Course List, School of Design and Architecture(Design)

	Supervising faculty member	Subject	Course level / day of week / period	Language
1	Kei Kobayashi	Advanced Study of Interaction Design	2st semester, Monday, 1st period and 2nd period	Japanese (English also acceptable)
2	Ryu Nakagawa	Advanced Study of Audiovisual Design	2nd semester: Thursday, 1st period and 2nd period	Japanese (English also acceptable)
3	Yasuyuki Kurihara	Advanced Study of Moving Image	2nd semester, Monday, 3rd period and 4th period	Japanese (English also acceptable),occasionally Japanese (language) movie or contents will be used in a class
4	Mikako Mizuno	Advanced Study of Sound Design	1st semester, Saturday, 1st period	Japanese (English also acceptable)
5	Eli Kaminuma	Advanced Study of Data Science	1st semester, Thursday, 3nd period	Japanese (English also acceptable)
6	Dai Hanawa	Advanced Study of Information and Communication Engineering	2nd semester, Friday, 6th period and 7th period	Japanese (English also acceptable but there are some limitations as described in the remarks)
7	Kiyoko Yokoyama	Advanced Study of Software Design	1st semester, Thursday, 6nd period	Japanese (English also acceptable)
8	Kenri Kodaka	Training in Media Engineering	2nd semester, Thursday, 6th period and 7th period	Japanese (English also acceptable)
9	Toshihiro Sakuma	Advanced Study of Visual Arts	2nd semester, Monday, 6th period and 7th period	Japanese (English also acceptable)
10	Junko Mori	Advanced Study of Visual Design	1st semester, Friday, 1st period and 2nd period	Japanese (English also acceptable)
11	Sei-ichi Tsujimura	Advanced Study of Biological Information Processing	1st semester, Monday, 3rd period and 4th period	Japanese and English
12	Neda Filfova	Advanced Study of Visual Environment Design	1st semester, Thursday, 5th period and 6th period	English (When necessary short Japanese translations and explanations are possible)

13	Nobuo Takahashi	Advanced Study of Computer Graphics	2nd semester, Wednesday, 6th period and 7th period	Japanese (English also acceptable)
14	Tomoaki Kageyama	Advanced Study of Product Design Methodology	1st semester, Tuesday, 1st period and 2nd period	Japanese (English also acceptable)
15	Takahiro Matsumoto	Advanced Study of Photonics and Quantum Electronics	1st semester, Tuesday, 7nd period	Japanese (English also acceptable)
16	Takashi Kato	Advanced Study of Cybernetics	1st semester, Friday, 3th period and 4nd period	Japanese (English also acceptable)
17	Toshimitsu Tanaka	Advanced Study of Computer Graphics Techniques	1st semester, Wednesday, 4th period	Japanese
18	Tomoaki Kageyama, Masayuki Kageyama, Takashi Kato, Eri Kaminuma, Yasuyuki Kurihara, Kenri Kodaka, Toshihiro Sakuma, Sei-ichi Tsujimura, Ryu Nakagawa, Nobuo Takahashi, Takahiro Matsumoto, Dai Hanawa, Neda Firfova, Mikako Mizuno, Junko Mori, Kiyoko Yokoyama	Studio for Design Information	-	Japanese (English also acceptable)
19	Masayuki Kageyama	Advanced Study of Mathematics	1st semester, Monday, 2th period	Japanese (English also acceptable)

VII Syllabus of Course

Year of course	Academic year 2022
Subject	Advanced Study of Interaction Design
Supervising faculty member	Kei Kobayashi
Number of credits	2 credits
Course level / day of week / period	2st semester, Monday, 1st period and 2nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
	This course aims to allow students to acquire various capabilities, from an understanding of the fundamental principles to the ability to apply what they have acquired in the future, regarding user interface design and interaction design, which are important issues in various design areas.
Key words	Interaction design, Information design
Related diploma policy	
Attainment goal	Students aim to acquire the theoretical framework necessary for delving into user interface design and interaction design. In addition, the goal is to be able to engage in design as research and present research results.
Grade evaluation criteria	
Outline of course	In the first half of the lecture, the lecturer talks about knowledge and techniques related to interaction design, and in the second half, students present papers or books that they have read. Finally, in order to apply the knowledge gained in this lecture to the students' own research, they propose a design to solve a problem related to interaction design.
Program of course	1. Interaction Design 2. Usability and Presentation of Previous Research 3. Information Design and Presentation of Previous Research 4. Research and Presentation of Previous Research 5. Design and Presentation of Previous Research 6. Input Methods, Recognition Techniques and Presentation of Previous Research 7. Production examples and Presentation of Previous Research 8. Presentation of Interaction Design
Learning out of the school hour	Investigate previous research on interaction design.
Performance criteria	Evaluation is based on presentations during class.
Texts	Texts to be used are announced in the first class.
Reference literature	Reference literature is introduced as the course progresses.
Course requirements	
Precautions and requirements	
Active learning	Presentation
Office hours and contact information	Monday, 13:00 – 14:00 Appointment by e-mail preferred. keikobayashi@sda.nagoya-cu.ac.jp
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Audiovisual Design
Supervising faculty member	Ryu Nakagawa
Number of credits	2 credits
Course level / day of week / period	2nd semester: Thursday, 1st period and 2nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	Through study cases of audiovisual expressions, this course aims to allow students to understand the background, structure and technology, and thereby deepen their recognition of audiovisual expressions.
Key words	Video art, New Media Art, Audiovisual Art, VR(virtual reality)、MR(mixed reality)、XR(extended reality, cross reality)
Related diploma policy	
Attainment goal	Students aim to develop their ability to understand and discuss the background, structure and technology of audiovisual expression they are learning.
Grade evaluation criteria	
Outline of course	Through appreciation of art works related to “audiovisual expressions” and "audiovisual technology," and reading intensively the texts about those works, students grope for the potential of audiovisual expressions while understanding their sociological and philosophical background and techniques
Program of course	・1. Abstract cinema ・2. Video installation（1） ・3. Video installation（2） ・4. Media art with XR（1） ・5. Media art with XR（2） ・6. Cyber space and communication ・7. Visual anthropology ・8. Summary In the 1st to 7th weeks, students take a task-oriented research that they appreciate audiovisual works and read intensively the texts related to the works, and write a report. Every distribution texts are written deeply about audiovisual works, and also students will be presented with the necessary perspectives and goals for the assignments. Research materials will be uploaded to the portal site every Thursday until 8 am. In the 8th week, students take an in-person class in the A305 lecture room.
Learning out of the school hour	Since related works and keywords are shown in the task-oriented research, students study them to gain a deeper understanding of audiovisual expressions.
Performance criteria	Evaluation is made comprehensively based on discussion during class, preparation for reading, and others.
Texts	Print-outs of materials, etc. are distributed as necessary.
Reference literature	Reference literature is indicated during class as necessary.
Course requirements	
Precautions and requirements	
Active learning	There may be a discussion time in the 8th week, so please do your own research on the audiovisual works and audiovisual technologies you are interested in.
Office hours and contact information	E-mail: nakagawaryu[at]sda.nagoya-cu.ac.jp Friday, 16:20～17:20 ※Be sure to make an appointment in advance by e-mail (stating your student ID number, name and purpose of contact). ※For any procedural matter, contact the office in the Administration Wing.
Remarks	In the 1st to 7th weeks, students engage in task-oriented research. In the 8th week, students take an in-person class in the A305 lecture room.

Year of course	Academic year 2022
Subject	Advanced Study of Moving Image
Supervising faculty member	Yasuyuki Kurihara
Number of credits	2 credits
Course level / day of week / period	2nd semester, Monday, 3rd period and 4th period
Language	Japanese (English also acceptable),occasionally Japanese（language) movie or contents will be used in a class.

Subtitle	
Mode of class	Lecture
Objective/goal of course	This course aims to allow students to acquire knowledge to objectively consider and discuss events and productions related to moving images. Students will appreciate moving image productions and consider the messages and issues behind them.
Key words	Filmmaking, Movie history
Related diploma policy	
Attainment goal	Students aim to acquire the ability to discuss moving image productions after objectively appreciating them. Students also aim to acquire the skills to express the value of moving image productions, point out problems within them, and subjectively provide suggestions for improvement, interpretation of problems, etc. These skills are regarded as being very important not only for interpreting moving image productions but also for considering various events in broader society.
Grade evaluation criteria	
Outline of course	Students appreciate the contents of various moving image productions ranging from the avant-garde to the commercial, discuss them, and read literature related to moving image productions. Thereby, students cultivate not only their ability to discuss moving image productions but also develop observant eyes capable of identifying and raising issues in works observed. Students may be required to make considerable preparation for the class, including preliminary reading and review.
Program of course	Documentary movies are screened and explained, and classic movies are screened and explained. The origin of movies and the mechanism of motion pictures are explained. In some instances, competition winning movies are screened, and recent trends of moving image production are considered. According to the characteristics of the subject, content may be updated to be the latest as the course progresses. Tentative program: 1st week: Screening, Explanation, and Discussion of Classic Masterpiece Movies 2nd week: Screening, Explanation, and Discussion of Classic Masterpiece Movies (Comedies) 3rd week: Screening, Explanation, and Discussion of Classic Masterpiece Movies (SF) 4th week: Screening, Explanation, and Discussion of Modern Documentary Productions 1 5th week: Screening, Explanation, and Discussion of Modern Documentary Productions 2 6th week: Screening, Explanation, and Discussion of Modern Independent Movies 1 7th week: Screening, Explanation, and Discussion of Modern Independent Movies 2 8th week: Screening, Explanation, and Discussion of Experimental Movies
Learning out of the school hour	Reading and summarizing the selected work.
Performance criteria	Evaluation is mainly attendance-based. In addition, an active attitude to class participation is highly evaluated. Students may be requested to submit reports, which also forms part of the performance criteria. Students may be disqualified for sleeping or touching cell phones during class, for late attendance, etc.
Texts	Necessary information materials, if any, are distributed or screened as the class progresses. In some cases, students may be requested to purchase collected materials.
Reference literature	Reference literature is indicated during class as necessary. In addition, “How to Read a Film” and “Shot by Shot” are also used. (Since these two books are available in the library, students are not obliged to purchase them.)
Course requirements	
Precautions and requirements	The course, each of which is composed of two consecutive sessions a week, continues for eight weeks. Preferably, the lecture should be selected by those who are interested in moving images and movies.
Active learning	Presentation
Office hours and contact information	Wednesday, 11:00 – 12:00 E-mail: ykurihar@i.softbank.jp
Remarks	URL: http://www.sda.nagoya-cu.ac.jp/ykurihar/home/

Year of course	Academic year 2022
Subject	Advanced Study of Sound Design
Supervising faculty member	Mikako Mizuno
Number of credits	2 credits
Course level / day of week / period	1st semester, Saturday, 1st period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	This course aims to allow students to learn the creation and analysis of sound and music based on multiple theories. In this course, students define “sound” in connection with timbre in music, digital files and contexts, learn the creation and analysis of sound and music according to the respective definitions, and train themselves to make a logical composition in both MIDI (musical instrument digital interface) and audio files. Furthermore, students learn in a practical manner how the logic of a work should be with regard to interactive pieces with/without sound. Based on what they have learned, students develop their skill of application to media art, which is increasingly taking broader sense of framework .
Key words	sound design, electroaoustic, spacialization, orchestral score, pitch class set
Related diploma policy	
Attainment goal	Students study the structure of music in order to able to consider it as a system of sound. The sound system can be considered from various aspects ranging from chord to harmony, to instrumentation, to orchestration, and to microstructure and macroform of motions, including acoustic body formation by controlling dynamics. In this course, however, students aim to interpret the structure of timbre from the composers’ orchestral scores.By applying the knowledge they have acquired there, students also aim to produce sounding variations using digital equipment.
Grade evaluation criteria	
Outline of course	1. Students learn the composition of sound, how to read orchestral scores, the comparison of orchestration features for each composer, the philosophy and history of electroacoustic music, spatial design with sound, basic study of DSP (digital signal processing) and sound synthesis using Max/MSP, music composition with set theory, and musical works of Stockhausen, Boulez, Nono, Xenakis and Murail. 2. Students analyze orchestra works in order to create MIDI data effective as music, and study how to mix timbres based on the analysis results. Concerning audio data, students also study synthesis types, DSP, MA etc.
Program of course	1. Sonic Composition (1) 2. Sonic Composition (2) 3. Score Reading (1) 4. Score Reading (2) 5. Orchestration and Musical Instruments (1) 6.Orchestration and Musical Instruments (2) 7. Philosophy and History of Electroacoustic Music 8. Current State of Electroacoustic Music 9. Spatial Design with Sound (1) 10. Spatial Design with Sound (2) 11. Basic Study of DSP and Sound Synthesis Using Max/MSP 12. Musical Composition with Set Theory 13. Timbre by the Contemporary Composers (1) 14. Timbre by the Contemporary Composers(2) 15. Summary
Learning out of the school hour	Check tests will sometimes be held. Students must read and study their notes after each class.
Performance criteria	Evaluation is based on reports, presentations during class.
Texts	Texts are indicated during class as required.
Reference literature	All volumes of “Invitation to Design and Architecture” published to date Websites concerning IRCAM (Institute de Recherche et Coordination Acoustique/Musique)
Course requirements	
Precautions and requirements	Since knowledge of musical terminology is required to complete course assignments, study of musical grammar and basic harmony beforehand is recommended.
Active learning	Presentation of the researches of each student will be needed. Concepts and techniques should be discussed based on each student's creative activities.
Office hours and contact information	Contact the supervising faculty member by e-mail in advance, and she will respond in accordance with her schedule. E-mail: mikakom@sda.nagoya-cu.ac.jp
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Data Science
Supervising faculty member	Eli Kaminuma
Number of credits	2 credits
Course level / day of week / period	1st semester, Thursday, 3nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	To intdoduce students to the basic concepts and techniques of DX (Digital Transformation), AI, and Data Science.
Key words	DX, AI, Data Science
Related diploma policy	1 Interdisciplinary knowledge understanding
Attainment goal	A good understanding of the basic knowledge of Digital Transformation, AI, and Data Science.
Grade evaluation criteria	S: the highest level of attainment A: a high level of attainment B: an adequate level of attainment C: a minimal passing level of attainment
Outline of course	Introducing the basic knowledge of "Digital Transformation, AI, and Data Science" for beginners. This class contains the practical training of the AI programming in Python language on Google Colaboratory and the no-code/low-code tool operations such as Power Automate of Microsoft 365.
Program of course	1st Introduction to Digital Transformation Part 1 2nd Introduction to Digital Transformation Part 2 3rd Introduction to Digital Transformation Part 3 4th Introduction to Digital Transformation Part 4 5th Presentation Part 1 6th Linux Commands 7th Open Data and API 8th Machine Learning Part 1 9th Machine Learning Part 2 10th Deep Learning Part 1 11th Deep Learning Part 2 12th Deep Learning Part 3 13th Deep Learning Part 4 14th AI Ethics 15th Presentation Part 2
Learning out of the school hour	
Performance criteria	The final course grade will be based on the submissions of assignments, presentations, and the participation in class.
Texts	Texts will be introduced as appropriate.
Reference literature	Reference books will be introduced as appropriate.
Course requirements	
Precautions and requirements	Lecture texts (in Japanese) will be distributed at each lecture.
Active learning	Presentation
Office hours and contact information	kaminuma@sda.nagoya-cu.ac.jp. Please contact me by email in advance.
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Information and Communication Engineering
Supervising faculty member	Dai Hanawa
Number of credits	2 credits
Course level / day of week / period	2nd semester, Friday, 6th period and 7th period
Language	Japanese (English also acceptable but there are some limitations as described in the remarks)

Subtitle	
Mode of class	Lecture
Objective/goal of course	Students learn about the information and communication network supporting our lives of today. With the rapid evolution of information and communication technology, new concepts, services and contents are being created one after another. Among the recent research topics related to the information and communication network, this course focuses mainly on web-related technology and aims to allow students to deepen their understanding of the trends, outline and basic knowledge pertaining to these areas, and acquire knowledge related to the development of network applications.
Key words	Programing, HTML5, JavaScript, Web3D, Web Socket
Related diploma policy	
Attainment goal	Students acquire an understanding of the basic structure of web-service applications using HTML5, and develop the ability to create programs using the functions of HTML5.
Grade evaluation criteria	
Outline of course	Through reading theses and books, students learn the latest research topics concerning the information and communication network, the basic knowledge of network application development, and programming techniques. This year, students will learn about programming techniques using HTML5, CSS3 and JavaScript, the programming languages on which attention has been focused in recent years.
Program of course	1st week: Guidance Preparation: Students are requested to carefully read the syllabus. Review: Students are requested to deepen their understanding of the section in their charge. 2nd week: Graphics 1 Preparation: Students are requested to read the section about graphics. Review: Students are requested to understand the program operation introduced during lecture. 3rd week: Graphics 2 Preparation: Students are requested to read the section about graphics. Review: Students are requested to understand the program operation introduced during lecture. 4th week: Graphics 3 Preparation: Students are requested to read the section about graphics. Review: Students are requested to understand the program operation introduced during lecture. 5th week: Video and Audio Preparation: Students are requested to read the section about video and audio. Review: Students are requested to understand the program operation introduced during lecture. 6th week: Interface Interaction Preparation: Students are requested to read the section about interface interaction. Review: Students are requested to understand the program operation introduced during lecture. 7th week: Web Socket 1 Preparation: Students are requested to read the section about Web Socket. Review: Students are requested to understand the program operation introduced during lecture. 8th week: Web Socket 2 Preparation: Students are requested to read the section about Web Socket. Review: Students are requested to understand the program operation introduced during lecture.
Learning out of the school hour	As described in the above program of course, students are requested to prepare for the next week's lecture and to review for the program operation introduced during lecture.
Performance criteria	Evaluation is based on reading and presentation (80%) and attitude during the course including attendance (20%).
Texts	Texts are introduced at the beginning of class.
Reference literature	Reference literature is introduced as necessary as the course progresses.
Course requirements	
Precautions and requirements	The course is carried forward centrally by reading and explanation in turn. At the first lecture, the theses and books for reading and explanation are introduced, and the order of reading is determined. For this reason, students should attend the first lecture by all means. Preferably, students should have experience in programming using the basic knowledge of object-oriented languages (e.g., C++, JAVA, JavaScript) and basic knowledge of web systems (e.g., HTML, HTTP, TCP/IC). Students are also requested to sufficiently understand the contents and conscientiously prepare for presentations on the area assigned. The content and format of classes are flexible and may be subject to change according to the status of progress, etc.
Active learning	Presentation
Office hours and contact information	Thursday, 17:00 – 18:30 E-mail: hanawa@sda.nagoya-cu.ac.jp
Remarks	Japanese or English texts for reading and explanation are used. Presentation, exercise and discussion are basically done in Japanese. Operating system of PC for exercise is Mac OS X for Japanese.

Year of course	Academic year 2022
Subject	Advanced Study of Software Design
Supervising faculty member	Kiyoko Yokoyama
Number of credits	2 credits
Course level / day of week / period	1st semester, Thursday, 6nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	This course aims to provide lectures about the theories and applied examples related to data structure and algorithms necessary for programming data processing and visualization of processing results.
Key words	algorithm, data structure, programing
Related diploma policy	
Attainment goal	Students aim to acquire knowledge related to data structure and algorithms necessary for programming data processing and visualization of processing results, and programming skills by applying the acquired knowledge.
Grade evaluation criteria	
Outline of course	The course consists of lectures about data structure, such as arrays, stacks and queues, sorting and search used as the basic technology for databases, pattern matching used in search engines, numerical analysis, signal processing and 3D graphics; reading of relevant literature in English; and presentations and discussion of relevant issues. English or Japanese information materials are distributed in advance of the next and subsequent lectures. Students are to read in advance, and make presentations and discussions within class time.
Program of course	1. Algorithms and Evaluating Running time, and Simple Algorithms – Preparation for Data Structure (1) (extracurricular study) 2. Data Structure (1): Stacks and Queues – Preparation for Data Structure (2) (extracurricular study) 3. Data structure (2): Vectors and Lists – Preparation for Data Structure (3) (extracurricular study) 4. Data Structure (3): Trees – Preparation for Data Structure (4) (extracurricular study) 5. Data Structure (4): Binary Trees – Preparation for Sorting (1) (extracurricular study) 6. Sorting (1): Bubble Sort, Simple Choice Method and Direct Insertion Method – Preparation for Sorting (2) (extracurricular study) 7. Sorting (2): Shell Sort, Heap Sort and Quick Sort – Preparation for Search Algorithms (extracurricular study) 8. Search Algorithms – Preparation for String Processing (1) (extracurricular study) 9. String Processing (1): Brute Force Pattern Matching, BM Algorithms – Preparation for String Processing (2) (extracurricular study) 10. String Processing (2): KMP Algorithms – Preparation for Text Processing (1) (extracurricular study) 11. Text Processing (1): Standard Tries – Preparation for Text Processing (2) (extracurricular study) 12. Text Processing (2): Compressed Tries – Preparation for Numerical Analysis (extracurricular study) 13. Numerical Analysis – Preparation for Recursive Procedure and Fractal Graphic Generation (extracurricular study) 14. Recursive Procedure and Fractal Graphic Generation 15. Summary
Learning out of the school hour	Reading and summarizing the distributed materials to make presentations and discussions with in next class time.
Performance criteria	Evaluation is based on presentations within class (70%) and assignments (30%).
Texts	M.T.Goodrich, R.Tamassia, (co-authors)"Algorithm Design",、 Johnwiley & Sons, Inc. Goodrich, M.T., Tamassia, R., (co-authors), “Algorithm Design,” *John Wiley & Sons, Inc.*
Reference literature	Yuda, K. and Ihara, H. (co-authors), “Algorithm and Data Structure,” *Corona Publishing*
Course requirements	
Precautions and requirements	
Active learning	presentation
Office hours and contact information	Wednesday, 13:00 – 15:00 E-mail: yokoyama@sda.nagoya-cu.ac.jp
Remarks	

Year of course	Academic year 2022
Subject	Training in Media Engineering
Supervising faculty member	Kenri Kodaka
Number of credits	2 credits
Course level / day of week / period	2nd semester, Thursday, 6th period and 7th period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	In order to design human-affinitive media, deep understanding is required of the external world recognition and method of behavior generation, as possessed by living things in general including human beings. As a result of recent developments in brain science, a large number of important theses that may substantially update the theories about human recognition have been published. Accordingly, for those who are engaged in research in intelligent media in graduate school, the literacy necessary for reading and understanding theses of interest (most important theses are from overseas journals) has become increasing important. In this lecture, students read in turn those theses that are useful for studying issues of intelligent media, and also learn the literacy necessary for searching for specific theses.
Key words	Cognitive Pychology, Neuroscience
Related diploma policy	
Attainment goal	・Students aim to search for theses of interest from online international journals (e.g., PloS One, Frontiers), and understand their contents. ・Students aim to understand the trends in recent brain science and cognitive science related (directly or indirectly) to intelligent media.
Grade evaluation criteria	
Outline of course	In the first half of the course, students understand the contents of theses specified by Prof. Kodaka. In the second half of the course, students summarize the contents of a thesis they have found and selected, and make presentations (at least once each).
Program of course	01-02. Introduction 03-04. Searching for theses (utilizing PumMed, Google Scholar, Mendeley, etc.) 05-08. Specification of theses (by Prof. Kodaka) (Students translate the Abstract into Japanese as preparation.) 09-15. Summarization of theses (by students)
Learning out of the school hour	Reading and summarizing the selected paper is needed as the homework.
Performance criteria	Evaluation is based on discussion during class and presentation performance.
Texts	Printouts, etc. are handed out, as necessary, and reference literature is introduced.
Reference literature	
Course requirements	
Precautions and requirements	The content and format of classes are flexible and may be subject to change according to the status of progress, etc.
Active learning	
Office hours and contact information	Monday, 12:00 – 14:00 kenrikodaka@gmail.com
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Visual Arts
Supervising faculty member	Toshihiro Sakuma
Number of credits	2 credits
Course level / day of week / period	2nd semester, Monday, 6th period and 7th period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	When giving form, such as motif, to that which has no physical object, such as an abstract concept, what kind of procedure do we go through? On the other hand, what kind of spatial perception does the space expressed in pictures generate in us? In seeking solutions to these two questions, this course aims to allow students to learn conception and process within the more advanced horizon of visual art planning.
Key words	Abstract Concepts, Pictorial Space
Related diploma policy	
Attainment goal	Through two assignments of (1) embodying abstract concepts, and (2) analyzing spatial expression in pictures, students experience the sensation of visually planned expression as different from “expression” and “representation,” and expand their figurative ability.
Grade evaluation criteria	
Outline of course	1. Students learn how to embody abstract concept, and apply the method to production (Assignment “a”). 2. Students analyze pictorial space by the perspective drawing method (Assignment “b”).
Program of course	1. Visual Art of Concepts A / Abstract Concepts and Shape (e.g., Growth, Multiplication, Confusion, Harmony, Convergence) 2. Visual Art of Concepts B / Digitization of Concepts 3. Visual Art of Concepts C / Visualization of Concepts 4. Visual Art of Concepts D / Designing Concepts 5. Visual Art of Concepts E / Production 1 6. Visual Art of Concepts F / Production 2 7. Visual Art of Concepts G / Production 3 8. Visual Art of Pictorial Space A / Analyzing Pictorial Space 1 9. Visual Art of Pictorial Space B / Analyzing Pictorial Space 2 10. Visual Art of Pictorial Space C / Analyzing Pictorial Space 3 11. Visual Art of Pictorial Space D / Drawing Plan Views and Elevation Views from Analysis Diagrams 1 12. Visual Art of Pictorial Space E / Drawing Plan Views and Elevation Views from Analysis Diagrams 2 13. Visual Art of Pictorial Space F / Drawing Plan Views and Elevation Views from Analysis Diagrams 3 14. Visual Art of Pictorial Space G / Drawing Plan Views and Elevation Views from Analysis Diagrams 4 15. Visual Art of Concept＋Visual Art of Pictorial Space / Presentation＋Commentary＋Summary
Learning out of the school hour	Specified goal to be cleared outside class.
Performance criteria	Evaluation is based on assignment submission (80% = 40%×2 assignments, Quality of works), portfolio submission and attitude in class (20%).
Texts	No texts are used.
Reference literature	Takahashi. M., “The Basis of Visual Art, ” vols. 1, 2, 3, Visual Design Labo., Hozansha, out of print (Consult at library, etc.) Koyama. K. “Descriptive Geometry of Pictorial Space – Picture Plane Structure, ” New Technique Series, ” Bijutsu Shuppan-sha, out of print (Consult at library, etc.)
Course requirements	
Precautions and requirements	Students are requested to bring them a compass, a straight ruler (over 60cm), a set square (30cm), a box-cutter, a cutting mat, pencils, an eraser, a Croquis Book (JIS A3 sized or so), etc. After each class, students are to review by looking up the artists, designers, books, websites, etc. referred to during the class.
Active learning	Including creative exercises
Office hours and contact information	Tuesda, 5th hour period Contact the supervising faculty member in advance by e-mail (sakuma@sda.nagoya-cu.ac.jp)
Remarks	Basic skills of design and perspective drawing are required.

Year of course	Academic year 2022
Subject	Advanced Study of Visual Design
Supervising faculty member	Junko Mori
Number of credits	2 credits
Course level / day of week / period	1st semester, Friday, 1st period and 2nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	This course aims to allow students to learn the theory of visual design development and application through design practices, and apply the importance of visual trans information to various fields.
Key words	Logo　Package Design　Scheme of Signs
Related diploma policy	
Attainment goal	Students aim to totally learn the theory and practice of design through all classes.
Grade evaluation criteria	
Outline of course	Students learn the social role, which is the essence of designs, by studying practical design.
Program of course	(01) Guidance (02) Typography (03) Typography / Presentation (04) Symbolmark / Logotype (05) Symbolmark / Logotype / Presentation (06) Editorial Design (07) Editorial Design / Presentation (08) Package Design (09) Package Design / Presentation (10) Advertising Design (11) Advertising Design / Presentation (12) Scheme of Signs / CI Space Design (13) Scheme of Signs / CI Space Design / Presentation (14) Space Design (15) Space Design / Presentation
Learning out of the school hour	Students are to study cases to be dealt with in the next class to familiarize themselves with the present situation.
Performance criteria	
Texts	Texts are introduced as appropriate.
Reference literature	Reference literature is introduced as appropriate.
Course requirements	
Precautions and requirements	Assignments are to be submitted at the beginning of the next class.
Active learning	Group work　Presentation
Office hours and contact information	Tuesday, 10:40 – 12:10, Mori Laboratory Office on the third floor of the Research Building Contact the faculty member by e-mail (mori@sda.nagoya-cu.ac.jp) in advance.
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Biological Information Processing
Supervising faculty member	Sei-ichi Tsujimura
Number of credits	2 credits
Course level / day of week / period	1st semester, Monday, 3rd period and 4th period
Language	Japanese and English

Subtitle	
Mode of class	Lecture and exercises
Objective/ goal of course	This course aims to provide students with a basic understanding of colorimetry and photometry, based on the knowlegde of physics, biology and experimental psychology. Lectures will be given in both English and Japanese as necessary.
Key words	Colourimetry, photometry, color science, vision science
Related diploma policy	
Attainment goal	Student will acquire a basic knowledge of colourimetry and photometry. In addition, the student will acquire knowledge of the mechanisms of colour vision.
Grade evaluation criteria	
Outline of course	The lecture focuses on acquiring knowledge of the fundamentals of information/electronic engineering that will enable the development of electronic devices. In addition, students will summarize English papers related to Biological Information Processing. Lectures will be given in both Japanese and English.
Program of course	1-2 Trichromaticy of vision 3-4 RGB colour system 5-6 CIE colour system 7-8 Colour discrimination 9-10 Colour vision 11-12 Colour deficiency 13-15 Mechanisms of colour vision
Learning out of the school hour	In addition to attending the lectures, students are expected to spend about 4 hours a week.
Performance criteria	Grades will be based on a weighting of 80% on minitests and the final exam and 20% on reports and discussions during lectures.
Texts	Appropriate textbook will be assigned in class.
Reference literature	Appropriate literature will be assigned in class.
Course requirements	Rquire knowledge of mathematical subjects such as differential and integral calculus, complex function theory, and electromagnetism for the study of optics.
Precautions and requirements	Nothing in particular
Active learning	The approach of group work, debate and laboratory works are used in class.
Office hours and contact information	Office hours will be assigned in class.
Remarks	Nothing in particular

Year of course	Academic year 2022
Subject	Advanced Study of Visual Environment Design
Supervising faculty member	Neda Filfova
Number of credits	2 credits
Course level / day of week / period	1st semester, Thursday, 5th period and 6th period
Language	English (When necessary short Japanese translations and explanations are possible)

Subtitle	
Mode of class	Lecture, discussion
Objective/ goal of course	The course will aim at improving the students understanding of design history and theory, particularly graphic design's relation to other disciplines and areas of life.
Key words	Exhibition visit, Discussion
Related diploma policy	
Attainment goal	The course will aim to outline the role of graphic design in contemporary society, while the students will acquire knowledge of the various aspects that the graphic designer profession has had within various historical and social contexts.
Grade evaluation criteria	
Outline of course	The course is made up of 15 lectures spread out in 8 weeks (7 blocks of 2 periods and 1 single class). In addition to attending the lectures, students are encouraged to discuss and present their projects/reading materials in class. Some of the classes are interactive, they include video material and going to exhibitions out of campus.
Program of course	1. Introduction 2. History and Theory of the Achievements of Printing and the Printed Medium (1&2) 3. From the Arts and Crafts Movement to Bauhaus (1&2) 4. The Modernist Graphic Designer and Modern Graphic Design (1&2) 5. Over-production and Anti-consumerist related tendencies / The End of Print 6. Post-mortem: Contemporary Graphic Design in Context 7. Visit of a related exhibition/Viewing of a related documentary 8. Student presentations and discussion
Learning out of the school hour	Reading material is recommended or provided for reading at home
Performance criteria	Evaluation is based on three elements: activity in class, presentations and reports related to reading material.
Texts	Provided when applicable.
Reference literature	Josef Mueller Brockman, Lewis Blackwell, Ellen Lupton, Marshal McLuhan, Bruno Munari, Rick Poynor etc.
Course requirements	
Precautions and requirements	Previous experience with graphic design is not required but as the class encourages active student participation on the student side, interest in the class content is a prerequisite.
Active learning	Exhibition visit, Discussion
Office hours and contact information	Thursday morning. Appointment by e-mail preferred (neda.firfova@sda.nagoya-cu.ac.jp).
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Computer Graphics
Supervising faculty member	Nobuo Takahashi
Number of credits	2 credits
Course level / day of week / period	2nd semester, Wednesday, 6th period and 7th period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture
Objective/goal of course	This course aims to allow students to acquire skills to efficiently use computer graphics in their own specialized field.
Key words	Computer Graphics
Related diploma policy	
Attainment goal	Students aim to acquire production techniques for computer graphics.
Grade evaluation criteria	
Outline of course	Students receive the outline of the production procedure for computer graphics, and produce assigned works. Students select their own production assignment as appropriate to their specialized field. Students use “AUTODESK MAYA” as the basic software for production. However, the use of any other software or I/O equipment may be permitted according to the contents of assignment.
Program of course	1. Outline of Production Procedure for Computer Graphics (1) 2. Outline of Production Procedure for Computer Graphics (2) 3. Explanation of Technique (Modeling) 4. Production (Modeling) 5. Explanation of Technique (Hierarchic Structure) 6. Production (Hierarchic Structure) 7. Explanation of Technique (Shading) 8. Production (Shading) 9. Explanation of Technique (Lighting) 10. Production (Lighting) 11. Explanation of Technique 12. Production of Final Assignment (1) 13. Production of Final Assignment (2) 14. Production of Final Assignment (3) 15. Commentary
Learning out of the school hour	Reviewing the last lesson
Performance criteria	Evaluation is based on attendance (50%) and assignment (50%).
Texts	AUTODESK MAYA Visual Reference
Reference literature	
Course requirements	
Precautions and requirements	
Active learning	practical training
Office hours and contact information	Wednesday, 16:20, Craft Center 2 E-mail: nt@sda.nagoya-cu.ac.jp
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Product Design Methodology
Supervising faculty member	Tomoaki Kageyama
Number of credits	2 credits
Course level / day of week / period	1st semester, Tuesday, 1st period and 2nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture & Workshop
Objective/goal of course	The essence of product design is to create comfortable and emotional satisfactions by human centred design. This advanced study course aims to allow students to build up various design skills and to learn the way of design thinking by lecture and workshop.
Key words	Product design process, Design thinking , Way of design solution.
Related diploma policy	
Attainment goal	Students aim to build up overall design skills that will be able to apply to any other genres.
Grade evaluation criteria	A: Achieved attainment target well B: Achieved attainment target well enough C: Achieved attainment target barely
Outline of course	This course is going to follow the experience of overall product design process by logical veiwpoint. Finally,students will compleat thair own design idea, and they will be able to get not only the knowledge but also the power of expression for design.
Program of course	01. Introduction 02-03. Production technologies 04-05. Process of product design 06-07. Idea generation supported methods 08-09. Way of design solution 10-11. Logical sketch work 12-13. Color theoly and expressive skills 14. Check for progress 15. Presentation of final product idea
Learning out of the school hour	Students may work for assignment design production at extra time.
Performance criteria	Evaluation is based on final presentation (50％) and attendance(50％).
Texts	
Reference literature	Reference literature is introduced as appropriate during the lecture.
Course requirements	Require to bring a laptop PC with Adobe Illustrator and Photoshop installed.and also PC operating device is preferably a pen tablet or mouse due to this lecture includes digital sketching. Learners need to understand Japanese due to this course will be conducted in Japanese.
Precautions and requirements	The required equipment for each workshop will be notified as appropriate.
Active learning	This course includes design workshop.
Office hours and contact information	Thursday, 16:30 – 17:30, Contact Tomoaki Kageyama Laboratory to make an appointment.
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Photonics and Quantum Electronics
Supervising faculty member	Takahiro Matsumoto
Number of credits	2 credits
Course level / day of week / period	1st semester, Tuesday, 7nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture and seminar
Objective/goal of course	The purpose of this course is to provide the basic knowledge of electromagnetism, which leads to understand the physics of electronic and optical devices. The final goal would be to theoretically describe the electromagnetic field in a condensed matter system and solve the quantum dynamical behaviors of photon, phonon, and electron by constructing a simple physical model.
Key words	Vector Analysis, Maxwell Equations, Electromagnetic Field, Symmetry, Solid State Physics, Semiconductor, Conduction
Related diploma policy	
Attainment goal	Students aim to acquire the ability to completely understand the physics of qunatum mechanics and electromagnetism governing natural phenomena around us. Particularly, students will acquire the ability to calculate various physical quantities described by Maxwell's equations with vector and/or tensor formalism.
Grade evaluation criteria	
Outline of course	In order to develop modern electronic and optical devices, it is necessary to fundamentally review the physical properties of these devices. Students will review the basic principle of these optical and electronic devices from the point of view of quantum mechanics and electromagnetism.
Program of course	1. Review of vector analysis: Acquisition of quantitative calculation technique related to scalar products, vector products, triple scalar product of vectors, triple vector product of vectors, gradients, divergence, rotation, calculation of continuously acted nabla (▽) such as Laplacian and D'Alembertian, vector integral and potential theory (1st – 3rd weeks) 2. Solving Maxwell's equations (static electric fields): Quantitative understanding and physical image acquisition of Coulomb's law, electric fields, Gauss's law, scalar potential theory, vector potential theory, Poisson equations, Laplace equations, boundary value problems, the method of images, 2D potential problems, coordinate transformation, special functions (Bessel functions, Legendre functions, Spherical harmonics), etc.(4th – 6th weeks) 3. Solving Maxwell's equations (dielectric media): Quantitative understanding and physical image acquisition of electric polarization, permittivity, boundary value problems when dielectric media exist, polarizability and dielectric susceptibility, electrostatic energy in a dielectric medium, etc. (7th – 8th weeks) 4. Solving Maxwell's equations (static magnetic fields): Quantitative understanding and physical image acquisition of Biot-Savart law, Ampere's law, vector potential and magnetic flux density, magnetic moment, boundary value problems at static magnetic fields, Farady's electromagnetic induction law, energy of magnetic fields, self-inductance and mutual inductance, etc. (9th – 10th weeks) 5. Symmetry and the beauty of Maxwell's equations: Quantitative understanding and physical image acquisition of displacement current, symmetric property, vector potential, scalar potential, gauge transformation, pointing vectors, magnetic monopole, relativity, etc. (11th – 13th weeks) 6. Calculation of electromagnetic physical amount in solids: Quantitative understanding and physical image acquisition of Bose distribution, Fermi-Dirac distribution, electronic state in crystals, electron conduction, Drude model, Lorentz-Drude model, electron-phonon interaction, solid-state band structure, impurity scattering, phonon scattering, electric conduction in metals, etc. (14th – 15th weeks)
Learning out of the school hour	Self-directed learning: "Classical Electrodynamics", J. D. Jackson, John Wiley & Sons (1999), "Electrodynamics of Continuous Media", L. D. Landau, E. M. Lifshitz, and L. P. Pitaevskii, Pergamon Press (1984).
Performance criteria	Evaluation is based on attendance (60%) and reports (40%).
Texts	Texts are introduced as appropriate during lectures.
Reference literature	Reference literature is introduced appropriately at times within lectures.
Course requirements	
Precautions and requirements	Students are required to have knowledge of differential, integral, matrix and Fourier transformation.
Active learning	
Office hours and contact information	Tuesday, 10:00 – 12:00 E-mail: matsumoto@sda.nagoya-cu.ac.jp
Remarks	This is a course in which the beauty of nature is expressed in mathematical language.

Year of course	Academic year 2022
Subject	Advanced Study of Cybernetics
Supervising faculty member	Takashi Kato
Number of credits	2 credits
Course level / day of week / period	1st semester, Friday, 3th period and 4nd period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecture & Workshop
Objective/goal of course	This course aims to allow students to learn the concept of cybernetics, understanding theory and elemental technology which underlie robotics and mechatronics, and to consider and conceive of a future society with technologies based on robots, IoT and AI.
Key words	Cybernetics, Robotics, Mechatronics, IoT, AI
Related diploma policy	1 Interdisciplinary Understanding of Knowledge
Attainment goal	Students aim to attain a comprehensive understanding of the concept of cybernetics, basic theory and peripheral knowledge of robotics and mechatronics.
Grade evaluation criteria	
Outline of course	There are robotic and mechatronic technologies and products around us in present-day society as a matter of course. The lecture describes in details the basic theory, applied theory and technology of robotics and mechatronics with the inclusion of real world case studies. At the same time, while investigating problems in the problems of present age from points of view of cybernetics, the lecture provides students with opportunities to explore the current situation of robotics through assignments to encourage the proactive consideration and conception of the human-robot relationship in future society.
Program of course	01 Guidance of this lecture 02-03 Concepts of Cybernetics and Robotics, and Relation in between 04-05 Perspective of Cybernetics from the veiw point of Science Fiction 06-07 Dynamics and Mechanics for Controling Systems 08-09 Control Engineering for Cybernetics/Robotics 10-11 Digital Circuitry and Digital Signal Processing for Robotics 12-13 Sensors and Actuators for Robotics 14-15 IoT, AI, and the future of Cybernetics
Learning out of the school hour	
Performance criteria	Evaluation is based on attitude of attendance and active learning (30%) Reports and assignment submission (70%)
Texts	Texts are introduced as appropriate.
Reference literature	Texts are introduced as appropriate.
Course requirements	
Precautions and requirements	
Active learning	Workshops and Discussions are implemented timely.
Office hours and contact information	3rd floor, Research Building Make an appointment by e-mail (kato@sda.nagoya-cu.ac.jp).
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Computer Graphics Techniques
Supervising faculty member	Toshimitsu Tanaka
Number of credits	2 credits
Course level / day of week / period	1st semester, Wednesday, 4th period
Language	Japanese

Subtitle	Introduction to Computer Graphics
Mode of class	Lecture
Objective/goal of course	This lecture aims to allow students to acquire the basics of modeling techniques and rendering techniques for 3D computer graphics (3DCG).
Key words	modeling, rendering, shading, mapping, shadowing
Related diploma policy	
Attainment goal	Students aim to understand the outline of the basic modeling technique and rendering techniques used in 3DCG.
Grade evaluation criteria	S: A: Achieved the attainment goal B: Almost achieved the attainment goal C: Achieved the minimum level of the attainment goal
Outline of course	This lecture explains the outline of algorithm of 3D modeling (CGS, B-rep, Metaballs, etc.), coordinate transformation (perspective transformation, homogeneous coordinates), hidden surface removal (Z-buffer, ray-tracing), shading (reflection model, light source model, etc.), shadowing (shadow texture, shadow map, etc.), and mapping (texture, bump, parallax mapping, etc.), respectively. The lecture also explains global illumination.
Program of course	1: Outline of 3DCG 2 – 4: Basic techniques for 3D shape representation (CSG, B-rep, Metaball, Voxel, Curved Surface Representation) 5 – 6: Homogeneous Coordinates and Perspective Transformation 7 – 8: Hidden Surface Removal Algorithms (Z-buffer, Ray-Tracing) 9 – 10: Brilliance Calculation (Reflection Model, Light Source Model, Method of Handling Line Light Source and Area Light Source) 11 – 12: Shadowing (Shadow Texture, Shadow Map, etc.) 13 – 14: Mapping (Texture, Bump, Disparity Mapping) 15: Global illumination.
Learning out of the school hour	Students are needed to read the teaching materials distributed before the lecture. And students have to read the materials again after the lecture.
Performance criteria	Evaluation is based on reports. The task of the report includes questions to confirm whether this lecture was understood and survey of related CG technology. Evaluation is based on the understanding level of the lecture and the quality of the survey.
Texts	Information materials for lectures are distributed as PDF files, and reference literature is introduced as appropriate as the course progresses.
Reference literature	Computer Graphic Arts Society (CG-ARTS Society), “Computer Graphics”
Course requirements	
Precautions and requirements	Students are to have learned the basic knowledge pertaining to digital images.
Active learning	
Office hours and contact information	Contact: E-mail: toshitnk@meijo-u.ac.jp If you have any questions, send an e-mail to this address. I will answer after lecture time or will reply by e-mail.
Remarks	

Year of course	Academic year 2022
Subject	Studio for Design Information
Supervising faculty member	Tomoaki Kageyama, Masayuki Kageyama, Takashi Kato, Eri Kaminuma, Yasuyuki Kurihara, Kenri Kodaka, Toshihiro Sakuma, Sei-ichi Tsujimura, Ryu Nakagawa, Nobuo Takahashi, Takahiro Matsumoto, Dai Hanawa, Neda Firfova, Mikako Mizuno, Junko Mori, Kiyoko Yokoyama
Number of credits	4 credits
Course level / day of week / period	
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Seminar
Objective/goal of course	This course aims to allow students to attain skills to solve various problems, assignments and issues in the Informatics and Media Design Area or the Industrial Innovation Design Area according to the theme of thesis and production for the Master's degree.
Key words	
Related diploma policy	
Attainment goal	Students aim to acquire the ability to make proposals for various problems, assignments and issues in the Informatics and Media Design Area or the Industrial Innovation Design Area, based on the awareness of actual conditions and backed up by knowledge and technology of the relevant academic area.
Grade evaluation criteria	
Outline of course	As appropriate to the area of specialization related to the thesis and production for Master's degree, students acquire the basic knowledge related to design, and undertake practical and applied exercises in accordance with the protocol of the relevant academic area.
Program of course	1. Explanation of Assignments 2. Formation of Concept 3. Creation of Seminar Implementation Plan 4. Investigation and Report of Previous Studies and Technical Trends (1) 5. Investigation and Report of Previous Studies and Technical Trends (2) 6. Investigation and Report of Previous Studies and Technical Trends (3) 7. Technical Acquisition Seminar (1) 8. Technical Acquisition Seminar (2) 9. Technical Acquisition Seminar (3) 10. Technical Acquisition Seminar (4) 11. Technical Acquisition Seminar (5) 12. Extraction of Design Requirements (1) 13. Extraction of Design Requirements (2) 14. Extraction of Design Requirements (3) 15. Summary of Contents of Acquisition from Master's Course 16. Implementation of Production, and Report and Discussion of Progress (1) 17. Implementation of Production, and Report and Discussion of Progress (2) 18. Implementation of Production, and Report and Discussion of Progress (3) 19. Implementation of Production, and Report and Discussion of Progress (4) 20. Implementation of Production, and Report and Discussion of Progress (5) 21. Implementation of Production, and Report and Discussion of Progress (6) 22. Implementation of Production, and Report and Discussion of Progress (7) 23. Implementation of Production, and Report and Discussion of Progress (8) 24. Implementation of Evaluation Experiment, and Discussion of Considerations (1) 25. Implementation of Evaluation Experiment, and Discussion of Considerations (2) 26. Implementation of Evaluation Experiment, and Discussion of Considerations (3) 27. Implementation of Evaluation Experiment, and Discussion of Considerations (4) 28. Report and Review of Achievements (1) 29. Report and Review of Achievements (2) 30. Report and Review of Achievements (3)
Learning out of the school hour	Each supervising faculty member instructs the preparation and review contents according to the the relevant academic area, the theme of thesis and production for the Master's degree.
Performance criteria	Each supervising faculty member makes a comprehensive evaluation based on attitude throughout the 30 seminars and achievements.
Texts	
Reference literature	
Course requirements	
Precautions and requirements	
Active learning	
Office hours and contact information	Each supervising faculty member
Remarks	

Year of course	Academic year 2022
Subject	Advanced Study of Mathematics
Supervising faculty member	Masayuki Kageyama
Number of credits	2 credits
Course level / day of week / period	1st semester, Monday, 2th period
Language	Japanese (English also acceptable)

Subtitle	
Mode of class	Lecturer
Objective/goal of course	This course aims to allow students to learn about decision-making models under uncertain circumstances. Introduced in this lecture are recently topical Bayesian networks (BN), risk measurement, etc. Also covered is the evaluation method of art works using fuzzy logic, and the usage of the software TeX to write academic papers in the science and engineering fields.
Key words	Measure theory, Risk analysis, Bayes statistic
Related diploma policy	
Attainment goal	Students aim to learn the basic knowledge of probability theory, statistics and fuzzy theory necessary for their application.
Grade evaluation criteria	
Outline of course	In the first lecture, several English books and papers are introduced, and the course is proceed in a reading and discussion format.
Program of course	1. Guidance, and the History of TeX 2. Installation of TeX, and the Introduction of Editors 3. Usage of TeX (1) 4. Usage of TeX (2) 5. Usage of TeX (3) 6. Axiomatic Probability Theory 7. Expected Value, Dispersion and Moment 8. Lebesgue Measure 9. Lebesgue Integral 10. Non-additive Measure 11. Risk Measure 12. Bayesian Network (1) 13. Bayesian Network (2) 14. Bayesian Network (3) 15. Summary
Learning out of the school hour	Students are needed to read the teaching materials distributed before the lecture. And students have to read the materials again after the lecture.
Performance criteria	Evaluation is comprehensively based on attendance, reports, etc.
Texts	Textbooks are introduced as appropriate as the course progresses.
Reference literature	
Course requirements	
Precautions and requirements	Students are requested to review differential and integral calculus learned in the freshman grade at the undergraduate level.
Active learning	
Office hours and contact information	Lecturer may be visited at any time at his laboratory office.
Remarks	