econometrics I	2	Runyu Dai	EM4702	Master's Program	○	○					1st Term	Tue.	2	Face-to-face	Small Lecture Room 3, Multidisciplinary Research Building	English	②③	This one-semester course covers essential (non-measure-theoretic) probability theories and statistical tools, laying the groundwork for students to take future econometrics and advanced statistics courses. Some examples using R or Python programs will be demonstrated. A good command of the knowledge in this course will also help students succeed in advanced economics and other quantitative social science courses.	All fields	A few classes might be conducted through on-demand video.
2	Economics and Management	Econometrics II	2	Stanley Ko	EM4704	Master's Program	○	○					2nd Term	Tue.	2	Face-to-face	Small Lecture Room 3, Multidisciplinary Research Building	English	②③	This course is a one-semester introduction to econometrics. The course will cover fundamental knowledge of linear regression in economic data analysis. Necessary probability and statistic concepts will be taught and reviewed. Empirical applications, rather than theoretical proofs, will be emphasized. Empirical examples will be demonstrated in class. The R program will be demonstrated. The students are expected to have a deep understanding of modern econometric methods in economic data analysis. Also, the course is designed as a prerequisite for advanced econometrics courses. The students will be able to apply basic econometric tools in empirical research (cross-sectional data) after the course.	All fields	
3	Economics and Management	Aging Economy	2	吉田　浩 Hiroshi YOSHIDA	EM0413	Master's Program	○	○					1st Term	Tue.	2	Face-to-face	Seminar Room 8, Graduate School of Economics and Management	English	①②⑤	To understand the effect of aging on economy. To understand the effect of economic system on population structure; aging, low fertility…. To know the skill for analyzing the economics of aging. Economic theory Technique of analyzing (programming, calculation..)	All fields	Maximum number of attendees: 30 students
4	Economics and Management	Welfare Economy	2	若林　緑 Midori WAKABAYASHI	EM0414	Master's Program	○	○					2nd Term	Wed.	2	Face-to-face	Seminar Room 3, Graduate School of Economics and Management	English	①②③⑤	This course focuses on the social security system and public finance. Current policy issues in Japan (especially, social security system) are also discussed.	All fields	Basic level of microeconomics, macroeconomics, and econometrics are required
5	Science	Advanced Solar System Physics	2	笠羽 康正 他 Yasumasa Kasaba et al.	SM42001	Master's Program	○	○					2nd Term	Mon.	3	Online	Online	English	①	Human beings are promoting space exploration by utilizing space probes and space vehicles to expand habitable area in the solar system. We will give detail explanations on the space exploration along with following three accepts; i.e. scientific aspects, engineering aspects and life aspects.	Science and Engineering	・It is also an interdisciplinary DIARE courses.
6	Science	Science and Society	1	本堂 毅 Tsuyoshi Hondou	SM7101	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Sat.	Face-to-face	Science Complex C Aoba Science Hall	Japanese	①④⑤	Course Title: What is scientific proof? Scientific incertitude and Society Understanding of incertitude about those questions is basis for constructive discussion between scientists and society. We will discuss how these issues are related to the issues between science and society.	All fields	・6月14日（土曜日）に集中講義形式で開講．「科学コミュニケーション」と合わせて履修することが望ましい． ・授業内で議論やアンケートを行うため，ネット接続可能なパソコンの持ち込みを推奨． ・座学ではなく、グループ等での相互討論を活発に行います。不織布マスクを持参の上、参加してください。

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7	Science	Science Communication	1	本堂 毅 Tsuyoshi Hondou	SM7102	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Sat.	Face-to-face	Science Complex C Aoba Science Hall	Japanese	①④⑤	Course Title: Social decision-making and science Scientific knowledge is indispensable in decision-making in society. In this course, I would like to show the actual state in the world and discuss the competency desired both for lawyers, politician and scientists. Finally, we will discuss the institutional reforms.	All fields	・6月28日（土曜日）に集中講義形式で開講.「科学と社会」と合わせて履修することが望ましい. ・授業内で議論やアンケートを行うため，ネット接続可能なパソコンの持ち込みを推奨. ・座学ではなく、グループ等での相互討論を活発に行います。不織布マスクを持参の上、参加してください。
8	Medicine	Research Promotion & Research Ethics	1	Charge Teachers	MD001	Doctoral Program			○	○	○	○	2nd Term	Intensive course	undecided	undecided	undecided	Japanese	①	Cultivation of the attitude and skills required to promote research	All fields	・Approximately 6 lectures by celebrities, medical professionals, and researchers ・Only lectures, with the exception of research proposal writing training, which is given to students in the Graduate School of Medicine, and is therefore one credit for students in other graduate schools.
9	Pharmaceutical Sciences	Advanced Molecular and Structural Analysis	3	金野 智浩 Tomohiro Konno	YM41112112	Master's Program	○	○					1st Term	Thurs.	9:00～12:00	Face-to-face	Graduate School of Pharmaceutical Sciences Small Lecture Room 1	Japanese	①	生体内のイオンからタンパク質やＤＮＡなどの生体高分子やバイオマテリアルなどの合成高分子にいたるまでの広範な分子の挙動を、主に物理化学的な原理に立脚して統一的に理解する方法論を学ぶ。さらに、これらの方法論が実際の機器分析法を通じて、生体分子の構造解析や医薬品の定量分析にどのように用いられているかを理解する。	Science and Engineering	
10	Pharmaceutical Sciences	Advanced Organic Chemistry	2	吉戒 直彦 Naohiko Yoshikai	YM90009312	Master's Program	○	○					1st Term	Thurs.	9:00～12:00	Face-to-face	Graduate School of Pharmaceutical Sciences Small Lecture Room 1	Japanese	①	本特論では、新規医薬品の開発に求められる有機反応論の概念と論理体系、ならびに目的とする有機化合物を効率的に合成するための方法論を理解することを目的とする。これらを講義と演習によって習得する。	Science and Engineering	
11	Pharmaceutical Sciences	Advanced Applied Bio-pharmaceutical Sciences	3	髙橋 信行 Nobuyuki Takahashi	YM41212117	Master's Program	○	○					1st Term	Thurs.	18:00～19:30	Online	Online	Japanese	①	新薬の価値はヒトを対象とした臨床試験および市販後調査での有効性、安全性の結果で決まる。本特論で臨床研究および臨床試験・治験を遂行する上で必要となる基本的な知識と技術を理解する。医薬開発を目指した基礎研究、質のよい臨床試験を実践するための、基礎知識、倫理、方策を学ぶ。	Science and Engineering	・医療薬学特別講義Ⅱと同時開講
12	Pharmaceutical Sciences	Special Lecture in Pharmacy Ⅱ	2	髙橋 信行 Nobuyuki Takahashi	YD90012502	Doctoral Program			○	○	○	○	1st Term	Thurs.	18:00～19:30	Online	Online	Japanese	①	新薬の価値はヒトを対象とした臨床試験および市販後調査での有効性、安全性の結果で決まる。本特論で臨床研究および臨床試験・治験を遂行する上で必要となる基本的な知識と技術を理解する。医薬開発を目指した基礎研究、質のよい臨床試験を実践するための、基礎知識、倫理、方策を学ぶ。	Science and Engineering	・応用医療薬学特論と同時開講
13	Engineering	History of Modern Technology	2	田中 秀治　他 Shuji Tanaka et al.	（確認中）	Doctoral Program			○	○	○	○	Intensive course	Intensive course	1～4	Online	Online	Japanese	①	技術史を学ぶことは、技術の原理と系譜、技術進化の必然性、社会と技術との関わり、試行錯誤の経緯と帰結、先人の成功と挫折などを理解することに繋がります。鉱山、巨大ダム、記憶装置、通信装置、半導体集積回路など、身近な技術の発展の歴史を、また、一部については衰退の歴史も学びます。それぞれの技術史には他の技術開発にも活かせる考え方や教訓が含まれ、それを受講者自身が考えることによって各自の仕事や勉強に活かすことを本講義の眼目としています。	All fields	・日本語講義
14	Engineering	Hardware Foundamentals	2	羽生 貴弘　他 Takahiro Hanyu et al.	（確認中）	Master's Program	○	○					Undecided	Undecided	Undecided	Undecided	Graduate School of Information Sciences, Lecture Room 206	Japanese	①	集積回路技術とプロセッサアーキテクチャ，さらに知能処理が融合された知能集積システムの基礎を講述する．講義内容は，知能集積システムの意義，高性能化と低消費電力化を指向したVLSIプロセッサのハイレベルシンセシス，CMOS集積回路の高性能化と低消費電力化，リコンフィギャラブルＶＬＳＩ，配線に起因する性能劣化を低減させる高性能VLSIの回路技術，電源配線及びクロック分配に関わる実装技術，システムLSIの統合設計技術などである．	Science and Engineering	・履修人数上限：30名
15	Engineering	Introduction to Semiconductor Device Physics and Technology	2	黒田 理人 Rihito Kuroda 櫻庭 政夫 Masao Sakuraba	（確認中）	Master's Program	○	○					Undecided	Undecided	Undecided	Undecided	EPIE Lecture Room Building 207	Japanese	①	固体電子論の基礎からデバイス動作までを，統一的に理解するための基盤を修得する事を目的とする。固体中の電子運動論，半導体の接合－境界での電子・正孔の挙動，MOSトランジスタの動作等について講義する。	Science and Engineering	
16	Engineering	Biophysics and Bioengineering	2	烏谷部 祥一 Shoichi Toyabe 中村 修一 Shuichi Nakamura	（確認中）	Master's Program	○	○					Undecided	Undecided	Undecided	Undecided	TBD	Japanese	①	工学技術による生命現象の観測，計測，制御について，基礎から最先端の内容まで広い知識を得ることを目的とする．特に，遺伝子工学，顕微鏡技術，微小系の制御技術などについて講義する．	Science and Engineering	・特になし

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17	Engineering	Urban Planning	2	姥浦 道生 Michio Ubaura	(確認中)	Master's Program	○	○					1st Term	Mon.	2	Face-to-face	103	Japanese	①⑤	各種都市計画的課題に対応するための先進事例を調査・プレゼンすることにより、都市の物的環境整備のための計画論的制度論的実態把握能力及び改善手法の提案能力を獲得することを目的とするものである。	All fields	・履修人数上限：40名程度 ただし、工学研究科の学生を優先する。
18	Engineering	Architectural IT Communication Design	2	本江 正茂 Masashige Motoe	(確認中)	Master's Program	○	○					1st Term	Wed.	3	Face-to-face	104	Japanese	①	現代における様々なITコミュニケーションデザインについての事例やそれを支える技術について解説し，情報技術によって建築や都市の空間がどのように影響を受け，変化し，その可能性を拡げうるのかについて論じる．情報と空間とが融合する時代に必要なデザイン能力開発の基礎作りを目的とする．	All fields	
19	Engineering	The World's Architectural Heritage	2	飛ケ谷 潤一郎 Junichiro Higaya	(確認中)	Master's Program	○	○					2nd Term	Tue.	4	Online	Online	Japanese	①	建築や都市について教員が毎年何らかのテーマを設定し、ユネスコの世界文化遺産から地元の文化遺産まで事例を広く取り上げて解説する。受講者は、個人またはグループでそれらの事例を選んで発表することにより、学際的な研究能力を獲得することを目的とするものである。講義は日本語で行うが、配布資料は英語も使用する。	Humanities and Social Sciences	・履修人数上限：40名
20	Engineering	Science Communication	2	高橋 信 Makoto Takahashi 狩川 大輔 Daisuke Karikawa	(確認中)	Master's Program	○	○					1st Term	Tue.	2	Face-to-face	101	Japanese	⑤	本講義では工学系研究者として知っておくべき技術者倫理の基礎と、科学技術コミュニケーションの基礎を、実践的な講義を通じて学ぶ。	Science and Engineering	・履修人数上限：40名
21	Engineering	Management Systems	2	永松 陽明 Akira Nagamatsu	(確認中)	Master's Program	○	○					1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	先端技術を効果的に活用して新規事業を構想し，実施するために必要な技術戦略の構築，経営戦略と技術戦略の統合，事業領域，事業機会と技術開発マネジメント，技術とマーケティングによる事業創造，戦略的提携，資本戦略，税務財務戦略，ファイナンス理論，標準化戦略を講義する。また，先端技術を具体的に事業化するための新規事業計画の作成手法，その評価方法について事例に基づいて理解させる。	Science and Engineering	・オンライン講義なので上限なし
22	Engineering	Advanced Management Systems	2	永松 陽明 Akira Nagamatsu	(確認中)	Doctoral Program			○	○	○	○	1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	本講義では，技術とイノベーションに係る企業のマネジメントにおいて主として技術革新により新製品を生み出す理論についてわが国及び欧米の最新の論文や研究成果等を取り扱う。特に，最近わが国を中心に提唱され世界的に注目されているアーキテクチャー理論や知識創造理論も中心としつつ，Fuzzy Front 理論，標準化戦略リードユーザー等のプロダクトイノベーションやプロセスイノベーションを生み出すための企業内における組織論についても触れる内容とし，イノベーションに関する理論と実務の融合を目指す講義とする。	Science and Engineering	・オンライン講義なので上限なし
23	Engineering	Value Systems	2	永松 陽明 Akira Nagamatsu	(確認中)	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	本講義の目的は、イノベーションを実践的・戦略的なレベルで理解するための知識を得ることと、実践するための必要な知見に関する基礎的な内容を理解できるようになることである。 わが国では、企業の設計力や技術力が優れているのに、それが利益に結びつかない場合が極めて多い。その一つの理由が、イノベーションのマネジメントに対する取り組みが十分に行なわれてこなかったことが挙げられる。そのために、イノベーションに関する基本的な考え方について、事例を通して体得していく。そして、このような内容を通し、現実に行われている社会活動、企業活動の中の課題を理解し、対応するイノベーションの可能性を思考するための基盤的知識を習得する。	Science and Engineering	・オンライン講義なので上限なし
24	Engineering	Project Leadership	2	石田 修一 Shuichi Ishida	(確認中)	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	将来的に企業経営に参画して行く技術系マネジメント人材の候補者が、上記背景とミッションを十分に理解した上で、戦略的、体系的にイノベーションに基づく経営戦略を理解し、知識をマネージすることで所属企業や団体においてイノベーションを実現するプロジェクト・マネジメントの実践能力を養う。	Science and Engineering	・オンライン講義なので上限なし
25	Engineering	New Business Creation	2	石田 修一 Shuichi Ishida	(確認中)	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	経営戦略の基本的な概念として、ドメインの定義、コア技術、競争戦略をキーワードとして、新製品開発と新事業開発の戦略に関する国内外の代表的な事例研究を行う。到達目標は、次の2点である。1)新事業開発と社内ベンチャーに関連した組織論と戦略論についての基礎的な概念と理論を習得し、理論用語を用いて検討や議論ができる。2)社内ベンチャーに関連した組織論と戦略論の理論的枠組みを新製品開発や新事業開発の事例分析などの研究に応用できること。	Science and Engineering	・オンライン講義なので上限なし
26	Engineering	Introduction to Management Science and Technology	2	石田 修一 Shuichi Ishida	(確認中)	Master's Program	○	○					1st Term	Mon.	5	Online	Online	Japanese	①	工学領域が支えてきた産業を取り巻く状況は移ろい、それとともに大学で工学を修めた者の活躍の場も以前とは大きく異なり、この先も想像が及ばないほどの変動が予想される。そこでこの講義では、幅広い専攻の理系学生が、技術と社会の関係について様々な考え方に触れることを目的としている。具体的には、技術社会システム専攻に関連した教員がオムニバス形式で各々の研究領域に照らしながら、専門領域のみならず社会とのつながりについて講義する。	Science and Engineering	・オンライン講義なので上限なし

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27	Engineering	Intellectual Property Strategy	1	石田 修一 Shuichi Ishida	（確認中）	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Intensive course	Intensive course	Online	Online	Japanese	⑤	研究開発や産業活動において，知的財産の重要性が高まっており，知的財産を保護するために知的財産権制度の活用が必須となっている．本講義では，基本的な産業財産権を始めとする知的財産権制度の概要及びその活用法を説明する．加えて，実務的な立場から，知的財産の価値評価，産業財産権のデータ活用及び知的財産権に関する最近の動向についても説明する．	Science and Engineering	・オンライン講義なので上限なし
28	Engineering	Advanced Management of Integrated System Technology	2	高橋　信 岩渕正樹	（確認中）	Master's Program, Doctoral Program	○	○	○	○	○	○	2nd Term	Intensive course	Intensive course	Face-to-face		Japanese	①	本少子高齢化や経済格差などの国レベルの巨大な問題、天災やパンデミックなどの予測できない事象、持続可能性や多様性の包摂、Z世代への社会的移行などの学際的な議題…VUCAと呼ばれる何もかもが不確実な21世紀に工学者はどう向き合い、先進技術をどのように適用すべきだろうか？ 本講義はこの問いに対し、スペキュラティヴデザイン、トランジションデザインといった最新のデザイン手法を用いて、未来の社会像を想像・夢想により可視化し、そのビジョンから遡り先進技術の可能性や方向性を計画する、バックキャスティングの手法を3日間の集中講義・演習型で学ぶ。事前知識・デザイン経験は不要	All fields	
29	Agricultural Science	Global Bioethics	2	石井 圭一 Keiichi Ishii	AM1531	Master's Program	○	○					1st Term	Fri.	3	Hybrid	Large Lecture Room, Aobayama Commons	Japanese	⑤	Considering human being, biological group, the ecosystem, environment surrounding it, agriculture and agricultural science cooperate with the life zone and have a history coexisting. From now on we need to have sound thinking and ethics of agricultural researchers and students as a member of the life sphere in order for us to coexist sustainably in the life sphere. It is the foundation of agricultural sciences. With the rapid development of life sciences in recent years and the seriousness of resource, environment and food problems, think about Biosphere ethics as the foundation of agricultural sciences that is responsible for the protection and restoration of the environment, the contribution to human development and the preservation and use of various organisms.	Science and Engineering	・It is also an interdisciplinary DIARE courses.
30	Agricultural Science	General Assessment Science of Agricultural Product and Food	2	藤井 智幸 Tomoyuki Fujii	AM1251, AD4003	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Tue.	5	Face-to-face	Lecture Room #3, Aobayama Commons	Japanese	⑤	In Japan, accidents related to food safety and cases related to morals occur frequently, which has become a big problem. With the expansion of international distribution of foods worldwide, it is required to formulate and implement unified safety management regulations. In this lecture, we will explain the knowledge from the basics to the practice regarding the quality and safety of foods, agricultural products and processed products in Japan and their evaluation methods. In addition, the current status and measures for quality and safety management of food, agricultural products and processed products in other countries will be explained. Then, select the topics explained and deepen the discussion among the students.	All fields	・It is also an interdisciplinary DIARE courses.
31	International Cultural Studies	Sustainable Development Ⅰ	2	西宮 宣昭 Noriaki Nishimiya	KM18860	Master's Program	○	○					Intensive course	Intensive course	Intensive course	Face-to-face	Undecided	Japanese	①⑤	持続可能性、持続可能な開発、SDGsに関する基本的な知識を提供し、日本の政府開発援助（ODA）でも取り上げられるこれらのテーマが、実際の開発援助プロジェクトの最前線で、どのような状況にあるかを理解することを目的とする。	All fields	・隔年開講（R７開講）
32	International Cultural Studies	Environmental Public Policy Ⅰ	2	福嶋 慶三 Fukushima Keizo	KM18870	Master's Program	○	○					Intensive course	Intensive course	Intensive course	Online	Online	English	①⑤	This class aims to provide students with a wide overview of the latest theory and practice of environmental policies and students can get a good provision of their future study and job hunting.	All fields	・隔年開講（R７開講） ・使用言語：英語
33	International Cultural Studies	Environmental Education Ⅰ	2	阿部　治 Abe Osamu	KM18860	Master's Program	○	○					Intensive course	Intensive course	tensive cour	Face-to-face	Undecided	Japanese	①⑤	This course provides an overview of the concept of EE / ESD (Education forSustainable Development) and the history of its development, as well as domestic and international trends. Furthermore, by consideringEE/ESD in Japan from the perspective of lifelong learning based on specific case studies, we explore the role and potential of EE/ESD in asustainable society.	All fields	・Courses offered every other year
34	International Cultural Studies	Environmental and Resource Economics I	2	佐藤 正弘 Masahiro Sato	KM23110	Master's Program	○	○					2nd Term	Wed.	1	Face-to-face	113(1st floor of Graduate School of International Cultural Studies)	Japanese	①⑤	This course offers a general introduction to the basic theories of environmental economics and resource economics, and provides students with theoretical tools to explore interactions between the Earth system and economic system.	All fields	
35	International Cultural Studies	Environmental and Resource Economics II	2	佐藤 正弘 Masahiro Sato	KM23230	Master's Program	○	○					2nd Term	Wed.	2	Face-to-face	113(1st floor of Graduate School of International Cultural Studies)	English	①⑤	This course offers a general introduction to the basic theories of environmental economics and resource economics, and provides students with theoretical tools to explore interactions between the Earth system and economic system.	All fields	・English
36	International Cultural Studies	A History of Japanese Religion	2	Klautau Orion	KM25210	Master's Program, Doctoral Program	○	○	○	○	○	○	2nd Term	Mon.	3	Face-to-face	111(1st floor of Graduate School of International Cultural Studies)	Japanese	①⑤	After Perry's "opening" of Japan in 1853 and the Meiji restoration of 1868, Japan's social and political structures were forced to several changes. Buddhism, which was considered by a number of Meiji intellectual as one of the "ancient evils" symbolizing the former bakuhan system, was also changed not only in the institutional sense, but also in terms of ideas. In this course, after discussing the basic stance of discursive history, we will examine this transformation process which lead to the "modernization" of Buddhism.	Humanities and Social Sciences	隔年開講（R7開講）

Cross-Graduate School Subjects for AY 2025

Classification:

① Advanced liberal arts education at the graduate level ② Cultivation of skills necessary in modern society, such as AI, mathematics, and data education

③ Education to improve research skills such as English and presentations ④ Cultivation of wide-ranging skills such as transferable skills ⑤ Education on ethical, legal, and social issues (ELSI)

No.	Courses offered Graduate School	Course Title	Credits	Instructors	Course Code	Curricula	Grade						Terms	Day of the week	lecture period	Course method	Course method	Language used in courses	Classification ①～⑤	Object and Summary of Class	対象 (全学向け・文系向け・理系向け)	Note
							M1	M2	D1	D2	D3	D4										
37	International Cultural Studies	Introduction to Language Sciences (English)	2	Zisk Matthew Joseph	KM23330	Master's Program, Doctoral Program	○	○	○	○	○	○	2nd Term	Wed.	3	Face-to-face	C204（Kawauchi Lecture Rooms C(A04)）	English	①③	In this course, we will look at the fundamental fields of linguistics such as phonology, morphology, syntax, typology and sociolinguistics, while focusing on the Japanese language as a case study. The goal of this class is for students to gain a basic understanding of the fundamental fields of linguistics and to acquire the skills to solve simple linguistic problems.	Humanities and Social Sciences	While this class is conducted in English, students are free to submit all assignments, including the final exam, in Japanese (この講義の使用言語は英語であるが、期末試験を含むすべての課題は日本語での提出も認める).
38	International Cultural Studies	History of the Japanese Language Ⅰ	2	Zisk Matthew Joseph	KM13320	Master's Program, Doctoral Program	○	○	○	○	○	○	1st Term	Wed.	3	Face-to-face	111(1st floor of Graduate School of International Cultural Studies)	English	①③	In this class, we will learn about the history of the Japanese language from the perspective of phonology, grammar, lexicon, writing, dialect formation and language contact. The goal of this course is to gain a basic understanding of the major events and developments throughout history that shaped the Japanese language. At the same time, students taking this course will acquire the skills necessary to conduct basic historical linguistic research about the Japanese language and languages in general.	Humanities and Social Sciences	隔年開講（R7開講） While this class is conducted in English, students are free to submit all assignments, including the final exam, in Japanese (この講義の使用言語は英語であるが、期末試験を含むすべての課題は日本語での提出も認める).
39	Information Sciences	Algebra and discrete mathematics	2	宗政 昭弘 Akihiro Munemasa	IM20500041	Master's Program	○	○					1st Term	Tue.	2	Hybrid	情報-大206	日本語	②	In this course, the student will first learn the notation of sets and logical expressions, as it will play the role of the grammar in mathematics. Examples in discrete mathematics and algebra will be given in order to solidify the understanding of the usage. The ability to use the proper notation is necessary not only for learning modern mathematics, but also helpful in writing computer programs, understanding and writing technical documents logically. Discrete mathematics is an excellent subject for the training of logical thinking. 日本語を母語とする学生は昨年度の授業録画を視聴可能とする。	All fields	・It is also an interdisciplinary DIARE courses.
40	Information Sciences	Statistical Modeling	2	荒木 由布子 Yuko Araki	IM20500141	Master's Program	○	○					2nd Term	Mon.	2	Face-to-face	Room 206, Graduate School of Information Sciences	Japanese	②	Statistical modeling is widely used in various fields of natural and social sciences to extract information from data and to solve problems. In this lectures, we will start from the basic theory underlying statistical modeling of phenomena , and then focuses on (1) how to set up flexible models, (2)how to estimate parameters of models, and (3) how to select optimal models in order to efficiently extract information from recent data with complex and diverse structures. Background knowledge on elementary probability and statistics are required.	All fields	・It is also an interdisciplinary DIARE courses.
41	Information Sciences	Systems Bioinformatics	2	木下 賢吾　他 Kengo Kinoshita et al.	IM20500262	Master's Program	○	○					2nd Term	Fri.	3	Online	3rd Floor Small Lecture Room, Graduate School of Information Sciences	Japanese	①	This course provides an introduction to the fundamental concepts of biological information science. We will explore the flow of biological information along the central dogma (DNA → RNA → protein) and the transmission of genetic information from digital (sequence information) to analog (three-dimensional structure information of proteins). The course will cover the analysis methods for sequence information at the gene level, including gene structure and promoter analysis. We will also examine the analysis of numerical data through the analysis of gene expression level information at the RNA level. Additionally, we will discuss the handling of three-dimensional structure data, which are important for functional expression, at the protein level. Throughout the course, we will emphasize the role that information science plays in the understanding of biological information and its practical applications, rather than on the algorithms themselves.	All fields	・It is also an interdisciplinary DIARE courses.
42	Environmental Studies	Introduction to Environmental Studies	2	村上　太一 Murakami Taichi	GM000001	Master's Program	○	○					1st Term	Mon.	3	Face-to-face	Lecture hall, 2F, GSES main building	Japanese	①⑤	This is an introductory lecture about what the environmental studies is and how it is studied. Fourteenlecturers from various fields of study including humanities, social sciences and natural sciences discuss eachtopic of the environmental study from their own viewpoints. This lecture demonstrates the multidisciplinarynature of Environmental Studies. Students learn the basics and necessary knowledge of the study of environmentand know what the new agenda of the environmental studies are.	All fields	・Japanese ・Maximum number of students: 110 However, priority will be given to students affiliated with the Graduate School of Environmental Sciences and students affiliated with other graduate schools who wish to take this course as a related subject.