

デザイン学セミナー Seminar Introduction to Design

[Instructor] Each teacher

[Credits] 2

[Semester] 1st year-Fall-Wed 1

[Course code] T1P001001

[Room] Bldg.ENG-2-102

[Candidate] 1st year of Department of Design Science

[Course description] The students are requested to find out their own problems and themes to the design, throughout the experiments and trainings for the themes given to the students; survey of the habitants' awareness and market research; and visit to factories and facilities. The curriculum consists of lectures and seminars, with home-works and reports as well as regular lessons.

[Course objectives] (General goal): To establish the background for the communications between the students and faculty members, as well as to deeply understand the fundamentals on the study and practice in the design field, from the viewpoint of education to introduce the students to this field. (Attainable goal): To understand the methods and attitudes of how to study at the Department of Design, how to recognize the awareness of problems, and how to conceive interest.

[Plans and Contents]

1. Guidance
2. Introduction of teaching contents and researches (1)
3. Introduction of teaching contents and researches (2)
4. Introduction of teaching contents and researches (3)
5. Introduction of teaching contents and researches (4)
6. Assignment configuration and research method.
7. Group based research, experiment, and observation (1)
8. Group based research, experiment, and observation (2)
9. Interim presentation (1)
10. Interim presentation (2)
11. Group based research, experiment, and observation (3)
12. Group based research, experiment, and observation (4)
13. Final presentation (1)
14. Final presentation (2)
15. Final presentation (3)
16. Summary

[Evaluation] Evaluation will be comprehensively given by attendance, assignments, reports, and presentations. Especially, attendance is counted

[Course requirements] Compulsory subjects

[Remarks] The grouping will be determined on the first seminar. Class time slot for the second seminar and beyond will be announced at each seminar with a consultation between the instructor and students. Depending on assignment contents, seminars may take place outside of the timetable.

図学演習 Descriptive Geometry (Lec & Lab)

[Instructor] Hiroko Imaizumi

[Credits] 2 Credits

[Semester] 1st year-Spring-Mon 3

[Course code] T1P002001

[Room] Bldg.ENG-2-Studio(2-601)

[Candidate] 1st year of Department of Design Science

[Course description] The faculty member lets the students to understand the basic drawing methods throughout the lectures and exercises, and to acquire the techniques of how to demonstrate and transmit the shapes. The faculty member lets the students to enhance the capability of grasping the three-dimensional objects throughout the understanding of various projection methods; mechanical drawings based on JIS; graphic analysis utilizing auxiliary projection, and cutting-away and passing through views; drawing of a three-dimensional object by means of perspective view, and interpretation of actual products in shape. In addition, the faculty member lets the students to acquire the sufficient techniques enough to design materials, by letting them performing the practice to experience the actual examples of drawing and design. This curriculum is in cooperation with “Integrated Design Practice I.”

[Course objectives] (General goal): To acquire the capability of grasping the three-dimensional objects, necessary to transmit their shapes, and to acquire the techniques of demonstrating the shapes. (Attainable goal): Understanding the primary and auxiliary projection methods, the students are allowed to make drawings. Understanding the third angle system, the students are allowed to make the mechanical drawings. The students are allowed to perform the graphic analysis for three-dimensional shapes utilizing the cutting-away and passing through views. The students are allowed to design a simple product and to make its drawings.

[Plans and Contents]

1. Basics of projection method: Principal projection and auxiliary projection (1)
2. Basics of projection method: Principal projection and auxiliary projection (2)
3. Basics of projection method: Principal projection and auxiliary projection (3)
4. Application of auxiliary projection (1)
5. Application of auxiliary projection (2)
6. Graphic analysis of solid using cutting and intersection (1)
7. Graphic analysis of solid using cutting and intersection (2)
8. Review
9. Examination
10. Mechanical drawing based on JIS standard (1)
11. Mechanical drawing based on JIS standard (2)
12. Mechanical drawing based on JIS standard (3)
13. Mechanical drawing based on JIS standard (4)
14. Mechanical drawing based on JIS standard (5)
15. Mechanical drawing based on JIS standard (6)

[Keywords] third angle system、 Mechanical drawing based on JIS standard, passing through views

[Evaluation] Evaluation will be given by submission of assignment, attendance, and exams

[Related courses] Integrated Design Practice I (T1P003001)

[Course requirements] Compulsory subjects

[Remarks] This course will be taught by an instructor and a teacher's assistant.

## 統合デザイン実習 I Integrated Design Practice I

[Instructor] Kenta Ono

[Credits] 2

[Semester] 1st year-Spring-Mon 4, 5

[Course code] T1P003001 T1P003002

[Room] Bldg.ENG-2-Studio(2-601)

[Candidate] 1st year of Department of Design Science

[Course description] The faculty members have lectures and exercises on the practical display techniques necessary for conceiving and transmitting the design concepts, and the basic way of thinking about the human resources who will conceive the construction of shapes and use tools. This curriculum is in cooperation with “Descriptive Geometry.”

[Course objectives] (General goal): To acquire the fundamentals of demonstration techniques and way of thinking about, both needed to the design, throughout the observation and sketch of the materials and human being. (Attainable goals): (1). To acquire the approach to properly show up shapes and textures. (2). To provide the capability of understanding the construction of the shapes. And (3). To provide the capability of thinking about the interrelation between the human being and materials.-5-

[Plans and Contents] The students are requested to acquire the demonstration techniques necessary for the beginners to study “Design,” throughout the thinking of ideas and forms; and training of sketch techniques needed to transmit shapes. The students are requested to acquire the scientific way of thinking about, throughout the construction of the practical products; and observation of and thinking about the human being who might use these products. The students are requested to improve the basic skill, by repetitively dealing with the practical themes during the time out of regular lessons.

Through practices of sketch techniques required for communication of ideas and form, students will acquire necessary graphical techniques for design beginners. In addition, students will acquire scientifically-based thinking techniques through observation and examination of histories associated with physical products as well as its users. Students will be asked to participate in practical assignments outside of the classroom hours to improve their basic skills.

1. Drawing of basic shape
2. Form pretension through line drawing 1
3. Form pretension through line drawing 2
4. Texture expression using colored pencils 1
5. Texture expression using colored pencils 2
6. Three-dimensional expression using marker pens 1
7. Three-dimensional expression using marker pens 2
8. Information transmission using captions 1
9. Information transmission using captions 2
10. Understanding human 1
11. Understanding human 2
12. Understanding human 3
13. History of objects 1
14. History of objects 2
15. History of objects

[Keywords] Design, Presentation Skill, Thinking Skill

[Textbooks and Reference Books] It will be informed separately.

[Evaluation] Evaluation will be given by submission of assignments, and attendance.

[Related courses] Descriptive Geometry (T1P002001)

[Course requirements] Compulsory Subjects

デザイン造形実習Ⅰ Practicum in design fundamentals I

[Instructor] Takatoshi Tauchi, (Akio Kiyohara), Youichi Tamagaki

[Credits] 2

[Semester] 1st year-Spring-Wed 4,5

[Course code] T1P004001, T1P004002

[Room] Bldg.ENG-2-Studio(2-601)

[Course enrollment] 70

[Candidate] 1st year of Department of Design Science, transfer student, Teaching certificate acquisition applicant of other department

[Course description] The students are requested to acquire the fundamental capability of the design, throughout the exercises in color composition and drawing.

[Course objectives] Students will learn the fundamentals for color compositions and drawing skills.

[Plans and Contents]

1. Plant exact description
2. As above
3. Fundament of Still life sketch
4. Still life sketch
5. As above
6. As above
7. Sketch Criticism
8. Fundament of color
9. As above
10. Study of color integrity
11. As above
12. Research and reconstruction of color
13. As above
14. As above
15. Color theme criticism

[Keywords] sketch, color, shape

[Textbooks and Reference Books] [COLOR WORKSHOP] By David Hornung

[Evaluation] Evaluation will be given by whether the solutions to the respective themes are submitted on the reports before their deadlines or not, and by the accomplishments to the objectives of these themes. Attendance of more than 4/5 is requisite. (An absence of 4 days or more is unacceptable.)

[Course requirements] Compulsory Subjects

[Remarks] The conjunction of ”Practicum in design fundamentalsⅠ” and ”Practicum in design fundamentals ” is a replacement subject of “Basic Design Aesthetics” held until 2004.

デザイン論 I Theory of design I

[Instructor] UEDA Akira Ueda, Fumio Terauchi, Takayuki Higuchi

[Credits] 2

[Semester] 1st year-Spring-Tues 3

[Course code] T1P005001

[Room] Bldg.ENG-2-201

[Candidate] 1st year of Department of Design Science

[Course description] The faculty members have a series of lectures on the viewpoints of design education at “Department of Design,” role of design, properties of design in Japan, and on the history of modern design.

[Course objectives] To understand the social mission of design, its objectives, and advancement of design.

[Plans and Contents]

1. Meaning of learning to design
2. Expansion of design activities
3. Industrial revolution and birth of dedicated design profession
4. Sublimation of everyday life into arts: Arts and Crafts movement
5. Industrial art as new artistic expression: Glasgow group, Art Nouveau, Wiener Secession, and Jugendstil.
6. Industrialization and standardization: Behrens and AEG, and Deutscher Werkbund.
7. Modern design education: Bauhaus
8. Rationalism design of Europe.
9. Post-modern design movement
10. Birth of industrial designer in America.
11. Mid-century modern: New materials and new forms.
12. Dawn of contemporary design in Japan and the history of Department of Design Science: Establishment of Tokyo Higher School of Arts & Technology and its activities.
13. Establishment of design in the period of high economic growth.
14. Development of corporate design in the global age.
15. Summary

[Keywords] Design, Modern Design, History of Design

[Textbooks and Reference Books] “History of Design of the world” ABE Kimimasa, Bijyutsushuppannsya

[Evaluation] Evaluation will be given by attendance( checked in every lecture)30 %, assignment of Report 30 %, exams 40 %

[Related courses] Theory of design II, Design Science I, Design Science II

[Course requirements] Compulsory Subjects

[Remarks] The curriculum substitutes the “History of Design” held until 2004.

## デザイン造形実習 II Practicum in design fundamentals II

[Instructor] Takatoshi Tauchi, Hiroko Imaizumi

[Credits] 2

[Semester] 1st year-Fall-Tues 4, 5

[Course code] T1P006001, T1P006002

[Room] Innovation Plaza, Faculty of Engineering, Bldg.ENG-2-studio(2-601)

[Course enrollment] 70

[Candidate] 1st year of Department of Design Science, transfer student to Department of Design Science, Teaching certificate acquisition applicant of other department

[Course description] The students are requested to make compositional paper sculpture, as exercises to grasp the shapes of three-dimensional objects. The students are requested to make copies of plaster figures with clay, as exercises to grasp the shapes of three-dimensional objects.

[Course objectives] The students will learn formative skills of basic three-dimensional.

[Plans and Contents]

1. 1st assignment: Composition with three cuboids.
2. Criticism
3. 2<sup>nd</sup> assignment: Composition with paper.
4. As above
5. Third assignment: Three-dimensional composition based on plan drawing.
6. As above
7. As above
8. Criticism
9. 4ht assignment: Plaster figure imitation.
10. As above
11. As above
12. As above
13. As above
14. As above
15. Criticism

[Keywords] Modeling Exercises in three-dimensional design

[Textbooks and Reference Books] Elements of Design, By Gail Greet Hannah

[Evaluation] Evaluation will be given by whether the solutions to the respective themes are submitted on the reports before their deadlines or not, and by the accomplishments to the objectives of the themes. Attendance of more than 4/5 is requisite. (An absence of 4 days or more is unacceptable.)

[Course requirements] Compulsory Subjects

[Remarks] Both “Practicum in Design Fundamentals I” and “Practicum in Design Fundamentals II” are employed together as the replacement of “Exercises on Basics of Molding” valid until 2004. “Integrated Design Practice II.”

## 統合デザイン実習 II Integrated Design Practice II

[Instructor] Kenta Ono

[Credits] 2

[Semester] 1st year-Fall-Mon 4, 5

[Course code] T1P007001, T1P007002

[Room] Bldg.ENG-2-Studio(2-601)

[Candidate] 1st year of Department of Design Science

[Course description] The faculty members request the students to experience a number of design approaches (product design, graphic design, and space design), aimed at industrial products seen in daily life. This curriculum is in cooperation with “Integrated Design Practice III.”

[Course objectives] (General goal): To enhance both the imagination and creativity to find out problems hidden behind miscellaneous matters and to provide solutions to these problems, throughout the experiences in designing a series of products allied to the objects, by the use of basic skills needed to the design. The students are to provide the following capabilities: (Attainable goals): (1). To provide the capability of deciding on the styling on the basis of the concept established by oneself. (2). To provide the capability of creating such graphic products as printed matters. (3). To provide the capability of creating the demonstration space to show up the products. And, (4). To provide the capability of presenting the resultant products designed by one utilizing the sketches and mock-up models.

[Plans and Contents] The faculty members will build up the design concept and decide on its styling, conceive a variety of graphics which will tie the yielded products to the users, and create the demonstration space to show up the products. The students are requested to acquire the communication skills throughout the presentation at each phase of production and at its final step. Actions of this creative work done by each personal will in principle be performed at the time out of lessons.

1. Construction of product concept.
2. Development of design idea.
3. Design tuning.
4. Product design presentation and criticism.
5. Logo design.
6. Product rendering.
7. Advertisement design.
8. Graphic design presentation and criticism.
9. Basic space composition.
10. Space layout planning,
11. Exhibition space design.
12. Spatial design presentation and criticism.
13. Production of presentation document and mockup.
14. Tutorial.
15. Final presentation and Criticism

[Keywords] Product Design, Graphic design, Exhibition space design.

[Textbooks and Reference Books] It will be informed separately.

[Evaluation] Evaluation will be given by submission of assignments, and attendance.

[Related courses] Integrated Design Practice III (T1P008001)

[Course requirements] Compulsory Subjects

# 統合デザイン実習 III Integrated Design Practice III

[Instructor] Hiromichi Hara

[Credits] 2

[Semester] 1st year-Fall-Fri 4, 5

[Course code] T1P008001, T1P008002

[Room] Bldg.ENG- 2-Studio(2-601)

[Candidate] 1st year of Department of Design Science

[Course description] The faculty members request the students to experience a number of design approaches (product design, graphic design, and space design), aimed at industrial products seen in daily life. This curriculum is in cooperation with “Integrated Design Practice II.”

[Course objectives] (General goal): To enhance both the imagination and creativity to find out problems hidden behind miscellaneous matters and to provide solutions to these problems, throughout the experiences in designing a series of products allied to the objects, by the use of fundamental skills needed to the design. (Attainable goals): (1). To provide the capability of deciding on the styling on the basis of the concept established by oneself. (2). To provide the capability of creating such graphic products as printed matters. (3). To provide the capability of creating the demonstration space to show up the products. And, (4). To provide the capability of presenting the resultant products designed by one utilizing the sketches and mock-up models. [Plans and Contents] The faculty members will build up the design concept and decide on its styling, conceive a variety of graphics which will tie the yielded products to the users, and create the demonstration space to show up the products. The students are requested to acquire the communication skills throughout the presentation at each phase of production and at its final step. Actions of this creative work done by each personal will in principle be performed at the time out of lessons.

1. Construction of product concept.
2. Development of design idea.
3. Design tuning.
4. Product design presentation and criticism.
5. Logo design.
6. Product rendering.
7. Advertisement design.
8. Graphic design presentation and criticism.
9. Basic space composition.
10. Space layout planning,
11. Exhibition space design.
12. Spatial design presentation and criticism.
13. Production of presentation document and mockup.
14. Tutorial.
15. Final presentation and Criticism

[Keywords] Product design, Graphic design, Exhibition space design.

[Textbooks and Reference Books] It will be informed separately.

[Evaluation] Evaluation will be given by submission of assignments, and attendance.

[Related courses] Integrated Design PracticeII (T1P007001)

[Course requirements] Compulsory Subjects



デザイン科学 I Design Science I

[Instructor] Koichi Iwanaga, Fumio Terauchi

[Credits] 2

[Semester] 1st year-Fall-Wed 3

[Course code] T1P010001

[Room] Bldg.ENG-2-202 Bldg.ENG-5-104

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Course enrollment] 75

[Candidate] 1st year of Department of Design Science

[Course description] The faculty members have a series of lectures on the human life as a target of the design, from the viewpoint of interrelation between the human-being's biological properties and the environment. The faculty members have a series of lectures on the physical properties of the designed artificial matters, the techniques of their material production, and its sensible properties.

[Course objectives] To study the fundamental knowledge of interrelation between the built environments recognized as the targets of the design, and the human-being's properties. For the human-being's properties, to understand the interrelation between the human being and the environment, and to enhance the fundamental capability of thinking about their applications to the design. For the artificial matters, the objectives of the lectures are to let the students to understand the physical properties of the artificial matters, the methods of their production, and the evaluation of their sensibility; and to enhance the capability of applying to the design.

[Plans and Contents]

1. Introduction to design science.
2. Human and living environment.
3. Values sought by consumers.
4. Human characteristics and design: Measurement and evaluation.
5. Human characteristics and design: Introduction to statistics.
6. Structure of human body and functions: Musculoskeletal system.
7. Structure of human body and functions: Nervous system, and examination (part 1 to 7)
8. Capturing artifacts as design subject. Inherent characteristic and attributes.
9. Form and production conditions for artifacts.
10. Economical characteristics of artifacts.
11. Environmental problems of artifacts. 12. Sensory and sensitivity characteristics of artifacts.
13. Physical and scientific characteristics of artifacts.
14. Advanced technologies and development of artifacts.
15. Exam

[Keywords] human behavior, human physiology, built environment, sensitivity characteristics, advanced technologies

[Textbooks and Reference Books] References will be suggested during classes.

[Evaluation] Students will be assessed on their attendance, report submission, and their understanding of curriculum contents, through averaging of marks given by two instructors.

[Related courses] Theory of design I, Theory of design II, Design Science II

[Course requirements] Compulsory Subjects

[Remarks] The curriculum substitutes the "Theory of Material Planning [T1F008001]" held until 2003.

デザイン科学 II Design Science II  
[Instructor] Tetsuo Katsuura, Haruo Hibino  
[Credits] 2

[Semester] 2nd year-Spring-Wed 3

[Course code] T1P011001

[Room] Bldg.ENG-2-201

[Course enrollment] about 90

[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student

[Course description] The students study the fundamental knowledge of and its application to the human anatomy, physiology, and psychology, which are indispensable to the design. The students enhance the capability of designing products from the viewpoints of ergonomics, and psychology.

[Course objectives] Sufficient knowledge enough to know the human being is requisite to think about the matters allied to the design. To scan from the beginning to the applications of the human-being's characteristics, for cultivating the viewpoints of ergonomics and psychology as the fundamentals for dealing with human being. The objectives of the lectures are to let the students to acquire the capability of thinking about the design truly harmonious with the human being.

[Plans and Contents] Designing the products easy to operate for the human being necessitates understanding the physiological and psychological properties of human being. The lectures mainly deal with the introductory talks on the ergonomics mainly related to the body motor function and design psychology.

1. Designing from the viewpoint of psychology: What is design psychology?
2. Characteristics of human perception (1) mysteries of the optical illusion
3. Characteristics of human perception (2) mechanisms of the optical illusion and its application to our daily life
4. The mechanisms of likes and dislikes Mere-exposure effect
5. Design and human behaviors
6. Applications of design psychology
7. Summary of first half and examination
- 8 What is the ergonomics?
9. Hand movement and product design.
10. Case study of ergonomic product design (1)
11. Case study of ergonomic product design (2)
12. Muscular structure and muscle contraction (1)
13. Muscular structure and muscle contraction (2)
14. Measurement and evaluation of muscular movement.
15. Summary of last half and examination.

[Keywords] Human ergonomics, body structure, physiology, design psychology, perception

[Textbooks and Reference Books] It will be announced in the first lecture.

[Evaluation] Evaluation will be comprehensively given by attendance, mid-term exam, and final examination.

[Related courses] Theory of design I , Theory of design II, Design Science I

[Course requirements] Compulsory Subjects

## 立体デザイン造形 Solid Design Forming

[Instructor] Mitsunori Kubo, Takayuki Higuchi, Takatoshi Tauchi

[Credits] 3

[Semester] 2nd year-Spring-Fri 3 / 2nd year-Spring-Fri 4 First half

[Course code] T1P012001, T1P012002

[Room] Bldg.ENG-2-Studio(2-601)

[Course enrollment] 60

[Course description] The students grasp the features of the three-dimensional shapes consisting of lines and planes throughout a series of mockups repetitively built to figure out the fundamental three-dimensional shapes, which will be realized by the three themes “models of a solid pieces, each having curved surfaces,” “materials and shapes,” and “production of an aircraft with no tails,” and to acquire the characteristics of the constituent materials, and the features of shapes generated from these materials, throughout the experiences.

[Course objectives] To acquire the techniques of modeling performed as the fundamentals for creating shapes in the design, or the capability of building three-dimensional shapes. To understand the characteristics of the materials.

“Models of solid pieces, each having curved surfaces”.

“Materials and shapes”; to feel the emotion of each material; to build a three-dimensional shape with the approaches of making prototypes; to deeply understand the interrelation between the materials and shapes.

“Production of an aircraft with no tails”; to find out the natural curves and lines adaptable to the air flow; to feel the dynamic balance of whole shape; to think about the interrelation between the materials and shapes.

[Plans and Contents] This curriculum consists of the following three themes. On the second and third themes, the students are respectively requested to be divided into groups A and B, where the themes will be given for the respective groups of students. First theme: “Models of solid pieces, each having curved surfaces” (Takayuki Higuchi) to produce the models of solid pieces in three different kinds under the given conditions. One is the model having an ellipsoidal top surface, another one is the model having hexagonal corners of symmetrical shape, and the other is the model produced by the works which are finished based on the shape made by moving a curved surface of the material. To set up the shapes of the materials along with the study of the sketched three-dimensional shapes, and to produce the three-dimensional shapes cut away from the Styloform by machine. The students are requested to fundamentally understand the construction of curves, and to acquire the way of how to generate creative ideas of models throughout the simple works of shaping. Second theme: “Materials and shapes” (Takatoshi Tauchi) to produce the three-dimensional shapes, featuring the characteristics of the materials. The students are requested to produce a well-balanced, three-dimensional shape by assembling the materials of three kinds or more, throughout the physical and sensible characteristics of materials being felt. The materials are to be glass, stone, wood, metals, and so on, excluding plastics. The students are requested to deeply understand the agreement or disagreement of models harmonized with the assembly of different materials, throughout the emotion felt from a variety of materials and shapes well matched together. Third theme: “Production of an aircraft with no tails” (Mitsunori Kubo) to build an aircraft with no tails, having simplest statue. The students are requested to start with drawing a sketch freely conceiving an image of flying, to produce a small, non-tailed aircraft of 30 cm long, and to repetitively perform flight tests. Upon the confirmation of flight tests properly done, the students are allowed to produce a large non-tailed aircraft of 3 meters long, and to repetitively perform the flight tests in the same manner as small one. During the flight tests, the students are allowed to change the shapes and weight balance according to the try-and-error method until the above three objectives are completed.

1. 1st assignment: Modeling of mass with curved configuration (Higuchi)

2. As above

3. As above

4. As above

5. Presentation / Criticism

6. Group A, second theme: “Materials and shapes:” (Tauchi): Following the machine tool practice, to temporarily try to assemble the materials worked. Group B, third theme: “Production of an aircraft with no tails:” (Kubo): To study “flying.”

7. Group A, Understanding the ideas of conceiving the construction of three-dimensional shapes, to perform the machine works and to assemble the materials together. Group B, Production of a flying object: (Small airplane with no tail, of 30 cm long.) Because of no tail, the airplane of this model is of the shape surrounded by a continuous envelope over the whole body.

8. Group A: As above, Group B: Characteristics and shape of material required for flying.

9. Group A: As above, Group B Production of a tail-less aircraft with 3m wing span.

10. Group A: Presentation / Criticism, Group B Final flight.

11. Group B, second theme: “Materials and shapes” (Tauchi) Following the machine tool practice, to temporarily try to assemble the materials worked. Group A, third theme: “Production of an aircraft with no tails:” (Kubo): To study “flying.”

12. Group B, Understanding the ideas of conceiving the construction of three-dimensional shapes, to perform the machine

works and to assemble the materials together. Group A Production of flying object (a small tailless aircraft with a span length of 30cm), a tailless aircraft, reasons to be tailless, a form where a part directly constitutes the continuous whole.

13. Group B: As above, Group A: Characteristics and shape of material required for flying.

14. Group B: As above, Group A Production of a tail-less aircraft with 3m wing span.

15. Group B: Presentation / Criticism, Group A Final flight.

[Keywords] Three-dimensional constitution, three-dimensional grasp, modeling

[Evaluation] Students will be assessed on their attendance, production (ability of composition, degree of perfection and ideas), and presentation. Attendance: 40% Product and presentation: 60%

形の工学 Engineering of Form and Shape

[Instructor] Mitsunori Kubo

[Credits] 2

[Semester] 2nd year-Spring-Wed 1

[Course code] T1P013001

[Room] Innovation Plaza, Faculty of Engineering 2F

[Course enrollment] Limit to 30 students. In the class, the laser processing machine will be used for making and also the experiment.

[Candidate] 2nd year of Design Systems in the Department of Design Engineering

[Course description] Students will investigate and experience engineering senses for the "craftsmanship" based on the relationship of material and form of objects, through use of basic theories and methods of material mechanics and structural mechanics. To achieve this, lectures will be combined with minor seminars and experiments as required.

[Course objectives] Understand the forms and characteristics from the perspective of engineering. Regarding interpretation of form, Material mechanics, Structural mechanics, and Kinematics of machinery will be laid foundation. Students understand basic structural units of dynamic characteristics from Material mechanics, mechanical relationship of parts and the form from Structural mechanics, and relationship of dynamic characteristic from Kinematics of machinery. [Plans and Contents] The following classes are planned for the purpose of letting students to experience the relationship of forms and mechanics through the core lectures combined with minor seminars. Weekly assignments will be given to cultivate better understanding of the leaning.

1. Tensegrity: Introduce Tensegrity structure; students investigate the dynamic point of form. Introduce way to manufacture simple tensegrity, and make it as assignment.
2. Petal and leaf: Introduce the petal and leaf having form as to relieve stress concentration by own weight.
3. Forms subjected to tension: Evaluation of paper strip: E and  $\nu$ , catenary curve, and tension structure. Homework: Scientific explanation of elongation.
4. Forms to withstand compression: Form with equal strength. Homework: About forms with equal strength found in everyday life.
5. Forms subjected to buckling: Familiar instability phenomenon. Homework: About buckling in everyday life.
6. Forms to withstand bending and compression: Two arches, boundary condition and form, and truss and rigid-frame structure. Homework: About forms affected by boundary condition.
7. Cylinder and shells: Cylinder and shell structure, bubble membrane structure, and membrane and plate. Homework: Forms making the best use of shell construction.
8. Creating a simple construction using CAD and structural analysis using FEM 1: Paper pulling battle (to be undertaken as group matches, with extra sessions outside of the timetable)?
9. Creating a simple construction using CAD and structural analysis using FEM 2: Paper pulling battle (to be undertaken as group matches, with extra sessions outside of the timetable)?
10. Forms and forces of natural objects: Understanding branches, bamboo, and bones. Homework: The form considered to have the most naturally ideal balance of form and shape.
11. Form and forces of artificial objects: Honeycomb and FRP. Homework: Forms with honeycomb structure.
12. Production of a mobile object: Production of a simple structure using CAD, CME, and CAM per group 1 (continue outside of the timetable)
13. Production of a mobile object: Production of a simple structure using CAD, CME, and CAM per group 2 (continue outside of the timetable)
14. Mechanics in form: Introduction of group submissions and cross evaluation.
15. The curriculum covers the relationship of form and force through a series of lectures.

[Keywords] Form and Force, Structure, Mechanism

[Textbooks and Reference Books] It will be introduced in the lecture.

[Evaluation] Students will be assessed by the total score of all assignments, small reports, experiment, and evaluation to production.

[Related courses] Physics B Introduction to Mechanics, Design Science Seminars 4

[Course requirements] Not particularly.

[Remarks] In accordance with the class progress, seminar based classes will be provided outside of class hours. The curriculum substitutes the "Theory of Dynamic Modeling" held until 2004.

## 工業デザイン I Product Design I

[Instructor] (Toshiaki Kume) (Yu Ishihara)

[Credits] 3

[Semester] 2nd year-Spring-Thurs 4 Last half / 2nd year-Spring-Thurs 5

[Course code] T1P014001, T1P014002

[Room] Bldg. ENG-1-401(Design Practical Training Room) Class hour: 15:15-17:40

[Course description] Through specific product design seminars, students will experience the basic process of product design including target establishment, concept planning, and generation of ideas.

[Course objectives] General aim: Acquire the basic knowledge and expression needed for a product designer, establish bases of design requirements from the standpoint of marketability and mass production in manufacturing, and learn the importance and enjoyments of design. Targets: (1) Ability to propose deeply investigated design concept, (2) ability to widely expand unconstrained ideas, (3) ability to use appropriate design tools including sketch, CG, and mockup, (4) aim to improve competence in presentation and communication skills.

[Plans and Contents] While practical working processes are introduced, individual feedbacks will be given through presentations and discussions using methods such as sketches. Individual creative processes are generally to be carried out outside of class hours.

1. Guidance: Assignment theme and case study.
2. Setting target: Consumers and their wishes.
3. Concept establishment: Attractiveness of concept.
4. Idea sketch: Performance of form.
5. Image sketch: Affordance of form.
6. Construction: Assignment of function, size, and components layout.
7. Styling: Motif and deformation.
8. Rendering: Line strength and expression of texture.
9. Interface: Expression of contents and usability.
10. Context: Design relationship, naming, and sales and promotion.
11. Mockup production.
12. Interim presentation
13. Establishment of refined concept.
14. Refine/Design production.
15. Final Presentation

[Keywords] merchantability, originality, inducement, form, detection

[Textbooks and Reference Books] 1) Naoto Fukazawa, DEZAIN NO SEITAIGAKU(Ecology of Design), Tokyo Shoseki Co., Ltd, 2)Kenya Hara, DEZAIN NO DEZAIN, Iwanami Shoten, Publishers.

[Evaluation] Evaluation will be given by presentation, submission of assignments.

[Related courses] Technical Design Seminars

[Remarks] The curriculum substitutes the "Product Design Seminar I" held until 2004

# トランスポートエーションデザイン I Transportation Design I

[Instructor] Jyunji Matsui, Ryouiti Asaumi

[Credits] 3

[Semester] 2nd year-Spring-Tues 4 period Last half / 2nd year-Spring-Tues 5

[Course code] T1P015001, T1P015002

[Room] Bldg. ENG-1-401(Design Practical Training Room)Class hour: 15:15～17:40

[Course enrollment] 30

[Candidate] Students of Faculty of Engineering

[Course description] Students will learn basics of design and processes of transportation machinery, typically the automobile.

[Course objectives] Students will learn the basics and processes of automobile design by the following programs. 1) Learn and master the fundamental sketch and rendering techniques, 2) idea making and unfolding by other motifs, 3) development of concepts and ideas, 4) basics of modeling processes, 5) presentation

[Plans and Contents] Through practice of processes and exercises of basic design techniques (sketch, rendering, and modeling), students will be motivated by transportation design. Students will prepare individually with home works given at each exercise.

1. Sketch of a physical automobile using pencils.
2. Sketch of an automobile in magazine photograph.
3. Basic illustration techniques of automobile, and a lecture about drawing methods.
4. Sketch of an automobile in magazine photograph.
5. Concentrated development of ideas based on other motifs.
6. As above
7. Idea sketches of an automobile using the selected other motifs.
8. Defining orientation of idea sketch.
9. Basic computer graphic techniques of the sketch including refining and coloring.
10. As above
11. Sketch rendering.
12. Scaled drawing of the exterior produced from the rendering (1:10)
13. Modeling using foamed material.
14. Modeling during summer vacation.
15. Modeling using foamed material.
16. Joint criticism (presentation)

[Keywords] Basics of Automobile design, Style and motif, Design processes

[Textbooks and Reference Books] Automobile drawing method (brochure)

[Evaluation] Attendance (80%), sketch assignments, and a model presentation.

[Related courses] Design Aesthetics/Display theories/Basic design/Product design theories.

[Course requirements] Students aiming to become a professional automobile designer.

## コミュニケーションデザイン I Communication Design I

[Instructor] Yoshie Kiritani (Toru Shiotani), (Yasumi Kozuka) (Yukie Ogaki)

[Credits] 3

[Semester] 2nd year-Spring-Wed 4, 5

[Course code] T1P017001, T1P017002

[Room] Bldg. ENG-2-202

[Course description] Through basic design exercises, students will prepare and be motivated for classes in later semesters. The basics of typography will be covered in the first 8 weeks (classes by Toru Shiotani, part-time lecturer). The following 3 weeks will cover the fundamentals of advertisement design, essential element of corporate and brand communications, through lectures and mini-seminars. This section will be formed around methods of establishing branding strategy during the first half, and methods of designing visual ideas during the second half. In lectures, students will learn branding strategies and creative advertisement by introduction to plentiful of CM and graphic works including Cannes Lions award winning pieces. Students will be requested to individually research prior given keywords (preparation) and study questions arising as class's progress (review). Students will be asked to research, review and investigate beforehand about brands to be selected through assignments. (Lectures by Yasumi Kozuka). The remaining 4 weeks will cover varieties of communication design and fundamental knowledge's of production process (classes by Yukie Ogaki).

[Course objectives] Students will understand fundamentals of communication design and develop thinking and expression abilities through: 1) Acquisition of basic expression techniques of typography design. 2) Development of bases for the ability to find and solve corporate or brand advertisement problems by construction of overcoming strategies using innovative design ideas. 3) Understanding of communication design variations. Understanding and acquisition of the graphic design production process.

[Plans and Contents]

1. Introduction of character design basics and two assignments. Assignment A: Create the character and name it!  
Assignment B: Give your name to the character! (Make your name character logo.) Mini assignment a1 (Product and present in class time.)
2. Mini assignment a2 (Production, presentation, and criticism in class time.)
3. Mini assignment a3 (Production, presentation, and criticism in class time.)
4. For Production assignment A.
5. Presentation for the assignment A, and criticism.
6. Mini assignment b1 (Production, presentation, and criticism in class time.)
7. For Production assignment B.
8. Presentation for the assignment B, and criticism.
9. Basics of corporate and brand advertisements 1: Lectures (strategic ability)
10. Basics of corporate and brand advertisements 2: Seminars: Seminars (inventiveness)
11. Basics of corporate and brand advertisements 3: Lectures, Presentation and criticism.
12. Lecture "Diversity of communication design" Being in front lines - art director in advertisement design –Lecture contents: Today, the job in communication design covers a field as broad as graphic design such as CM, newspapers, magazines, and station posters, symbol mark design such compact storefront tools and logos, character design, package design, picture books, or event direction. Through classes, students will discover abilities to design and to carry out a complete creative direction.
13. Lecture "Tips and elements of design" Being in front lines - art director in advertisement design –assignment 1 : Business card design (self-communication design)
14. Assignment 1: Presentation of business card design, and assignment 2: Graphic advertisement design (and deployment)
15. Presentation and criticism of the assignment 2: Graphical advertisement design.

[Keywords] character design, brand advertisements, branding strategy, inventiveness, idea, rhetoric, graphic design, communication design, art direction, advertisement

[Textbooks and Reference Books] Kozuka, Y. Introduction to getting an idea.

[Evaluation] Evaluation is given by attendance, and submission of assignments.

[Remarks] The curriculum substitutes the "Media Design I" held until 2007.



デザイン科学演習 I Design Science I Seminar

[Instructor] Fumio Terauchi, Edilson Shindi Ueda, Mitsunori Kubo, Takatoshi Tauchi, Tetsuo Katsuura, Yoshihiro Shimomura, Haruo Hibino, Shinichi Koyama, Koichi Iwanaga, Keita Ishibashi

[Credits] 3

[Semester] 2nd year-Spring-Mon 1 Last half / 2nd year-Spring-Mon 2

[Course code] T1P018001, T1P018002

[Room] Bldg. ENG-2-studio(2-601)

[Course description] In this course, seminars will cover design science fields consisting of materials planning, design morphology, humanomics, design psychology and human informatics. Students will conduct experiments and exercises assigned for each field, and participate in a presentation covering the seminar content and the learning achievement. Students will be asked to cultivate better understanding of each field's seminar content through individual leaning outside of class hours.

[Course objectives] Students will aim to understand the fundamental roles of design in design science fields consisting of materials planning, design morphology, humanomics, design psychology and human informatics, and acquire basic knowledge and techniques of scientific approach in design.

[Plans and Contents]

As follows, students will attend a series of seminars covering design science fields consisting of (1) materials planning and design morphology, (2) humanomics, (3) design psychology and (4) human informatics.

1. Design psychology seminars (1): Perceptual motor learning and how to write an effective report.
2. Design psychology seminars (2): Experiment of perceptual motor learning.
3. Design psychology seminars (3): Data analyses and how to write a scientific report.
4. Materials planning and Design morphology Seminars (1): Verification of shape through sketches.
- 5 Materials planning and Design morphology Seminars (2): Production assignment.
6. Material planning and Design morphology Seminars (3): Continuation of production assignment.
7. Material planning and Design morphology Seminars (4): Presentation and criticism.
8. Human informatics seminar (1): Introduction to human interface experiment - preparation of PC environment
9. Human informatics seminar (2): Introduction to human interface experiment - configuring experiment condition.
10. Human informatics seminar (3): Introduction to human interface experiment - measurement and analysis.
11. Human informatics seminar (4):Introduction to human interface experiment measurement and analysis (cont.)
12. Humanomics Seminars (1): Basics and application of various measurement techniques.
13. Humanomics Seminars (2): Basics of relationship between electromyogram and exertion ability experiment.
14. Humanomics Seminars (3): Basics of circulatory system index experiment.
15. Humanomics Seminars (4): Data analyses and report.
16. Spare day

[Evaluation] Students will be assessed on their report per seminar assignment and presentations.

[Related courses] Design Science I, Design Science II

[Course requirements] Successful completion of this subject is essential for a completion of the Design Science Seminar II.

[Remarks] The completion of the subject is strongly recommended for students wishing to progress to the postgraduate program.

## 工業デザイン II Product Design II

[Instructor] (Koji Suso), (Masayuki Arakawa), (Hiroyuki Noda)

[Credits] 3

[Semester] 2nd year-Fall Thurs 4 Last half / 2nd year-Fall -Thurs 5

[Course code] T1P019001, T1P019002

[Room] Bldg. ENG- 2 atelier Class hour: 15:15-17:40

[Course description] Students will take part in seminars on product design, focusing on the styling for a particular manufactured product.

[Course objectives] General aim: Firmly materialize the newly formed features and performances while achieving well-ordered design. Targets: (1) Ability to appropriately understand the mechanism and construction of a product, (2) ability to evaluate functionalities through mock-up, (3) ability to apply styling to satisfy the self-structured design concept, (4) ability to explain the design intension in a presentation.

[Plans and Contents] In order to achieve a degree of reality in the design of a finished product, parameters such as size and weight of components and manufacturability will be assigned. In general, student will participate in individual creative activities outside of class hours, with exchange of views in class based feedback sessions.

1. Guidance
2. Design concept
3. Shape concept
4. Mechanism, structural understanding, and design development 1.
5. Mechanism, structural understanding, and design development 2
6. Observation.
7. Shape tuning.
8. Shape tuning2
9. Rendering.
10. Modeling.
11. Evaluation of functions 1.
12. Evaluation of functions2
13. Evaluation of functions3
14. Presentation preparation
15. Final Presentation

[Keywords] Product Design, Styling, functional assessment

[Evaluation]Final Presentation

[Related courses] Technical Design Seminars

[Remarks] The curriculum substitutes the "Product Design II" held until 2004.

## トランスポーターションデザイン II Transportation Design II

[Instructor] Bunzou Koyama

[Credits] 3

[Semester] 2nd year-Fall -Fri 3 / 2nd year-Fall -Fri 4 First half

[Course code] T1P020001, T1P020002

[Room] Bldg. ENG-17-111

[Course enrollment] 20 &#12316; 30

[Candidate] Students of Faculty of Engineering

[Course description] Through assignments in a theme of vehicle (mobile tool) as human life mobile equipment, students will learn practical design techniques and processes of comprehensive technology that enables harmonization of human, product, and environment. The subject aims to develop a professional designer who successfully contributes to the society.

[Course objectives] Students will aim to acquire design methods for an automobile including information of layout of functional components and skills in concept work.

[Plans and Contents] Students will learn fundamentals of design namely the relationship between practical concept work and the packaging (main components and passengers layout), mainly through a design process of an automobile according to their individual ideas.

1. Guidance, assignment introduction, and case study of design development.
2. Theme configuration: Introduction of product case study.
3. Gathering of 5W1H information document required for the concept.
4. Packaging and layout.
5. Packaging and layout
6. Concept establishment.
7. Idea sketch.
8. Idea sketch
9. Idea sketch
10. Rendering.
11. Rendering
12. Rendering.
13. Model drawing.
14. Practical training of clay modeling (at the manufacturer)
15. Practical training of clay modeling
16. Presentation and joint criticism.

[Keywords] Packaging, Form and function, Concept

[Textbooks and Reference Books] "Basic planning and design of automobile" under the supervision of Saitou and Yamanaka publication by Sankaidou

[Evaluation] Presentation, concept and model.

[Related courses] Product design theory.

[Course requirements] Students interested in the transportation design aiming for a professional designer. Transportation Design I.

[Remarks] The curriculum substitutes the "Product Design II" held until 2004.

## コミュニケーションデザイン II Communication Design II

[Instructor] Yoshie Kiritani, (Hiroyuki Kimura), (Keiichi Koyama)

[Credits] 3

[Semester] 2nd year-Fall -Wed 4 Last half / 2nd year-Fall -Wed 5

[Course code] T1P022001, T1P022002

[Room] Bldg.ENG-2-studio (2-601)※Course periods 15:15-17:40

[Course description] The subject is aimed at learning of the information design as a communication method through "infographics" in the first half, and "signage design" in the second half. With lectures and practical instructions, fundamentals and development of infographics are covered in the first 7 weeks (classes by Hiroyuki Kimura, part-time lecturer) and the fundamentals and development of signage design are covered in the second 7 weeks (classes by Keiichi Koyama, part-time lecturer). In this subject, students will learn thoughts and know-how to contrive concepts and ideas through substantial observations, and acquire skills in graphic facilitation and presentation abilities. The first week will host an introduction to establish a link between the first half and the second half, with both Kimura and Koyama providing details of their classes and explain their roles.

[Course objectives] [The aim and target of the first half] Infographics are the graphic design to "visualize" the "obscured information" using illustrations, diagrams, maps, or icons. They are closely related to every areas of design field. It is an important way of our communication since illustrations and diagrams enable ease of understanding. This time, students will try to challenge the information design in order to realize from now on, in particular, the theme of Tokyo Olympic and Paralympic 2020, in a free-thinking in the absence of anything in 2014, but it is not a fancy, and those that come in after six years surely.

[Plans and Contents]

Specifically, there are the following four items can be roughly categorized into information required for Olympic and Paralympic. For these, a group will approach by selecting one of them from the position of info graphics in the first half, and from the standpoint of sign information design in the second half. (1) Design example involved the competition (first half): Info graphics to be clearly described rules and competition Infographics of country medal count (last half): Research and development for pictogram motif appropriate to 2020 Tokyo (2) Guidance to the venue, etc., guidance system (first half): Design of the guide diagram easy to understand for foreigners (last half): Temporary sign response plan (3) Means of communication to the tourists that are derived in the Olympic (first half): Attractions proposals for the enjoyment culture and Japanese food, express info graphics manner restaurant menu to foreign tourists (last half): Research of pictograms required to foreign tourists, Research of communication support board, Interface study of digital media (4) Infrastructure development (first half): Infographics easy to understand traffic (last half): System for urban transportation common sign system

1. Orientations
2. Sketch such as contents and concepts conscious of that it transmitted to the other party. (Personal presentation)
3. Discussion and presentation focusing on concepts. (Personal presentation)
4. Thinking about concept and ideas: Observation and concept, and creating and presenting mechanism.
5. Discussions and presentations focusing on graphic facilitation.
6. Shuffle discussion between the groups, or world cafe
7. Final finish and preparation for presentation.
8. Review, vote, presentation, summary and reflection in all. (Group presentation)
9. Item extraction for the Olympic and overview of Sign Design.
10. Survey of existing sign, etc., analysis presentation. (Personal presentation)
11. Group classification, policy development by group. (Group presentation)
12. Deployment plan of the item
13. Individual design of the item
14. Coalescence of the deployment plan and the individual design
15. Presentation and criticism. (Group presentation)

[Keywords] ] Infographics, illustration, map, graph, chart, visualization, observation, concept, graphical facilitation, sign, communication, information, interface, visibility, understandability, universal design, pictogram, fonts, layout, color

[Evaluation] (First half) In addition up to the presentation, points will be given as an evaluation by the imagination, action capabilities, expressive power presentation force of the group, assignment of personal submission, and attendance. (Last half) Planning capabilities, research, and assignment presentation of individuals will be evaluated as group evaluation. This evaluation scores evaluated separately planning ability, power of expression, presentation force or the like.

[Remarks] The curriculum substitutes the "Media Design II" held until 2007.

デザイン科学演習 II Design Science II Seminar

[Instructor] Koichi Iwanaga, Mitsunori Kubo, Fumio Terauchi, Tauchi Takatoshi, Tetsuo Katsuura, Yoshihiro Shimomura, Haruo Hibino, Keita Ishibashi

[Credits] 3

[Semester] 2nd year-Fall- Fri 1 Last half /2nd year-Fall-Fri 2

[Course code] T1P023001, T1P023002

[Room] Bldg. ENG-2–studio(2–601)Class hour: 9:35-12:00

[Course description] In this subject, seminars will cover 4 design science fields consisting of design morphology, humanomics, design psychology, and human informatics. Students will undertake experiments and exercises assigned for each field. Students will be asked to cultivate better understanding of each field's seminar content through individual leaning outside of class hours.

[Course objectives] Students will aim to understand the fundamental roles of design in 4 design science filed consisting of design morphology, humanomics, design psychology, and human informatics, and acquire basic knowledge and techniques of scientific approach in design.

[Plans and Contents] Students will attend four seminars consisting of design morphology, humanomics, design psychology, and human informatics. Each seminar will last for four weeks.

1. Humanomics Seminars (1)
2. Humanomics Seminars (2)
3. Humanomics Seminars (3)
4. Humanomics Seminars (4)
5. Design Morphology Seminars (1)
6. Design Morphology Seminars (2)
7. Design Morphology Seminars (3)
8. Design Morphology Seminars (4)
9. Design Psychology Seminars (1)
10. Design Psychology Seminars (2)
11. Design Psychology Seminars (3)
12. Design Psychology Seminars (4)
13. Human informatics Seminars (1)
14. Human informatics Seminars (2)
15. Human informatics Seminars (3)
16. Human informatics Seminars (4)

[Evaluation] Students will be assessed on their reports, presentations, and attendances. Students are required to pass all four assignments.

[Related courses] Design Science I, Design Science II, Design Science I Seminar I

[Course requirements] Students must take this course to take Design Science I Seminar III.

[Remarks] The completion of the subject is strongly recommended for students wishing to progress to the postgraduate program.

## デザインの展望 View of Design

[Instructor] Yoichi Tamagaki

[Credits] 2

[Semester] 2nd year-Fall -Tues 5

[Course code] T1P024001

[Room] Bldg. ENG-.2-103 Bldg. ENG- 5-105

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Course enrollment] 100

[Course description] Classes will introduce topics in various design fields.

[Course objectives] Students will deepen profound knowledge in possibilities of design via introduction to examples such as issues in the field of design and examples of prominent works.

[Plans and Contents] Due to classes being run with lectures by outside lecturers, refer to the notice board at 1F of the department of technology building No.2 for the particular topic of each class.

1. Guidance

2. Ms. Shino Misawa, hanauta works

3. Mr. Jun Musashi, WAKO Co. Ltd.

4. Mr. Mikio Otani, THINK CRAFT

5. Ms. Masami Shibasaki, NIHON SEKKEI, INC.

6. Mr. Hironori Nakahara, nD inc. giftee inc.

7. Mr. Ryuta Yamada, NOMURA Co. Ltd.

8. Mr. Takayasu Hashimoto, Mitsubishi Electric Corporation

9. Mr. Kenji Ido, Toshiba Corporation

10. Ms. Yuki Kamiya, Patent Office

11. Mr. Atsushi Kawaida, HAKUHODO Inc.

12. Mr. Kota Nezu, znug design

13. Mr. Omori Masaki, West Japan Railway Company

14. Mr. Haruo Oba, Sony Corporation

15. Summary

[Keywords] design, field, job, society,

[Textbooks and Reference Books] It will be introduced in the lecture on appropriate time.

[Evaluation] Evaluation is given by attendance, reports submitted by the end of every lecture.

## ヒューマンインタフェース論 Human Interface Theory

[Instructor] Koichi Iwanaga, Keita Ishibashi

[Credits] 2

[Semester] 2nd year-Fall -Wed 2

[Course code] T1P025001

[Room] Bldg. ENG- 2-201

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Candidate] Students of Faculty of Engineering

[Course description] From the viewpoint of physiology, morphology, and psychology, this subject explains the considerable human characteristics on design of human interface, the constituting surface between man, tool and system. The subject will also highlight the human interface design process and methods, and the present state of the human interface research.

[Course objectives] Students will understand the history of human interface, its current state, and the importance of human characteristics in human interface design, and aim at acquisition of fundamental knowledge required for a practice of human interface design.

[Plans and Contents]

1. History of human interface: Human elements and artificial elements
2. Types and categorization of human interface: Physical interface and cognitive interface
3. Considerable human characteristics in human interface (1): Vision 1
4. Human characteristics must be considered in human interface (2): Vision 2
5. Human characteristics must be considered in human interface (3): Hearing 1
6. Human characteristics must be considered in human interface (3): Hearing 2
7. Human characteristics must be considered in human interface (4): Somatic sensation
8. Human interface research topic (1)
9. Human interface research topic (2)
10. Interim summary and examination
11. Human interface in VDT operation (1): Operation system interface
12. Human interface in VDT operation (2): Display interface
13. Human interface in VDT operation (3): Multiuser interface
14. HCI (Human Computer Interaction) in the real world.
15. Human interface evaluation methods.

[Keywords] Human interface, Design, Human sensation

[Textbooks and Reference Books] It will be informed in the lecture.

[Evaluation] Each of 2 instructors gives exams, and reports. Evaluation is given by the average of theses score.

[Related courses] Design Science I, Design Science II

[Remarks] For 2012, lectures 2 to 9 will be offered with the intensive lecture format on the following dates: November 10 (lecture 2 to 5) and December 1 (6 to 9).

デザイン材料 Design Material

[Instructor] Fumio Terauchi

[Credits] 2

[Semester] 2nd year-Fall –Wed 2

[Course code] T1P026001

[Room] Bldg. ENG- 2-201, Bldg. ENG- 5-204

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Candidate] 2nd year of Department of Design Science

[Course description] Based on the topic of the relation between design and engineering development, students will systematically understand contents required for materials for various designs. From the viewpoint of material planning, lectures will also highlight the relationship between kansei informatics and materials as well as their environmental considerations, and the state of the latest material development.

[Course objectives] General aim: Students will learn the fundamental knowledge of design materials. Targets: (1) Establish a systematic understanding of various material characteristics, (2) Understanding of the relationship between kansei informatics and materials, (3) Understanding of the state of material use and material development.

[Plans and Contents]

1. Plastic materials
2. Plastic materials
3. Plastic materials
4. Plastic materials
5. Metal materials
6. Metal materials
7. Ceramic materials
8. Wood and timber materials
9. Wood and timber materials
10. Wood and timber materials
11. Advanced materials and trends in material use.
12. Kansei information processing.
13. Environment-conscious materials.
14. Trend and direction of material development and material related technologies.
15. Overview and examination

[Textbooks and Reference Books] References will be suggested during classes.

[Evaluation] Evaluation is given by attendance, contents of submitted reports, and understanding of lecture by exams.

[Related courses] Design Science I

[Remarks] To judge students' understanding, short tests will be introduced at irregular intervals.



[Instructor] Akira Ueda

[Credits] 2

[Semester] 2nd year-Fall -Tues 2

[Course code] T1P027001

[Room] Bldg. ENG-2-201

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Candidate] Students of Faculty of Engineering

[Course description] In this subject, students will analyze various aspects of design that made contribution to the formation of living culture in human society, through particular historical examples from both Japan and abroad. Students will also study principles and philosophy of living culture formation required to be firmly maintained in the practice of design, through links to immediate and up-to-date challenges.

[Course objectives] For anyone practices design, how to illustrate the "ideal state" of living is extremely important. Through lectures, students will be asked to establish a viewpoint in constructing the "ideal state" of living by understanding and analyzing various aspects of "past" and "present" living. The lecture aims at acquisition of knowledge to define understanding of design activity to realize the aforementioned viewpoint.

[Plans and Contents] The course is formed around classroom lectures for students to acquire comprehensive knowledge of the design culture. The first half of the course will focus on the fundamental knowledge of the design for the formation of living culture, and the second half will deal with examples of how a particular fundamental knowledge constructs the "ideal state" of living in real- living scenarios.

1. The objective of design as a culture today: Design as an essence of humanity.
2. Design of a lifestyle tool: Bricolage.
3. Design of a living tool: Concept of whole usage.
4. Design of a living tool: Bowl and the concept of multipurpose usage.
5. Design of a living tool: Resource circulation.
6. Structure of everyday living culture: The concept of Kekkai, Hare and Ke.
7. The concept of Kekkai, Hare and Ke, and an example of living space design.
8. Design of community life formation: Strenuous community formation.
9. Design to meet the globalization: Part 1
10. Design to meet the globalization Part 2
11. Roles of designers for inheriting the culture of traditional crafts.
12. Learning in field: The basic concept of culture and community design.
13. Case study of evaluation for spontaneous community eco-design (Inagaki area, Tsugaru City).
14. Case study of evaluation for spontaneous community eco-design (Palau, Vietnam)
15. Future vision of design as a culture, and outline of the design survey.

[Keywords] Design, Living Culture, Value of Traditional Culture, Traditional Crafts and Design, Philosophy of Living

[Textbooks and Reference Books] It will be introduced in the lecture.

[Evaluation] Students will be assessed with their results of mini-tests, attendances, report submissions, and examination. During the first-half, the level of basic knowledge of students will be assessed with three to four mini-tests. During the second half, students and their level of understanding will be assessed with reports and end of the term examination.

[Related courses] Design Survey

[Remarks] Student, who hopes to do graduation work at “Design Culture Unit”, must take this course.

## プログラミング演習 I Computer Programming Practice I

[Instructor] Keita Ishibashi

[Credits] 3

[Semester] 2nd year-Fall -Fri 4 Last half /2nd year-Fall -Fri 5

[Course code] T1P028001, T1P028002

[Room] Bldg. ENG-.2-201, Bldg. ENG-.9-206, Bldg. ENG-.2-201, Bldg. ENG-.9-206 ※Class period 15:15-17:40

※[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Course enrollment] 80

[Course description] C programming language is the basis of numerous programming languages that exist.

In this class, students will learn C programming language using Arduino through lectures and workshops. Students will acquire C programming language not only by using standard computer input devices such as a mouse, display and keyboard, but also by taking advantage of devices incorporating physical computing such as a sensor actuator.

[Course objectives] Students will aim to develop a program using C programming language self-sufficiently. Using a program to be developed during the free assignment of the programming integrated study (1) to (4), students will be assessed on their fluency in various operators, control statements, arrays and pointers.

[Plans and Contents]

The following curriculum schedule is subject to change depending of the progress of students.

1. Preparing a programming environment.
2. Basic structure of C language programming.
3. Using variables and data input and output.
4. Operator
5. Control statement.
6. Creating functions and storage class.
7. Array and pointer.
8. Structure.
9. Preprocessor.
10. Standard library functions.
11. File input and output.
12. General programming seminar (1)
13. General programming seminar (2)
14. General programming seminar (3)
15. General programming seminar (4)
16. Presentation

[Keywords] C programming language, Arduino

[Textbooks and Reference Books] There are numerous reference books on C programming language and Arduino, with many resources available online. Students should individually select ones that are suitable for their requirements.

[Evaluation] Evaluation is given by attendance 40%, submitted assignments (program source and the explanation) 60%.

[Remarks] All students must bring a PC (with a fully charged battery). Windows environment is recommended.

平面デザイン造形 Plane Design Forming

[Instructor] Takatoshi Tauchi, (Akio Kiyohara)

[Credits] 3

[Semester] 2nd year-Fall -Mon 1 Last half /2nd year-Fall-Mon 2

[Course code] T1P029001, T1P029002

[Room] Innovation Plaza, Faculty of Engineering, Bldg. ENG-.2-studio (2-601) Class hour: 9:35-12:00

[Course enrollment] 70

[Course description] Students will learn advanced graphic skills through trainings in compositional drawings and nude drawings.

[Course objectives] This course complements and expands upon the contents of “Practicum in design fundamentals 1” in the semester 1. Students will aim to develop a graphic skills based on advanced understanding of color, color expressiveness, and skills of two-dimensional composition.

[Plans and Contents] In nude drawing classes, students will learn expression techniques in figure painting skills and ability to illustrate objects, by exploring various painting materials and painting methods. Motifs and themes for sketches and composition drawings will be set according to the capacity of students. Details will be provided during classes.

1. Rough sketch of a human figure.

2. As above.

3. As above

4. As above

5. Sketch 1

6. As above

7. Sketch 2

8. As above

9. Compositional drawing 1

10. As above

11. As above

12. Compositional drawing

13. As above

14. As above

15. Criticism

[Textbooks and Reference Books] It will be introduced in the lecture.

[Evaluation] Evaluation will be given by whether the solutions to the respective themes are submitted on the reports before their deadlines or not, and by the accomplishments to the objectives of these themes. Attendance of more than 4/5 is requisite. (An absence of 4 days or more is unacceptable.)

## 工業デザイン III Product Design III

[Instructor] (Masaki Kanayama) (Kenichi Kimura)

[Credits] 3

[Semester] 3rd year-Spring-Thurs 4 Last half / 3rd year-Spring-Thurs 5

[Course code] T1P030001, T1P030002

[Room] Bldg. ENG-.2–studio(2–601) \*Class hour: 15:15-17:40

[Course enrollment] 30

[Course description] Students will practice in the design of a system which incorporates both hardware and software.

[Course objectives] Students will aim to establish an ability to search and design the ideal form of a system, not only individual design of either hardware or software.

[Plans and Contents] Students will propose the design of a system which incorporates both hardware and software.

1. Guidance
2. Theme based technological trends.
3. Concept target presentation (design work to continue)
4. Protocol analysis.
5. Presentation of protocol analysis results.
6. Quantification analysis of protocol analysis results.
7. Presentation for the quantification analysis of protocol analysis results.
8. Presentation of user image based on the analysis result.
9. Development of the product specification.
10. Interface design.
11. System evaluation.
12. Dummy production.
13. Appearance evaluation.
14. Usability evaluation.
15. Presentation

[Keywords] Product Design, Appearance, Interface

[Textbooks and Reference Books] None

[Evaluation] Final submitted Assignment

[Related courses] Technical Design I, Technical Design II

[Course requirements] Students must take Product Design I, Product Design II.

## トランスポートেশョンデザイン I I I    Transportation Design III

[Instructor] Shigeaki Sugawara

[Credits] 3

[Semester] 3rd year-Spring-Fri 3 /3rd year-Spring-Fri 4 First half

[Course code] T1P031001, T1P031002

[Room] Bldg. ENG-1-401(Design Practical Training Room)

[Course description] Through practical training and lectures, students will be given practical experiences in a series of design processes for the transportation design with a main focus on automobiles.

[Course objectives] General aim: Through the individual proposal in transportation design, students will aim to create an integrated view and improve their technical abilities. Targets: (1) Ability to propose a design concept with social awareness, (2) ability to widely expand unconstrained ideas, (3) aim to improve design techniques such as a sketching skill, (4) aim to improve a competence in presentation and communication skills.

[Plans and Contents] For the theme of "a car - ten years later", students will participate in a series of design processes including concept establishment, investigation, idea development, rendering, and presentation. In general, feedbacks will be provided at discussions during each class slot. Students will be asked to develop design ideas outside of class hours. Also they will be asked to perform general refinements and the preparation of presentation during their summer holidays.

1. Guidance: Outline of previous assignment and introduction of conditions
2. Theme configuration and establishment of hypothetical period
3. Concept
4. Concept
5. Concept and idea development
6. Concept and idea development
7. Concept and idea development
8. Idea development
9. Idea development
10. Idea development
11. Summary of idea development.
12. Summary of idea development.
13. Summary of idea development.
14. Presentation seminars
15. General refinements, modeling, and presentation preparation during the summer vacation.
16. Final presentation and joint criticism.

[Keywords] Concept, Idea development, General design, Reskilling

[Textbooks and Reference Books]

[Evaluation] Concept, design proposal, and study attitudes.

[Related courses] Transportation Design I, II, IV

### 環境デザイン III Environmental Design III

[Instructor] Hiromichi Hara

[Credits] 3

[Semester] 3rd year-Spring-Mon 4 / 3rd year-Spring-Mon 5

[Course code] T1P032001, T1P032002

[Room] Bldg. ENG-1-401 (Design Practical Training Room) \*Class hour: 15:15-17:40

[Course description] From a selection of assignments on physical supporting devices (such as a chair, sofa, bench, or wheelchair) that are some of our most familiar environmental configuration elements, students will be asked to investigate user requirements and conditions for location of use, and undertake a design proposal of a product and surrounding environment where such device is going to be used. Works of excellence from each assignment may be recommended for furniture competitions or student furniture design exhibitions. Works will be built either by self-production or production with potential enterprise cooperation.

[Course objectives] "Environment" can be understood as "our surrounding conditions", and it is something that every person comes into contact every day. When we look at the reality, we find that there are numerous design challenges. In this seminar, students will learn basics of environmental design, a subject that comprehensively handles the relationship between users, products, and space, through the design of physical supporting devices which are some of our most familiar environmental configuration elements.

[Plans and Contents]

1. Lecture: Street furniture as environmental forming products Lecture: Designing environment forming products and locations: Introduction of the selected assignment through examination of work by a designer.
2. Lecture: Background of each assignment and practical developments in corporations.
3. External research (outside university).
- . Lecture: Environment forming products and its relationship with locations of application.
5. Presentation of research findings and a basic policies, and criticisms.
6. Lecture: Human engineering and psychological basics and potentials of SF. Lecture: Basics and potentials of structure and materials of SF.
7. Lecture: SF development processes, drawing expression, and model production techniques.
8. Production and individual consultation.
9. Production and individual consultation.
10. Presentation of SF design proposals, and criticism.
11. Environment forming product and applicable location, expressions through drawings, and model production techniques.
12. External research.
13. Production and individual consultation.
14. Production and individual consultation.
15. Presentation of a comprehensive design proposal including the target space design / Following the completion of all criticism stages, further coaching will be provided for students with a selected design proposal. These works may be progressed to the workshop based production at factories of cooperative enterprises. Such works of excellence will then be exhibited in and out of the campus, and can be recommended for, and exhibited at, various design competitions or student furniture design exhibitions. The above listed programs will be adjusted according to the numbers of students expressed their intention of attendance at the first week.

[Keywords] environmental forming products , Street furniture, physical supporting devices, furniture design Designing locations

[Textbooks and Reference Books] As necessary, Instructions and introduction will be given.

[Evaluation] Students will be assessed on a combined factors consisting of assignment results, comments submitted with each assignment, and their attendances.

[Course requirements] At each class slot, students will be asked to submit their comments on the given subject by filling in a sheet which doubles as a record of attendance. With lower than 10 attendances or lack of any assignment, the student will be not be given any credit in general.

[Remarks] The curriculum substitutes the "Life Environment Design III".

[Course description] During the first 6 weeks, students will learn the process of concept work through the development of a beverage product, and propose the package design in accordance with the established concept. At the outset, students will study the initial conception methods via introduction to a case study of a product development by Suntory. Students will then study metaphorical expressions and the importance of securing "identity", and engage in a comprehensive design starting at the conception to the package design (classes by Satoshi Ito, part-time lecturer). During the following 7 weeks, students will participate in planning and design of services and products by taking advantage of network technologies, and acquire the knowledge required to undertake such designs. During the first half of the 5-part curriculum, students will learn the basic knowledge and approach, and then materialize individual ideas during the second half. According to the individual ability, the final output can either be a proposal of a practical example, or a design only proposal (classes by Yasuaki Mio, part-time lecturer). On the last 3 weeks, theme of "Let's make a fun project." will be in charged by (Ippei Iwahara (lecture lecturer) and Tomoyuki Torisu (part-time lecturer). Following description from the teachers. "Let's make 'fun project.' You can surprise someone, with a tremendous surprise presents to friends, or play a surprise on the professor, create a web service that mom will be very happy. Anything is good. Let's make a fun project. It is a lesson to learn the joy to create and to run a project and on your own. The evaluation will evaluate the contents of the final report meeting. Presentation format is desirable as image, but it is not provided to limit to expression. Than the quality of the output, evaluation will be focused on the contents of the project, especially purpose 'why was it done' and the measure 'Is it interesting'"

[Course objectives] In this course, students will aim at development of their thinking and expression abilities for the communication design. Specifically: 1) Ability to propose an attractive concept with understanding of difference between specification and benefit. Understanding of the human recognition structure to "separate" (prototype) and "compare" (metaphor) and ability to reflect such qualities onto the design itself. Through "identity" and "sizzle", establish an understanding that food or beverage design cannot be established with only stylishness or conspicuousness: 2) a: Deepen knowledge on nature of various Internet ready products such as web services and smartphones. B: Learn examples of network technologies other than the Internet. C: Study the basic concepts of developing a web service, including server mechanism, HTML, CSS, JavaScript, and PHP. D: Acquire presentation skills which take into account upcoming changes triggered by the evolution of network technologies, such as ways in which we communicate and how businesses are going operate: and 3) Experience of social relation through design. For review and preparation, students should research individually about keywords or areas of interest found during classes.

[Plans and Contents]

1. Lecture: Product value structure.
2. Lecture: Human perception structure.
3. Seminar: Concept work.1
4. Lecture: Concept expression techniques.
5. Seminar: Package design work.
6. Presentation
7. Lecture: Communication design, Introduction to Internet
8. How to do Concept work, how to plan Concept work.
9. Lecture: Interim check 1: Basics of UI design, confirmation of the concept
10. Lecture/Seminar: Basics programming.
11. Interim check 2 Group Discussion
12. Presentation
13. Lecture/Seminar: case study of "Fun project"
14. Seminar: Launch own project
15. Presentation

[Keywords] package design, metaphor,benefit, prototype, sizzle, colors of categories, cloud, web service, digital signage, free, share, business model, social game, Google, Apple, Facebook, twitter, LINE, USTREAM, project, prototyping, experience

[Textbooks and Reference Books] It will be introduced in the lecture. We use Google (search engine) 8th through 14th lecture.do install ( <http://dotinstall.com/>), WIRED(<http://wired.jp/>)

[Evaluation] Evaluation is given by attendance and production of assignment.

[Remarks] Some part-time lecturers may schedule their classes outside of pre-assigned time slots. Students must pay

attention to the information announced during classes, or distributed via email. Lecture 1-6 starts 16:45. The curriculum substitutes the "Media Design III" held until 2007 and "Media Design II" held during the old curriculum.



デザイン科学演習 III Design Science III Seminar

[Instructor] Koichi Iwanaga, Mitsunori Kubo, Fumio Terauchi, Takatoshi Tauchi, Tetsuo Katsuura, Yoshihiro Shimonura, Haruo Hibino, Keita Ishibashi, Choi JeongSeo

[Credits] 3

[Semester] 3rd year-Spring-Fri 1 Last half /3rd year-Spring-Fri 2

[Course code] T1P034001, T1P034002

[Room] Bldg. ENG-2–studio(2–601)

[Candidate] 3rd year of Department of Design Science

[Course description] In this course, seminars will cover 4 design science fields consisting of material planning, human life engineering, design psychology, and human information science. Students will undertake experiments and exercises assigned for each field, and participate in a presentation covering the seminar content and the learning achievement. Students will be asked to cultivate better understanding of each field's seminar content through individual learning outside of class hours.

[Course objectives] Students will aim to understand the fundamental roles of design in 4 design science fields consisting of material planning and morphology of design, design psychology, human life engineering, and human information science, to acquire basic knowledge and techniques of scientific approach in design.

[Plans and Contents] Students will attend a series of seminars covering 4 design science fields consisting of material planning and morphology of design, design psychology, human life engineering, and human information science.

1. Human life engineering seminar (1): Concept of ergonomic product design.
2. Human life engineering seminar (2): Product evaluation experiment 1.
3. Human life engineering seminar (3): Data analyses and report.
4. Design psychology seminar (1): Creating a drawing with optical illusion.
5. Design psychology seminar (2): Measuring the amount of optical illusion.
6. Design psychology seminar (3): (cont.)
7. Design psychology seminar (4): Introduction of presentation and report production methods.
8. Materials planning and morphology seminar (1): Production of material image structure model (introduction of outline, evaluation standard and sample extraction).
9. Materials planning and morphology seminar (2): Production of material image structure model (data analysis and interpretation, and investigation of a model proposal)
10. Materials planning and morphology seminar (3): Production of material image structure model (model production)
11. Materials planning and morphology seminar (4) Production of material image structure model (presentation)
12. Human information science seminar (1): Introduction to human interface experiment - preparation of PC environment.
13. Human information science seminar (2): Introduction to human interface experiment- configuring experiment condition.
14. Human information science seminar (3): Introduction to human interface experiment-measurement and analysis.
15. Human information science seminar (4): Introduction to human interface experiment-measurement and analysis (cont.)
16. Spare day

[Keywords] material planning/design psychology, /human life engineering/ human information science

[Evaluation] Students will be assessed on their report per seminar assignment and presentations.

[Related courses] Design Science I, Design Science II, Design Science Seminars I, Design Science Seminars II

[Course requirements] Successful completion of this subject is essential for a completion of the Design Science Seminar IV.

[Remarks] The completion of the subject is strongly recommended for students wishing to progress to the postgraduate program.

デザイン数理解析論 Design Mathematical Analysis

[Instructor] Koichi Iwanaga, Yoshie Kiritani, Fumio Terauchi

[Credits] 2

[Semester] 3rd year-Spring-Wed 3

[Course code] T1P035001

[Room] Bldg. ENG-2-101

[Course description] This course will explain the three most frequently used statistical methods of the design science, consisting of analysis of variance, multivariate analysis, and quantification theory. In seminars, students will learn the fundamental method of statistical analysis.

[Course objectives] Students will learn the basic approach to the three statistical methods consisting of analysis of variance, multivariate analysis, and quantification theory, and aim to establish the fundamental ability to apply analysis by application of these methods.

[Plans and Contents] This course will provide lectures and seminars on the basic knowledge and approach to "analysis of variance", "multivariate analysis", and "quantification theory". Students will be asked to collect data required for analysis and prepare reports outside of class hours.

1. Analysis of variance in design science: Case studies.
2. Analysis of variance and experiment plan: Analysis of variance model.
3. One-way analysis of variance.
4. Two-way analysis of variance and interaction.
5. Analysis of variance and comparative test, and mini-test.
6. Pretesting to verify knowledge of statistics, and guidance.
7. Order method and paired comparison method.
8. Correspondence analysis and dual scaling.
9. Multivariate analysis type III and cluster analysis.
10. Principal component analysis and factor analysis.
11. Discriminant analysis.
12. Quantification theory type II
13. Multiple regression analysis.
14. Quantification theory type I
15. Mini-test and guidance.
16. Final exam and Presentation

[Keywords] analysis of variance, multivariate analysis, quantification theory

[Textbooks and Reference Books] It will be introduced in the lecture.

[Evaluation] The score of accomplishment of Seminars in the lecture, reports, and final exam are integrated and evaluated.

## 色と形の心理学 Psychology of Color and Shape

[Instructor] Haruo Hibino, Shinichi Koyama

[Credits] 2

[Semester] 3rd year-Spring-Mon 3

[Course code] T1P036001

[Room] Bldg. ENG-2-102

[Course enrollment] about 90

[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student

[Course description] This course will outline the basics of color and shape perception essential for the field of design.

[Course objectives] Students will aim to cultivate the essential psychological viewpoint required for examining various design related issues, and deepen understanding of the knowledge about human perception characteristics. Specifically, the course explains the fundamental theories of color psychology and color science from the standpoint of design, and outlines the fundamentals of form and shape perception.

[Plans and Contents] In order to realize better design for human use, it is essential to have a correct understanding of human perception characteristics. In this course, students will think about color and shape in detail, notably from the psychological viewpoint.

1. Introduction: Psychology of color and shape in the field of design-
2. Basic theories of color
3. Various problems about color appearance
4. Munsell color system
5. How to represent color numerically
6. Basic theories of visual perception: What do we see?
7. Attention and subliminal perception
8. Gaze perception and communication: Eye contact of misunderstanding
9. Multimodal integration of vision and tactile: Pain caused by vision
10. Interaction between vision and behavior: Synchronized body
11. Prosopagnosia and object agnosia: Unable to recognize face and object
12. Memory and sleep: Sleep promotes learning
13. Problems of color and design
14. Practical applications of design psychology
15. Overview and examination

[Keywords] Color, shape, design psychology, humans, perception

[Evaluation] Evaluation is given by attendance (will be checked in every lecture) 30%, reports /assignments 30%, and exams 40%.

[Related courses] Design Science II

[Course requirements] Students have preferably take Design Science II.

[Remarks] The seminar is compulsory for students wishing to enter Design Psychology Unit.

環境人間工学 Environmental Ergonomics

[Instructor] Tetsuo Katsuura

[Credits] 2

[Semester] 3rd year-Spring-Wed 2

[Course code] T1P037001

[Room] Bldg. ENG-2-202

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Lectures will be provided on the relationship of human and surrounding environment from the viewpoint of ergonomics and physiological anthropology. In particular, lectures will deal with light and sound environments, and introduce effects of light and sound on human physiology, and provide examples of an ideal light environment and an ideal sound environment.

[Course objectives] Students will aim to understand the ergonomics and physiological anthropology required for a design of comfortable environment based on the human centered design. The goal also includes development of ability for students to explain effects light and sound environment has upon users, and capacity for them to discuss desirable environments for human use. 2013 Faculty of Engineering Department of Design Science syllabus

[Plans and Contents] Degree of each student's understanding will be assessed via the question sheet to be handed out during each class. Students will be asked to individually research prior given keywords.

1. About environmental ergonomics: Outline of environmental ergonomics.
2. Natural daylight and artificial lighting: Examining natural daylight and artificial lighting.
3. Light and biorhythm.
4. Light and taste.
5. Light and autonomic nervous function.
6. Light and central nerves function.
7. Human visual function.
8. Summary and interim assessment.
9. Ideal lighting environment.
10. Human hearing function.
11. Sound and autonomic nervous function.
12. Sound and central nerves function.
13. Sound design.
14. Ultrasonic and human.
15. Summary and final evaluation.

[Keywords] ergonomics, physiological anthropology, light environment, sound environment, physiological functions

[Textbooks and Reference Books]

Environmental Ergonomics, Sato M, Katsuura T, Asakura Publishing.

[Evaluation] Students will be comprehensively assessed by interim exam and end-of-term exam.

[Related courses] Design Science II, Design Science I Seminar I~IV

[Course requirements] None

## プログラミング演習 II Computer Programming Practice II

[Instructor] Yoichi Tamagaki

[Credits] 3

[Semester] 3rd year-Spring-Tues 4 Last half / 3rd year-Spring-Tues 2

[Course code] T1P038001, T1P038002

[Room] Bldg. ENG-1-401(Design Practical Training Room) Class hour 9:35-12:00

[Course description] By being familiarized with programming skills, it is possible for you to embark from an imitative design work using existing application to a truly original design using design tools developed by yourself. The course will provide seminars and lectures to create opportunities for students to aim at a highly set goal by taking advantage of distributed textbooks.

[Course objectives] Students will aim to understand the nature of design expression enabled through programming. In particular, students will acquire coding methods using algorithm of interactive computer graphics and a simplified programming language in proportion to the C programming language. Students will be requested to individually research prior given keywords (preparation) and study questions arising as class's progress (review).

[Plans and Contents]

1. Recognition of basic environment and introduction of objective.
2. Introduction of algorithm and seminars (1-1)
3. Introduction of algorithm and seminars (1-2)
4. Assignment production (theme 1)
5. Assignment production (theme 1)
6. Introduction of algorithm and seminars (2-1)
7. Introduction of algorithm and seminars (2-2)
8. Introduction of algorithm and seminars (2-3)
9. Assignment production (theme 2)
10. Assignment production (theme 2)
11. Introduction of algorithm and seminars (3-1)
12. Introduction of algorithm and seminars (3-2)
13. Introduction of algorithm and seminars (3-3)
14. Assignment production (theme 3)
15. Assignment production (theme 3)

[Keywords] Digital, Program, Graphics,

[Textbooks and Reference Books] It will be introduced in the lecture.

[Evaluation] Evaluation is given by attendance and production of assignment

[Remarks] Students must bring full charged Laptop from the first lecture.

## デザイン文化計画演習 Design Survey

[Instructor] Akira Ueda

[Credits] 3

[Semester] 3rd year-Spring-Thurs 1 Last half / 3rd year-Spring-Thurs 2

[Course code] T1P039001 T1P039002

[Room] Bldg. ENG-2-201

[Course enrollment]

[Course description] In this course, students will understand survey methods and various aspects of design culture in regional societies, and comprehend and analyze them through seminars hosted in local communities. Following studies of significant works and the method of a field survey, students will be asked to visit local communities during a summer holiday for around 1 week to carry out a practical field survey. The acquired information must be compiled into a design proposal aimed at the local community.

[Course objectives] To practice design to pursue and propose an "ideal form" of human living, comprehensive check of the "past" and "present" living cultures is essential. To achieve this, it is necessary for each student to firmly focus on the overall living culture of local people in historical and climatic contexts via "field survey". Seminars will aim at students to cultivate their potential to search and propose the "ideal form" of living culture in actual local communities, based on the viewpoint of living culture analysis learned and established in the "Theory of Design Culture".

[Plans and Contents] This course will provide three parts consisting of lectures, seminars, and field surveys. Following lectures on aspects including community, design and survey methods, and seminars will be carried out in and around the campus. Students will then stay at the survey target area for around 1 week after their survey preparation, and participate in a survey session followed by a proposal, presentation and evaluation.

1. Overview of field survey for the community living design, overview of research theme, and grouping of a desirable theme selection
2. Knowledge of design elements based on "coexistence with nature", "resource usage and utilization", and "environment and landscape formation" in local communities in accordance with the particular theme setting.
3. Mastering field survey methods, and seminars.
4. Mastering method for survey item organization and questioning methods, and seminars.
5. Mastering method for survey item organization and questioning methods, and seminars.
6. Seminar group presentation and lecture on seminar supplement.
7. Visiting the area of survey and undertaking prior survey.
8. Understanding of the target area (visits to the field survey target location, or a lecture, interview, or meeting provided with a presence of a community representative)
9. Theme establishment, survey planning, and prior evaluation.
10. Undertaking field survey.
11. Undertaking field survey.
12. Undertaking field survey.
13. Summarization of field survey.
14. Investigation of design proposal based on the field survey
15. Reporting session, and future visions of design culture found through the field survey.

[Keywords] Design, Field Survey, Living Culture, Presentation

[Textbooks and Reference Books] Information and reference materials will be introduced or provided during classes.

[Evaluation] Students will be assessed by their attendances and results of their presentations. In particular, the evaluation of whether or not a student managed to cultivate the quality to seek and propose the "ideal form" of living culture will be dependent on the content of the presentation to be held on the final day of the field survey, and answers to be provided by the local residents who responds to the design proposal.

[Related courses] Theory of Design Culture

[Course requirements] Not particularly.

[Remarks] Student, who hopes to do graduation work at "Design Culture Unit", must take this course.

工業デザイン IV      Product Design IV

[Instructor] (Tsuyoshi Sempuku) , (Toshifumi Ogura)

[Credits] 3

[Semester] 3rd year-Fall-Thurs 3 Last half / 3rd year-Fall-Thurs 4

[Course code] T1P040001, T1P040002

[Room] Bldg. ENG-1-401(Design Practical Training Room)

[Course enrollment] 20

[Course description] Through seminars, students will learn the business model planning in industrial design.

[Course objectives] The study will focus on particular planning for the industrial design with an appearance of a system. Students will be asked to propose a system as a business model, and suggest a product which offers a new way of living. At the same time, students will also participate in analysis of protocols from the design psychology aspect in order for a user model to be constructed. The target will include a wide ranging field from domestic systems such as home networks and network products, to systems with highly public products such as ubiquitous networks.

[Plans and Contents]

1. Guidance
2. Analysis of case studies related to business model.
3. User analysis.
4. User behavior analysis and finding user characteristics.
5. Concept establishment, target user establishment, and presentation
6. Appearance evaluation.
7. System evaluation.
8. System evaluation.
9. Interface analysis.
10. Development of the final interface design.
11. Design development.
12. Usability research.
13. Usability review.
14. Presentation preparation
15. Presentation

[Keywords] Design Business Model, User Experimentation, User Centered

[Textbooks and Reference Books] None

[Evaluation] Student is assessed by model of works and presentation. Especially, evaluation is given by final presentation.

## トランスポーターションデザイン IV Transportation Design IV

[Instructor] Koichi Hayashi

[Credits] 3

[Semester] 3rd year-Fall-Fri 4 Last half /3rd year-Fall-Fri 5

[Course code] T1P041001, T1P041002

[Room] Bldg. ENG-1-401(Design Practical Training Room) Class hour: 15:15-17:40

[Course enrollment] 25

[Candidate] The course will be available for students in other transportation design subjects, students in other subjects, special registered students, and overseas students aiming to progress to the transportation design subject.

[Course objectives] 1. Transportation design practical training mainly on automobile design. 2. Students will aim to create integrated view and improve technical abilities.

[Plans and Contents] Students will be asked to establish a concept on the theme of the "upcoming transportation for a particular premium brand" and aim to improve their design skills through a series of design processes including research, idea development, expression, clay models, and presentations.

1. Guidance: Presentation theme of assignment, and introduction of conditions
2. Research and theme establishment
3. Research and theme establishment, and development of concept and ideas
4. Development of concept and ideas
6. Summary of idea development
7. Interim report for the development of concept and ideas
8. Rendering
9. Rendering
10. Clay models
11. Clay models
12. Clay models
13. Clay models
14. Presentation practice and preparation (clay modeling)
15. Final presentation and joint criticism

[Keywords] Concept, Premium brand, General Reskilling of design

[Evaluation] Concept and design proposal and model

[Related courses] Transportation Design I, II, III



## コミュニケーションデザイン IV Communication Design IV

[Instructor] Yoshie Kiritani, (Tatsuzo Akase)

[Credits] 3

[Semester] 3rd year-Fall-Wed 3 / 3rd year-Fall-Wed 4 First half

[Course code] T1P043001, T1P043002

[Room] Bldg.ENG-1-401(Design Practical Training Room)

[Course description] During the first 8 weeks, students will be asked to propose a design using a new material, functional glass and be asked to propose a design for minorities using visual metaphor (Kiritani). An outside lecturer (Tatsuzo Akase from Rei Design & Planning) will be invited during the following 7 weeks, with lectures and seminars on planning of communication design for public spaces.

[Course objectives] Students will learn abilities to develop and apply the communication design. Courses will aim for: 1) Proposal of a design scheme to connect material characteristics and user's cognitive structure: 2) Training of visual thinking and acquisition of skills for a humorized design proposal: and 3) Acquisition of skills needed for a dynamic presentation using 3D data. Students will be asked to research keywords in their preparations, and challenge assignments to be given during classes for their reviews.

[Plans and Contents]

1. New material, the functional glass, and temporary production: Lectures will be provided by professor Fujino from the University of Kyushu who will highlight the characteristics of the new material to deepen students' understanding about the material. Students will be asked to pick up keywords highlighting the characteristics of the new material.
2. Visualization of a cognitive structure for users: Based on the characteristics of the functional glass, the cognitive structure of a target user will be apprehended using laddering method. Concepts also will be also made.
3. Presentation of concepts.
4. Final presentation of a work for the functional glass.
5. Training to visualize proverbs.
6. Presentation about the minorities.
7. Presentation of ideas and feedback in group.
8. Final presentation of a work of the visualization.
9. Communication design for a public space, and introduction of the assignment.
10. Field survey and data collection.
11. Evaluation of proposal concept based on the analysis of research findings.
12. Production of improved proposal 1.
13. Production of improved proposal 2
14. Production of improved proposal 3
15. Presentation

[Keywords] cognition, laddering, visual metaphor, minorities, dual nature, visual communication design, design concept, public information, visualization, special sinology, digital image

[Textbooks and Reference Books] It will be informed in the lecture, if needed.

[Evaluation] Attendance and assignment production.

[Remarks] The curriculum substitutes the "Media Design IV" held until 2007. And "Media Design Seminar III" held during the old curriculum.

デザイン科学演習 IV Design Science IV Seminar

[Instructor] Koichi Iwanaga, Mitsunori Kubo, Fumio Terauchi, Takatoshi Tauchi, Tetsuo Katsuura, Yoshihiro Shimomura, Haruo Hibino Keita Ishibashi

[Credits] 3

[Semester] 3rd year-Fall-Mon 1 Last half / 3rd year-Fall-Mon 2

[Course code] T1P044001, T1P044002

[Room] Bldg.GEN-F41 Bldg. ENG-2 -201 Class hour: 9:35-12:00

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Candidate] 3rd year of Department of Design Science

[Course description] In this course, seminars will cover 4 design science fields consisting of material planning and design morphology, humanomics, design psychology, and human informatics. Students will undertake experiments and exercises assigned for each field, and participate in a presentation covering the seminar content and the learning achievement. Students will be asked to cultivate better understanding of each field's seminar content through individual learning outside of class hours.

[Course objectives] Students will aim to understand the fundamental roles of design in 4 design science fields consisting of material planning and design morphology, humanomics, design psychology, and human informatics, and acquire basic knowledge and techniques of scientific approach in design.

[Plans and Contents]

Students will attend a series of seminars covering four design science fields consisting of material planning and design morphology, humanomics, design psychology, and human informatics. Each field will last for four weeks.

1. Material planning and design, morphology Seminars (1)
2. Material planning and design, morphology Seminars (2)
3. Material planning and design, morphology Seminars (3)
4. Material planning and design, morphology Seminars (4)
5. Humanomics Seminars (1)
6. Humanomics Seminars (2)
7. Humanomics Seminars (3)
8. Humanomics Seminars (4)
9. Design psychology Seminars (1)
10. Design psychology Seminars (2)
11. Design psychology Seminars (3)
12. Design psychology Seminars (4)
13. Human informatics Seminars (1)
14. Human informatics Seminars (2)
15. Human informatics Seminars (3)
16. Human informatics Seminars (4)

[Keywords] material planning and design morphology, humanomics, design psychology, and human informatics

[Evaluation] Evaluation will be given by report related to each seminar, and presentation.

[Related courses] Design Science I, Design Science II, Design Science Seminars I, Design Science Seminars II, Design Science Seminars III

[Course requirements] Successful completion of this subject is essential for a completion of the Design Science Seminar III.

[Remarks] The completion of the subject is strongly recommended for students wishing to progress to the postgraduate school.

生活行動の心理学 Psychology of Living Activity

[Instructor] Yoshie Kiritani

[Credits] 2

[Semester] 3rd year-Fall-Tues 2

[Course code] T1P045001

[Room] Bldg.ENG-1-401(Practical Training Room for Design), Bldg.ENG-2-101

\*[Attention!!] Bldg.ENG-2 cannot be used during 2014 fall semester.

[Course enrollment] Maximum 40

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Psychological knowledge needed for a designer, social psychology in particular (human activity in relation to others), will be outlined. With practical experiments, the knowledge of self-control will also be explained. Students will write a report by reading Frankl (1977).

[Course objectives] Students will aim to learn the basic knowledge of the social psychology needed for a designer. Students will be asked to establish understanding of keywords given in titles of each class, and develop abilities to examine a particular relationship between academic knowledge and our everyday life. It is desirable for students to individually research prior given keywords and study questions using publications.

[Plans and Contents]

1. Guidance Class simulation.
2. Impression formation: Theories of Asch and Anderson will be explained Impression formation: impression formation and Anderson's weighting averaging model.
3. Stereotype: Stereotype and cognitive miser will be explained: stereotype, illusory correlation, and cognitive miser.
4. Experiment 1.
5. Attribution theory: Kelley's principle will be explained: Kelley's principle, causal schema, discounting principle, and correspondence bias.
6. Group and leadership: Meaning of group in social psychology and leadership research will be explained: Group cohesiveness and leadership theory.
7. Conformity: Conformity and social facilitation will be explained: conformity, deviation and social facilitation.
8. Group decisions: Group decisions will be explained in relation to conformity: extremity shift, and Eichmann experiment.
9. Attitude change: Attitude change, persuasive communication, balance theory, cognitive dissonance theory, and factors determining the persuasion will be explained: balance theory, cognitive dissonance theory, and persuasion.
10. Experiment 2
11. Examination
12. Workshop of self-control 1
13. Workshop of self-control 2
14. Workshop of self-control 3
15. S Workshop of self-control 4 and summary of classes.

[Keywords] social psychology, interpersonal behavior, communication, will power, self-control

[Textbooks and Reference Books] Frankl (1977, a Japanese translation in 2002 by Kayoko Ikeda, Misuzu Shobo)

[Evaluation] Evaluation is given by examination 30 points, assignments 40 points and report 30 points. In the examination, the students will be allowed to bring the specified matters. The assignments include 2 experimental reports. The report will be about the assigned book of Frankl.

[Remarks] Index of each lecture will be sent to the registered students via Moodle. However, blackboard writing and PowerPoint slides will not be basically distributed. Students must take notes individually. In addition, during class, the students may be asked to participate in experiments or survey for graduation study or master's thesis.

インターンシップ・プログラム Internship Program

[Instructor] Keita Ishimashi

[Credits] 2

[Semester] 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P046001

[Room]

[Course objectives] This program aims at students to undergo practical design experiences otherwise not obtainable through university classes, for the purpose of learning how to apply design skills acquired in lectures and seminars to practical scenarios in the actual society.

[Plans and Contents] During non-class period, students will attend a practical work experience at an external business or organization. Due to the nature of the program requiring coordination with the external organizations, the program availability is subject to confirmation. Student wishing to take part in the program must contact the faculty in charge and follow his instruction.

[Evaluation]

[Course requirements] Offer to take this course to your year- teacher

[Remarks] Only 3rd and 4th year students may take this course

材料計画演習      Seminar on Material Planning

[Instructor] Fumio Terauchi

[Credits] 3

[Semester] 4th year-Spring-Thurs 4 Last half / 4th year-Spring-Thurs 5

[Course code] T1P048001, T1P048002

[Room] Bldg.ENG-.2-102 \* Class period 15:15~17:40

[Course description] In this course, students will investigate the performance demand on design materials and its relationship with applications via both theoretical and practical aspects. In particular, students will learn via seminars concepts, theories, and approaches of themes such as "relationship of material and sensitivity", and "suitable relationship of material, structure, and form in design as a solution". Students will be asked to deepen their understanding through assignments scheduled to be engaged outside of class hour.

[Course objectives] Through theories and seminars, students will aim to acquire the method of material planning in design and develop their abilities to analyze design comprehensively

[Plans and Contents]

Through dealing with the following assignments, students will be asked to visualize the work into a portfolio.

1. Guidance
2. Plan a function through a research of product usages, and explore methods to develop the plan into a design.
3. Plan a function through a research of product usages, and explore methods to develop the plan into a design.
4. Plan a function through a research of product usages, and explore methods to develop the plan into a design.
5. Analyze the material characteristics of a product, and propose a new product based on the knowledge acquired through the analysis.
6. Analyze the material characteristics of a product, and propose a new product based on the knowledge acquired through the analysis.
7. Analyze the material characteristics of a product, and propose a new product based on the knowledge acquired through the analysis.
8. Interim presentation
9. Carry out a value analysis of decorative plants, building materials, or food samples made out of artificial materials, and examine the meaning and future possibilities of imitation materials.
10. Carry out a value analysis of decorative plants, building materials, or food samples made out of artificial materials, and examine the meaning and future possibilities of imitation materials.
11. Carry out a value analysis of decorative plants, building materials, or food samples made out of artificial materials, and examine the meaning and future possibilities of imitation materials.
12. Experience the disassembly of a product, and explore the material utilization and disassembly facilitative design.
13. Experience the disassembly of a product, and explore the material utilization and disassembly facilitative design.
14. Experience the disassembly of a product, and explore the material utilization and disassembly facilitative design.
15. Final Presentation (1)
16. Final Presentation (2)

[Evaluation] Evaluation is comprehensively given by attendance, submitted assignment, and presentation.

[Remarks] Things to be prepared will be informed later.

人間工学演習 Experiments on Ergonomics

[Instructor] Tetsuo Katsuura, Koichi Iwanaga, Yoshihiro Shimomura, Keita Ishibashi

[Credits] 3

[Semester] 4th year-Spring-Tues 3/4th year-Spring-Tues 4 First half

[Course code] T1P049001, T1P049002

[Room] Each Lab \*Class period 12:50~15:15

[Course description] Ergonomics demands comprehensive evaluation of human characteristics in relation to various design targets. In this lecture series, students will learn the theories and practices of measuring various human physiological functions, and undertake investigations of design using such knowledge and technologies.

[Course objectives] Students will aim to acquire measurement techniques and establish understanding of various measuring methods of human physiological functions, such as sweat rate, blood flow, cardiac output, electrodermal activity, heart rate variability, and electroencephalogram measurement. Through active experimentation, students will aim to obtain abilities to think and propose design evaluations.

[Plans and Contents]

1. Introduction of outline.
2. Basics of measurement and analysis methods.
3. Electromyogram and biometrics.
4. Blood pressure, pulse wave and cardiac output.
5. Electrocardiogram and heart rate variability.
6. Electroencephalogram and event related potential.
7. Body temperature, heat flow and sweat rate.
8. Oxygen intake and respiratory rate.
9. Electrogastrogram and electrodermal activity.
10. Cutaneous blood flow and cutaneous sensation.
11. Vision analysis and pupil diameter.
12. Subjective evaluation and environmental measurement.
13. Task performance and tremor.
14. Motion analysis and spinal column length.
15. End of the term examination

[Textbooks and Reference Books] Laboratory Experiments in Human Structure & Function, Kakitsuba N, Katsuura T, Yamasaki M (trans.), Bunkoudou. Environmental Ergonomics, Sato M, Katsuura T, Asakura Publishing.  
Man-Machine Interface, Sato M (edit.), Asakura Publishing.

[Evaluation] Evaluation in given comprehensively by attendance, attitude, reports, and the end-of-term exams.

[Remarks] Actual measurement items are subject to change depending on the number of students.

## 機械工作実習 B Practical Training in Machining B

[Instructor] Each teacher (Hideo Koyama)

[Credits] 1

[Semester] 4th year-Spring-Fri 4, 5

[Course code] T1P050001, T1P050002

[Room] Mechanical Practice Workshop

[Course enrollment] 20

[Candidate] 4th year of Design Systems in the Department of Design Engineering

[Course description] Develop an awareness of safety in machine operation of various processing methods as well as experience in the field.

[Course objectives] Actually experience the production technology and processing technology that is the fundamentals of manufacturing, learn various methods of workmanship, understand the step of processing things and develop the “engineer sense” in production design and production planning.

[Plans and Contents] There are round objects, objects on the plane, and the shape of complex objects such as machine parts. Processing of round objects using a lathe, finish grinding in order to further improvement the accuracy of the plane and the plane machining by milling, and experience working with complex shapes, such as electrical discharge machining. In addition, the student can also try their hand at gas welding and electric welding for bonding the mechanical parts. In these processes, because the automatic machines with the Numerical control (NC) are increased, NC programming will also be studied.

The following example shows a case wherein it starts from Lathe training,

1. Lathing Work class 1: Safety explanation, normal lathe structure, operating instructions, basic operations. Making a single-flower vase –machining external diameter, machining ends, drilling, threading (taps).
2. Lathing Work class 2: Making a single-flower vase – machining external diameter, machining ends, stepping, slotting, drilling, threading (dies)
3. Lathing Work class 3 :Making a single-flower vase (Finishing work) machining external diameter, taper turning, stepping, slotting.
4. Milling machines 1: Explanation of machine operations, immobilizing material, attaching tools, cutting, measuring dimensions, scribing.
5. Milling machines 2: Immobilizing material, attaching tools, cutting, measuring dimensions.
6. Milling machines 3: Immobilizing material, attaching tools, cutting, measuring dimensions beveling, file finishing.
7. Machining center class 1: Outline of features and mechanisms of NC machining, demonstrations with actual machines, learning NC programming and seminar. Explanation of the free Assignment “Plate with original design,” free assignment design proposal.
8. Machining center class 2: Learning NC programming and seminar, explanation how to make program to create piece for free assignment, manual programming for the free assignment.
9. Machining center class 3: Check the free assignment program using CAM software, use the machining center and make the book for the free assignment piece.
10. Welding 1: Oxyacetylene gas welding (steel plate welding).
11. Welding 2: AC arc welding (Steel plate down hand welding).
12. Welding 3: TIG welding (Aluminum, stainless down hand welding), MAG welding (steel plate down hand welding).
13. Electric discharge machining 1: The principles and history of electric discharge machining, video outline of electric discharge machining, edit assignment data with CAD/CAM and forming NC programs, network transfer of NC data.
14. Electric discharge machining 2: Die-sinking electric discharge machining – explanation of die machining, outline of die-sinking electric discharge machines, work layout, control system operation, setting processing conditions, programming, processing.
15. Electric discharge machining 3 Explanation of wire electric discharge machine, explanation of control system operations, work fixing and layout, setting processing conditions, processing, review, report.

[Keywords] Manufacturing, Machining, Machine Operation, Metal Materials, Machine Elements, Design and Drafting.

[Evaluation] Machined product, production report, assignment, report, and presentation.

[Course requirements] Students must attend all dates. For absence due to illness and authorized absence, supplementary classes will be provided.

[Remarks] To work safely and avoid accidents, students must wear work clothes and work shoes. Students must concentrate on operations and act with caution. Class contents may be changed depending on numbers of attending students.

卒業研究 Graduate Research

[Instructor] Each Teacher

[Credits] 6

[Semester] 4th year Spring-Fall Intensive

[Course code] T1P051001

[Room] Each Lab

[Course objectives] In this subject, students will aim to establish abilities to integrate design related knowledge and skills learned at each year of the undergraduate degree. Another purpose of the graduate research is to evaluate whether the acquired skills are applicable in real life scenarios.

[Plans and Contents] During the first half of the 4th year, students will be assigned to laboratories of design education research field. Each student will establish individual graduation research theme based on the specific academic area of the laboratory. Students will be asked to progress their research with regular instructions to be provided from the faculty of the laboratory via occasions such as seminars. Research results can be chosen from dissertation, dissertation / project, or project.

[Evaluation]

[Course requirements] Undertaking of a graduation research is conditional to a permission of assignment to the corresponding academic research field.



## デザイン総合プロジェクト Collaborative Research & Design Projects

[Instructor] Each teacher

[Credits] 6

[Semester] 4th year Spring-Fall Intensive

[Course code] T1P052001

[Room] Bldg.ENG-1-401(Design Practical Training Room)

[Course description] Students will select a theme from various themes related to a broad design field and carryout a collaborative research and design under the guidance of a team of faculties.

[Course objectives] Students will aim to acquire skills to utilize their fundamental expertise in collaboration with other specialized areas to apply their insights in a research and design with a greater complexity and extensiveness. The subject will run through the 7th and 8th semesters and forms the graduation requirement equals to the graduation research.

[Plans and Contents] The seminar will establish issues related to the social issues of the time as the issue of the design. 1 to 5: Published papers of other related fields to the subject, descriptive studies, and analysis. 6 to 10: Concept design to tackle the issues. 11 to 17: Process to convert the concept design into a prototype design, and presentation. The seminar will run through the 7th and 8th semesters. Students will repeat the above processes through each semester to advance their proposal to archive a solution with a greater quality.

[Evaluation]

[Course requirements] Operations to be assigned will be advanced. Due to the nature of team based operation, midway cancellation or unauthorized absences are generally not permitted. Students must duly consider this point before registration.

[Keywords] Design Projects, industry-university alliance

デザイン イングリッシュ 1 Design English 1

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P053001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 2 Design English 2

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P054001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 3 Design English 3

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P055001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 4 Design English 4

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P056001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 5 Design English 5

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P057001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 6 Design English 6

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P058001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

デザイン イングリッシュ 7 Design English 7

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P059001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.



デザイン イングリッシュ 8 Design English 8

[Instructor] Each Teacher

[Credits] 2

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P060001

[Room]

[Course objectives] To cultivate communication skills to make a presentation, and discussion in English about design.

[Plans and Contents] To improve listening skills, and speaking skills through discussion and reading ability and writing ability through reporting by picking up different design topics every time.

[Evaluation] Evaluation is given by attendance, and exams.

英語 e ラーニング 1 English e-Learning 1

[Instructor] Each Teacher

[Credits] 1

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P061001

[Course enrollment] 300

[Candidate] Only students of Department of Design

[Course description] Using the software in order to focus on studying the listening and reading in English, to learn on your own. Students study "Super Standard Course" using the software for self-study, in the e-learning system of ALC Press Inc.

[Course objectives] Be able to communicate properly with the native in all situations by focused learning listening and reading

[Plans and Contents] From a PC that can connect to the Internet on your own, and to attend to access "Super Standard Course" in the e-learning system of ALC Press Inc.

[Keyword] Listening, Reading, TOEIC(R) Countermeasure

[Textbooks and Reference Books] Not Particularly

[Evaluation] Evaluation is given by the score of written exams. Registration qualification of written test, students must attend the e- learning system "Super Standard Course" and have been completed to a level that the Department specifies.

[Related courses] T1P062001, T1P063001, T1P064001, English e-Learning 2, English e-Learning 3, English e-Learning4

[Course requirements] Not particularly

[Remarks]Students must attend the guidanceof each academic year of each fiscal year, as there are the explanation of how to take the course and to take the exams.

英語 e ラーニング 2 English e-Learning 2

[Instructor] Shinichi Koyama

[Credits] 1

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P062001

[Course enrollment] 300

[Candidate] Only students of Department of Design

[Course description] Using the software in order to focus on studying vocabulary in English, to learn on your own. Students study "Power words Course Plus" using the software for self-study, in the e-learning system of ALC Press Inc.

[Course objectives] To be able to communicate properly with the native in all situations by focused learning vocabulary.

[Plans and Contents] From a PC that can connect to the Internet on your own, and to attend to access "Power words Course Plus" in the e-learning system of ALC Press Inc.

[Keyword] Vocabulary, TOEIC(R) Countermeasure

[Textbooks and Reference Books] Not Particularly

[Evaluation] Evaluation is given by the score of written exams. Registration qualification of written test, students must attend the e- learning system "Power words Course Plus" and have been completed to a level that the Department specifies.

[Related courses] T1P062001, T1P063001, T1P064001, English e-Learning 1, English e-Learning 3, English e-Learning4

[Course requirements] Not particularly

[Remarks] Students must attend the guidance of each academic year of each fiscal year, as there are the explanation of how to take the course and to take the exams.

英語 e ラーニング 3 English e-Learning 3

[Instructor] Keita Ishibashi

[Credits] 1

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course Code] T1P063001

[Course enrollment] 300

[Candidate] Only students of Department of Design

[Course description] Using the software in order to focus on studying the listening and reading in English, to learn on your own. Students study "English grammar Course" using the software for self-study, in the e-learning system of ALC Press Inc.

[Course objectives] Be able to communicate properly with the native in all situations by understanding structure of English sentence.

[Plans and Contents] From a PC that can connect to the Internet on your own, and to attend to access "English grammar Course" in the e-learning system of ALC Press Inc.

[Keyword] English grammar, TOEIC(R) Countermeasure

[Textbooks and Reference Books] Not Particularly

[Evaluation] Evaluation is given by the score of written exams. Registration qualification of written test, students must attend the e- learning system "English grammar Course" and have been completed to a level that the Department specifies.

[Related courses] T1P062001, T1P063001, T1P064001, English e-Learning 2, English e-Learning 2, English e-Learning4

[Course requirement ] Not particularly

[Remarks] Students must attend the guidance of each academic year of each fiscal year, as there are the explanation of how to take the course and to take the exams.

[Instructor] Fumio Terauchi

[Credits] 1

[Semester] 1, 2, 3rd, 4th year-Spring-Fall Intensive

[Course code] T1P064001

[Course enrollment] 300

[Candidate] Only students of Department of Design

[Course description] Using the software in order to focus on studying the listening and reading in English, to learn on your own. Students study "TOEIC(R) test Exercise 2000Course" using the software for self-study, in the e-learning system of ALC Press Inc.

[Course objectives] The object is to mark the English proficiency of TOEIC (R) score 730 points equivalent.

[Plans and Contents] From a PC that can connect to the Internet on your own, and to attend to access "TOEIC(R) test Exercise 2000Course" in the e-learning system of ALC Press Inc.

[Keyword] TOEIC(R) Countermeasure

[Textbooks and Reference Books] Not Particularly

[Evaluation] Evaluation is given by the score of written exams. Registration qualification of written test, students must attend the e- learning system "TOEIC(R) test Exercise 2000Course"and have been completed to a level that the Department specifies.

[Related courses] T1P062001, T1P063001, T1P064001, English e-Learning 1, English e-Learning 2, English e-Learning3

[Course requirements] Not particularly

[Remarks] Students must attend the guidance of each academic year of each fiscal year, as there are the explanation of how to take the course and to take the exams.

グローバルデザインスタジオワーク 1 Global Design Studio work 1

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P065001

[Room]

[Course objectives] This subject is aim to enhance the capacity of student and exchange students in Department of Design to operate globally through the collaboration.

[Plans and Contents] Students will put together the proposal by repeating meeting with teachers once a week, by the group work, with the assignment set by the teacher.

[Evaluation] Evaluated by attendance and participation to the meeting with the instructor, and the proposition.

グローバルデザインスタジオワーク 2 Global Design Studio work 2

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P066001

[Room]

[Course objectives] This subject is aim to enhance the capacity of student and exchange students in Department of Design to operate globally through the collaboration.

[Plans and Contents] Students will put together the proposal by repeating meeting with teachers once a week, by the group work, with the assignment set by the teacher.

[Evaluation] Evaluated by attendance and participation to the meeting with the instructor, and the proposition.

グローバルデザインスタジオワーク 3 Global Design Studio work 3

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P067001

[Room]

[Course objectives] This subject is aim to enhance the capacity of student and exchange students in Department of Design to operate globally through the collaboration.

[Plans and Contents] Students will put together the proposal by repeating meeting with teachers once a week, by the group work, with the assignment set by the teacher.

[Evaluation] Evaluated by attendance and participation to the meeting with the instructor, and the proposition.



グローバルデザインスタジオワーク 4 Global Design Studio work 4

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P068001

[Room]

[Course objectives] This subject is aim to enhance the capacity of student and exchange students in Department of Design to operate globally through the collaboration.

[Plans and Contents] Students will put together the proposal by repeating meeting with teachers once a week, by the group work, with the assignment set by the teacher.

[Evaluation] Evaluated by attendance and participation to the meeting with the instructor, and the proposition.

グローバルデザインプロジェクト 1 Global Design project 1

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P069001

[Room]

[Course objectives] Develop the design ability that can be globally active, through participation in the design projects with overseas alliances, cooperation universities, and companies specified by teachers.

[Plans and Contents] Period of the project is assumed to 3-6 months or so.

[Evaluation] Evaluation is given by the content of activities and results in the project.

グローバルデザインプロジェクト 2 Global Design project 2

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P070001

[Room]

[Course objectives] Develop the design ability that can be globally active, through participation in the design projects with overseas alliances, cooperation universities, and companies specified by teachers.

[Plans and Contents] Period of the project is assumed to 3-6 months or so.

[Evaluation] Evaluation is given by the content of activities and results in the project.

グローバルデザインスタジオワーク 3 Global Design Studio work 3

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P067001

[Room]

[Course objectives] This subject is aim to enhance the capacity of student and exchange students in Department of Design to operate globally through the collaboration.

[Plans and Contents] Students will put together the proposal by repeating meeting with teachers once a week, by the group work, with the assignment set by the teacher.

[Evaluation] Evaluated by attendance and participation to the meeting with the instructor, and the proposition.

グローバルデザインプロジェクト 4 Global Design project 4

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P072001

[Room]

[Course objectives] Develop the design ability that can be globally active, through participation in the design projects with overseas alliances, cooperation universities, and companies specified by teachers.

[Plans and Contents] Period of the project is assumed to 3-6 months or so.

[Evaluation] Evaluation is given by the content of activities and results in the project.

## 海外アライアンスプログラム 1 Design Alliance Program 1

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P073001

[Room]

[Course description] Develop the design ability that can be globally active, through participation in the design projects with overseas alliances, cooperation universities, and companies specified by teachers.

[Course objectives] To develop the communication ability and capabilities by cooperating with students from different cultures and field.

[Plans and Contents] Period of the workshop is assumed to 1-2 weeks or so.

[Evaluation] Evaluation is given by the content of activities and results in workshops.

## 海外アライアンスプログラム 2 Design Alliance Program 2

[Instructor] Each Teacher

[Credits] 2

[Semester] 2,3rd, 4th year-Spring-Fall Intensive

[Course code] T1P074001

[Room]

[Course description] Develop the design ability that can be globally active, through participation in the design projects with overseas alliances, cooperation universities, and companies specified by teachers.

[Course objectives] To develop the communication ability and capabilities by cooperating with students from different cultures and field.

[Plans and Contents] Period of the workshop is assumed to 1-2 weeks or so.

[Evaluation] Evaluation is given by the content of activities and results in workshops.

造形演習 Design Aesthetics (Lab.)

[Instructor] Akira Ueda

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016001

[Room] Bldg. ENG-2-201

[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.

[Course objectives] Specific objectives of this course are as follows: (1) to cultivate the attitude to learn; (2) to develop multilateral observation skills; (3) to recognize the existence of various solutions; (4) to enhance presentation skills. In the Design Aesthetics (Lab.) course, students are required to challenge each of these 4 assignments, and continue until they achieve satisfaction. Students will learn to associate their brain and hands, and "move their hands, work up a sweat, let imagination loose, and create."

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assignment 3: Production of a tabletop lamp shade.
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
12. Assignment 4: Modeling of flying object.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition, summary, and criticism.

[Keywords] Observation, Thinking, Design, Presentation

[Textbooks and Reference Books] Not particularly.

[Evaluation] Evaluation is given by attendance works, and presentation.

[Related courses] Not particularly

[Course requirements] Not particularly

[Remarks] Not particularly



造形演習 Design Aesthetics (Lab.)

[Instructor] Takatoshi Tauchi

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016002

[Room] Innovation Plaza, Faculty of Engineering

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Pencil sketch of a hand.
3. Assignment 1: Seminar.
4. Assignment 1: Seminar/Criticism.
5. Assignment 2: Sketch of a solid object based on the three orthographic views.
6. Assignment 2: Seminar/Criticism
7. Assignment 3: Production of elastic band driven car.
8. Assignment 3: Seminar: Presentation of work based on the research findings.
9. Assignment 3: Production
10. Assignment 3: Presentation.
11. Assignment 4: Production of a paper sandal.
12. Assignment 4: Presentation of work based on the research findings.
13. Assignment 4: Production
14. Assignment 4: Presentation.
15. Exhibition and criticism.

[Evaluation] Evaluation is comprehensively given by attendance, works, and the quality of presentation.

[Remarks] Wearing sandals and high-heeled shoes are strictly prohibited in Innovation Plaza, Faculty of Engineering

造形演習 Design Aesthetics (Lab.)

[Instructor] Yoichi Tamagaki, Yoshihiro Shimomura

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016003

[Room] Bldg. ENG-2-atelier (2-601)

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

[Evaluation]

造形演習 Design Aesthetics (Lab.)

[Instructor] Yosuke Yoshioka

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016004

[Room] Bldg. ENG-1- 110

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

[Evaluation]

## 造形演習 Design Aesthetics (Lab.)

[Instructor] Ueda Edilson Shindi

[Credits] 2

[Semester] 1st year-Spring-Tues 5

[Course code] T1Y016005

[Room] Bldg. ENG-2-102

[Course enrollment] 60

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] Engineering is manufacturing, and manufacturing is a formative activity. The Design Aesthetics (Lab.) course aims to evoke students' interest in Engineering = manufacturing through several formative design projects and to awaken the individual talents in formative arts.

[Course objectives] When awareness towards an issue leads to some form of result by an engineering means, making something with a better organized form in mind and making something without such cognition will produce very different results. Through exercise, students will learn what better organized forms are. In specific, students will be given assignments for each item shown in the course plan based on the specialized areas of the faculty member.

[Plans and Contents]

1. Overall guidance.
2. Assignment 1: Precision drawing using a pencil.
3. Assignment 1: Seminar.
4. Assignment 1: Criticism.
5. Assignment 2: Drawing of a solid object based on the elevation drawing.
6. Assignment 2: Seminar.
7. Assignment 2: Criticism.
8. Interim presentation
9. Assessment 3: Select a theme from water, fire, soil, or wind, and freely create a form
10. Assignment 3: Seminar.
11. Assignment 3: Criticism.
13. Assignment 4: Seminar.
14. Assignment 4: Criticism.
15. Exhibition

[Keywords] Observation, Thinking, Design, move their hands, work up a sweat, let imagination loose, and create Presentation

[Textbooks and Reference Books] Not particularly

[Evaluation] Evaluation is given by attendance, works and quality of presentation. Attendance 40%, Presentation 60%.

[Related courses] Not particularly

[Course requirements] Not particularly

[Remarks] Not particularly

工学倫理 Engineering Ethics

[Instructor] Kenta Ono

[Credits] 2

[Semester] 3rd year-Fall-Mon 5

[Course code] T1Z051001

[Room] Large Lecture Room

※Large Lecture Room is located in 2<sup>nd</sup> Building of Faculty of Educations,

[Candidate] 2nd to 4th year of Faculty of Engineering (Direction is given by each Department)

[Course description] Engineering is a practical area of learning that utilizes various scientific and technological achievements to enhance our lives and living environment. However, if used in an inappropriate manner, it will create major social dislocations and loss which may even jeopardize our personal lives. This course discusses the missions, norms, roles, rights and responsibilities of engineers in relation to the society from a broad perspective.

[Course objectives] The objective of this course is to acquire the basic concepts and knowledge for engineers to promote the advancement of technology and contribute to society based on sound ethics.

[Plans and Contents] \* The schedule and contents are subject to alteration.

1. Introduction to ethics (Kyuichiro Takahashi, Center of General Education, Chiba University)
2. Characteristics of engineering ethics (Keizo Kutsuna, the Center for General Education, Chiba University)
3. Compliance and general principles of ethics (Moriyoshi Konami, professional engineer)
4. Product liability (Moriyoshi Konami, professional engineer)
5. Whistleblowing (Moriyoshi Konami, professional engineer)
6. Resolving ethical problems (Moriyoshi Konami, professional engineer)
7. Preparedness as an engineer and professional (Moriyoshi Konami, professional engineer)
8. Information technology and copyright: Private sound recording and the Copyright Levy Framework for audiovisual recordings (Heitoh Zen, Institute of Media and Information Technology, Chiba University)
9. Proprietary rights including intellectual property rights (1) (Masayoshi Takahashi, patent attorney)
10. Proprietary rights including intellectual property rights (2) (Masayoshi Takahashi, patent attorney)
11. Proprietary rights including intellectual property rights (3) (Masayoshi Takahashi, patent attorney)
12. Natural resource consumption and environmental ethics (Motoi Machida, Safety and Health Organization, Chiba University)
13. Safety and risks (1) (Yukinobu Shinoda, Industrial Safety Consultant)
14. Safety and risks (2) (Yukinobu Shinoda, Industrial Safety Consultant)
15. Group Discussion (Education committee member of each department)

[Keywords] Mission of engineers, morals, obligations, discipline, and engineering ethics.

[Textbooks and Reference Books] 1) Norifumi Saitoh et al., HAJIMETE NO KOUGAKU RINRI (Introduction of Engineering Ethics) second edition, Showado, (2005), 1400 yen + Tax, 2) Taiji Sugimoto et al, GIJYUTUSHA NO RINRI NYUMON (Introduction of ethics for engineer) fourth edition, Maruzen Publishing Co., Ltd., (2008), 1700 yen + Tax

[Evaluation] Students will be assessed by results of mini-tests at the end of each lecture. Students must attend a minimum of 12 lectures for accreditation. The yes or no entry to Moodle is treated as attendance. Students need to answer it during every review time.

[Course requirements] Refer to syllabus available online for subject categories of each faculty. Consult a faculty member of Board of Education when the information is not available.

[Remarks] Lecture schedule and contents are subject to alteration depending on availability of lecturers. Students are required to attend the guidance session to be held on the first class.

知的財産権セミナー Seminar: Intellectual Property Rights

[Instructor] (Satoru Asakura)

[Credits] 2

[Semester] Spring Intensive /June-July, Tue 4, 5

[Course code] T1Z052001

[Room] Eng.D-Bld.2-101

[Course enrollment] 32

[Candidate] Students of Faculty of Engineering, and Specially Registered Non-Degree Student

[Course description] Rights to intellectual property that are created through unique intellectually creative activities are protected by law, and effective utilization of these intellectual property rights leads to creation of new intellectual property. Promoting such intellectual creation cycle is lately recognized as an important national strategy. The objective of this course is to acquire the basic knowledge and practical approach to intellectual property rights, mainly focusing on industrial property rights as represented by patents.

[Course objectives] The goals for this course are as follows: 1) to be able to explain the concepts such as intellectual property and intellectual property rights; 2) to be able to understand the requirements for patentability of inventions; and 3) to be able to conduct patent search using the Industrial Property Digital Library.

[Plans and Contents]

Lectures mainly covered patent systems for protecting inventions, and explained other related legislation and recent trends. The lecture contents were subject to change depending on student interests and requests.

1. Outline of patent system.
2. Industrially applicable invention.
3. Potential of industrial use
4. Novelty and inventiveness.
5. Patent categories and prior art search.
6. Using Industrial Property Digital Library.
7. Patent claim and patent specification.
8. Preparing patent application.
9. Patent examination.
10. Patent appeal.
11. Patent litigation.
12. Economic use of patent rights.
13. Outline of utility model system and design system.
14. Summary and examination.

[Keywords] intellectual property, intellectual property rights, industrial property, industrial property rights, invention, patent

[Textbooks and Reference Books] Students were asked to bring a statute book covering the Patent Act. Printed materials and the following title were handed out as-reference textbooks:

INDUSTRIAL PROPERTY RIGHTS, National Center for Industrial Property Information and Training

[Evaluation] Comprehensive evaluation was conducted by means of reports. Students had to obtain over 60 points to achieve credits.

[Course requirements] Although the course taught basic terms of patent laws, knowledge of the law was not required. Any students interested in the subject were welcome.

[Remarks] In 2014, lectures were held in the 4th and 5th time slots, Tuesday, June 3, 10, 17, 24 and July 1, 8, 15.

## 工業技術概論 Introduction to Industrial Technologies

[Instructor] Yun Lu

[Credits] 2

[Semester] Spring-Mon5

[Course code] T1Z05400

[Room] Eng.D-Bld.17-111

[Candidate] Students of Faculty of Engineering, other Faculties

[Course description] First, the course will discuss the development of global industrial technologies with focus on Japanese technologies, changes of people's lives caused by technologies, environment and energy situations, and the history, current situation and future of industrial technologies. The course will also provide lectures on the necessary mindset as industrial engineers, resource research, how to write technical papers, and how to give research presentation, as well as guidance on studying and report writing techniques for students majoring in science and engineering.

[Course objectives] The objective is to increase the understanding of foreign exchange student majoring in science and engineering towards the development of industrial technologies and changes of people's lives caused by technology development, environment and energy situations, and to teach students the basic abilities that are required as industrial engineers (mindset, resource research, how to write technical papers, and how to give research presentation, etc.) as well as guidance on studying and report writing techniques for students majoring in science and engineering. At the same time, the course is aimed to enable foreign exchange students to gain a better understanding on the industrial technologies of Japan and to acquire the ability to contribute to the development of industries and technologies in their home countries or to work in Japanese companies in the future.

[Plans and Contents] The lectures will be given in 2 parts. Part 1: History, current situation and future of industrial technologies (Classes 1 – 9), and Part 2: Path to becoming a researcher. To ensure a better understanding, lecture resumes will be distributed on the web and lectures will be given using a projector. Achievements will be evaluated by reports and presentation (Classes 10 – 15).

1. Orientation and discussion about course content
2. Advances in industrial technology worldwide
3. Advances in industrial technology in Japan
4. Unique industrial technology
5. Industrial technology and life
6. Industrial technology and energy, the environment
7. 21<sup>st</sup> century industrial technology
8. How to write a report
9. Assignment presentation 1
10. Basic R&D thinking 1
11. Basic R&D thinking 2
12. Resource research
13. How to write a technical paper
14. Research presentations
15. Research presentations 2
16. Research presentations 3

[Textbooks and Reference Books] Textbook is not specified. Handouts will be provided via <http://apei.tu.chiba-u.jp/Luyun-HP.html>. Reference books will be introduced in class time.

[Evaluation] Attendance (30%) and exercises, report (30%) and presentation (40%), the total score 60 accredited.

[Course requirements] Not particularly

[Remarks] Foreign students only, the choice subject (F30 or F36) and no credit for Japanese students (Z99) .

## 居住のデザインと生活技術 Dwelling Design and Living Technology

[Instructor] Yun Lu

[Credits] 2

[Semester] Fall-Fri 4

[Course code] T1Z055001

[Room] Eng.D-Bld.17-213

[Course enrollment] about40

[Candidate] Students of Faculty of Engineering, other Faculties, and Specially Registered Non-Degree Student

[Course description] This course will be led by grand fellow Atsushi Maruyama.

[Course objectives] In the life of a person, there are various schemes being repeated in our given environment, the various designs that lead to scales of city or region from around us cannot be done elsewhere. For foreign students aiming to go to form a professional environment, firstly, they need to focus on design and life skills for such residence, then think of the parallel development, also, in the present, they need to understand what is being deployed.

[Plans and Contents] We would like to discuss, in seminar format, examples of native students not only in the case in Japan, regarding the technology and lifestyle design for residential, and deepen the understanding. There are also plans of visits outside the university during the term.

1. October 3 – Orientation: What does “living” mean? How have people designed living spaces thus far?
2. October 10 – What types of houses can be found now in Japanese urban and rural areas?
3. October 17 – What types of houses can be found in Japanese historical rural and fishing areas?
4. October 19 (Sunday) – On-site observation: Boso Hudokinooka Open air Museum. (Bus tour)
5. October 24 – What types of houses can be found in Japanese historical urban areas?
6. November 7 – What trends have been seen in designing dining spaces kichen and family room?
7. November 14 – What trends have been seen in designing drawing rooms to allow for social relationships?
8. November 21 – What trends have been seen in designing amusement spaces for Noh and Kabuki?
9. November 28 – What trends have been seen in designing amusement spaces in Tokyo Disney land?
10. December 5 – How people have designed tea houses and Sukiya houses facing four seasons and nature?
11. December 12 – How people have designed tea gardens and imperial villa facing four seasons and nature?
12. December 19– How people designed religious spaces in dwelling houses and community during Bon and Shogatsu?
13. January 9 – How people designed religious spaces, Temples and Shrines in community?
14. January 23 – How people designed religious monument such as five storied pagodas ?
15. January 30 – Summary and Overall Discussion

[Keywords] Dwelling house, Design, Living Technology, Mealtime, Relationship, Religious Belief

[Textbooks and Refrence Books] Textbook is not specified. Reference books will be introduced with the process of class on appropriate time.

[Evaluation] Evaluation will be given by small questionnaire with attendance sheet, presentation of the report in seminars at each research room, and the final report.

[Course requirements] Not particularly

[Remarks] Foreign students only, subject of choice(F30 or F36)and no credit for Japanese students(Z99)