

Theory of Electromagnetics (4.0credits) (電磁理論)

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

The purpose is not only to deeply understand electromagnetics as fundamentals of broad applications to energy, electronics and so on, but also to learn utilization techniques for "practical electromagnetics". Group works on different subjects without guidelines will be done. Through repetitive consideration, investigation, presentation and discussion based on electromagnetic theory, the solution of the selected subject is pursued.

Prerequisite Subjects

Electromagnetic theory, Vacuum electronics, High voltage engineering, Plasma physics and engineering, Computer literacy, Electric circuits

Course Topics

1. Introduction, grouping, subject selection
2. Investigations on basic theory and related references to the selected subject
3. Interim report and discussion on investigations
4. Analysis and verification using different approaches
5. Final presentation

Textbook

Textbook will be introduced in class.

Additional Reading

Reference will be introduced in class.

Grade Assessment

Report and/or presentation

100-90:S, 89-80:A, 79-70:B, 69-60:C, <59:F

Notes

not imposed

Contacting Faculty

Questions will be taken after class.

Theory of Quantum Systems (4.0credits) (量子理論)

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

In order to deepen the understanding of quantum mechanics for the students who mastered elementary quantum mechanics, this lecture provide the knowledge from basic concept to advanced contents of the quantum mechanics, and is designed to acquire applied skills in actual electronic materials. Moreover, this lecture is designed to acquire the skills to predict the physical phenomenon in actual electronic materials by visualizing the electron transport and the wave function based on the computer simulation.

After successfully studying this lecture, students will be able to:

1. Understand and Describe quantization phenomena in actual electronic materials and devices.
2. Cultivate the skills to visualize wave functions in simple quantum devices.

Prerequisite Subjects

Quantum mechanics, Solid state electronics, Magnetic materials, Electromagnetics

Course Topics

1. Basic quantum theory (Wave-particle duality in photon and electron, Schrodinger equation, Uncertainty principle, etc.)
2. Matrix and state vector (Matrix element, Diagonalization, Heisenberg representation)
3. Electron spin and angular momentum (Spin operator, spin-orbit interaction, etc.)
4. Electron scattering and tunnel effect (Rutherford scattering, Matrix element in scattering problem, etc.)
5. Perturbation theory (Electron scattering, Absorption and emission of photons)
6. Many-particle system and many-body problem (Bose particles, Fermi particles, Second quantization, etc.)
7. Quantum device (Optical devices, Electron devices)

Textbook

Quantum mechanics I, II: Shoichiro Koide, Shokabo Co., Ltd

Additional Reading

Elements of Advanced Quantum Theory: J. M. Ziman, Cambridge Univ. Press

Grade Assessment

Evaluation will be based on the report or final examination.

<enrolled student after 2020.4>

A+: 100-95, A: 94-80, B: 79-70, C: 69-65, C-: 64-60, F: 59-

<enrolled student before 2020.3>

S:100-90, A:89-80, B:79-70, C:69-60, F:59-

Notes

No special requirements for attending the course.

Contacting Faculty

Questions will be asked during the lecture or in the office hour. If necessary, students should book an appointment for your questions in advance via e-mail.

Contact:

Hiroshi Amano 3321 amano@nuee.nagoya-u.ac.jp

Kodo Kawase 4211 kawase@nuee.nagoya-u.ac.jp

Satoshi Iwata3303 iwata@nuee.nagoya-u.ac.jp

Takeshi Kato3304 takeshik@nuee.nagoya-u.ac.jp

Yoshio Honda5275 honda@nuee.nagoya-u.ac.jp

Kiichi Niitsu2794 niitsu@nuee.nagoya-u.ac.jp

Thermodynamics and Statistical Mechanics (4.0credits) (熱・統計力学)

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

Thermal and statistical dynamics is a branch of physics and provides us important fundamental concepts in various fields including energy, plasma and electric materials at the heart of electronics. The purpose of this course is not only to understand basics of thermal and statistical dynamics but also to learn how to use them in various applications with gaining a computer simulation skill. Students can acquire the above issues.

Prerequisite Subjects

Mathematics 1, Fundamentals of Electric Energy with Exercises, Fundamental Computer Programming with Exercises. You should take the above subjects, but you can take this subject even if you have not taken above subjects.

Course Topics

1. basics of thermal dynamics (ideal gas, entropy, thermal cycle)
2. thermal dynamics on material science
3. microscopic expressions of equilibrium system
4. molecular dynamics
5. energy distribution functions and density of energy state
6. Boltzmann transport equation and scattering, transition process
7. thermal transportation in fluid mediums
8. basics of numerical calculation on thermal transportation

As homework will be assigned during or after class, submit as a report each time or by the designated date.

Textbook

to be introduced in the lecture.

In a lecture on molecular dynamics, you need to prepare UNIX, g++ and make environment on your own computer.

Additional Reading

to be introduced in the lecture.

Grade Assessment

Grading by Exercises, Reports and Examinations.

(enrolled student after 2020.4)

A+:100-95, A:94-85, B:84-75, C:74-65, C-:65-60, F: 59

(enrolled student after 2011.4)

S:100-90, A:89-80, B:79-70, C:69-60, F:59-

(enrolled student before 2011.3)

A:100-80, B:79-70, C:69-60, D:59-

Notes

No course requirements

Contacting Faculty

We handle student questions during and after class.

If you ask questions after-class hour, contact by telephone or e-mail.

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

The purpose is to understand the various physical phenomena related to electrical and electronic engineering and the principles of mathematical methods used for them, and to cultivate the basic skills necessary for research in this field through the following items.

1. To develop the ability of making good use of major mathematical methods for analyzing physical phenomena in electrical and electronic engineering:
2. To understand the universality and physical meanings of major mathematical methods by applying the methods in various physical phenomena:
3. To study how to model physical phenomena for analysis using mathematical methods:
4. To obtain intuitive understanding of physical phenomena through exercises using computer simulation and visualization

In this lecture, the goal is for students to have the following knowledge and skills at the end of the lecture.

1. Students can visualize and theoretically explain physical phenomena.
2. Students can simulate electronic circuit by optimum modeling
3. Students can formulate surface and interface phenomena and evaluate them quantitatively.
4. Students can understand quantum effects and run device simulation based on numerical computing.

Prerequisite Subjects

Mathematics 1 and 2, Electromagnetic Theory, Fundamentals of Electronic Materials, Linear Circuit Theory, Electronic Circuits, Quantum mechanics

Course Topics

Visualization of phenomena in electric circuit and its theoretical understanding

Modeling of device and numerical solutions of algebraic equations and ordinary differential equations (linear, non-linear)

Theoretical understanding and formulation of surface and interface phenomena, such as photoelectric effect

Fundamentals of semiconductor device simulation: Semiconductor equations and numerical analysis methods

. Optical beam propagation and spectral analysis based on fast Fourier transform (FFT)

Review the contents of the previous lesson and understand the principles of each process.

Textbook

Lecture materials are handed out as needed.

Additional Reading

References will be assigned as needed.

Grade Assessment

Degree of achievement is examined by the submitted report.

The minimum acceptance criterion is to correctly understand and discuss the physical phenomena related to electrical and electronic engineering and principles and characteristics of mathematical methods.

The report at each class is scored out of 100, and 60 of average score of all reports is appraised as passable.

The grade evaluation criteria are as follows,

Students enrolled in or after the 2020 school year:

100~95: A+, 94~80: A, 79~70: B69~65: C, 64~60: C-, 59~0: F

Students enrolled in or before the 2019 school year:

100~90: S, 89~80: A, 79~70: B69~60: C, 59~0: F

Notes

Students should have studied in electromagnetics, mathematics I and tutorial AB, and mathematics II and tutorial AB, but can take this course if they have not already done so.

Contacting Faculty

Questions are always invited at the class, and also available out of the class.

Theory of Discrete Systems (4.0credits) (離散システム論)

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty Tetsu IWATA Associate Professor	Associated Faculty	Associated Faculty

Course Purpose

With the growth of information and communications technology, the amount of data that systems need to collect and process increases. Then, the processing and modelling technologies of a vast amount of data, and analysis and design techniques using computers become more important.

The purpose of this course is to review several basic topics listed as 1 to 7 in the following list, and practice their application topics with some exercises.

Students understand and explain the following topics:

1. An example of control system, design flow of the "system" method of modeling, simulation, analysis and design techniques and understanding
2. Algorithm techniques for programming
3. Architectures of distributed systems that integrate computers and networks, and protocols for communication, synchronization, and maintaining consistency
4. Minimization of boolean functions by the Quine–McCluskey algorithm
5. Data analysis algorithms and analysis tools
6. Basic discrete mathematics and its applications
7. Fundamentals of interactive systems such as robots, and techniques for expressing their movements

Prerequisite Subjects

Discrete Mathematics with Exercise, Fundamental Computer Programming with Exercises, Digital Circuits with Exercises

Course Topics

1. Modeling, analysis and design of system
2. Algorithm techniques
3. Architectures of distributed systems and protocols
4. Boolean function minimization
5. Data analysis algorithms and tools
6. Basic discrete mathematics and its application
7. Fundamentals of interactive systems and techniques for expression

For each topic, students will submit reports or there will be oral presentation.

Textbook

Will be specified during the lecture when necessary.

Additional Reading

David A. Patterson and John L. Hennessy. "Computer Organization and Design", Morgan Kaufmann

Grade Assessment

Evaluate the degree of achievement with reports, oral presentation and discussion. Pass if it is greater than or equal to 60%.

Notes

None.

Contacting Faculty

During and after lectures.

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

Image media systems and communication networks are technical bases of the modern society. The aims of the course are to learn the fundamental principles of information theory, signal/image processing, and communication systems, and to obtain the essential knowledge of the current ICT society.

Goal

- To understand the basics of signal processing and waveform transmission.
- To implement a simple system that performs signal processing and waveform transmission.

Prerequisite Subjects

Course Topics

Lectures:

- Fundamentals of image signal processing
- Fundamentals of information networking
- Fundamentals of wireless communication systems

Exercises and final presentation:

- Implementation of image signal processing and wireless communication systems on a pair of laptop PCs with C language.
- For the final presentation, a poster presentation on the above systems and a demonstration with it will be requested.

All the reports should be submitted without delay.

Textbook

Books of lectures will be suggested during the lectures whenever necessary.

Additional Reading

References will be suggested during the lectures whenever necessary.

Grade Assessment

The judgement will be conducted based on the quality of submitted reports and that of the final presentation. All of the reports should be submitted without delay.

Notes

No requirement.

Contacting Faculty

Questions are accepted after each lecture and via emails.

Course Type	Basic Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
	Automotive Engineering		
Starts 1	1 Spring Semester 1 Spring Semester	1 Spring Semester	1 Spring Semester
Lecturer	Associated Faculty	Associated Faculty	Associated Faculty

Course Purpose

The purpose of this seminar is to understand the principle of the main method and the evaluation method of the error on the signal measurement of the voltage / current etc. in the experiment of the electronic information system. In addition, we will be able to process and analyze measured data using software (LabView and SCILAB). These are aimed at understanding the techniques necessary for acquisition and analysis of experimental data and training of practical skills.

Prerequisite Subjects

electromagnetics, electric circuits, electronics Circuits, mathematics1 & 2, programming, probability / statistics

Course Topics

1. Signal measurement
 - 1.1 Measuring instrument definition and specification
 - 1.2 Basics of circuit design
 - 1.3 Voltage measurement, current measurement, resistance measurement
 - 1.4 Error source in measurement
 - 1.5 Configuration of PC-based instrument
 - 1.6 Collection and programming of experiment data
2. Data analysis
 - 2.1 Statistical analysis (sampling and population, basic statistics, statistical error, test)
 - 2.2 Time series analysis (FT, FFT, WT, transfer function, chaos)
 - 2.3 Correlation analysis (autocorrelation, cross-correlation)
 - 2.4 Spectral analysis (Fourier analysis, Fourier transform, spectral density function)
 - 2.5 Simulation · Observation Experimental Data Analysis (Basic)
 - 2.6 Simulation / Observation Experimental Data Analysis (Application)

Textbook

"Low Level Measurements Handbook (6th Ed.), Keithley" will be distributed,
Distribution of data analysis print

Additional Reading

LabView Programming Guide ASCII

Piersol, John Wiley & Sons

"Random Data: Analysis and Measurement Procedures" by J. S. Bendat and A. G. Piersol (John Wiley and Sons)

"Atarashii Gosa-Ron (in Japanese)" by K. Yoshizawa (Kyoritsu)

"Spectral Analysis (in Japanese)" by M. Hino (Asakura)

Grade Assessment

Evaluate the target achievement level by comprehensively summarizing the presentation content of the seminar, the degree of understanding of the lecture, and the analysis result report of the exercise. Pass score of 60 points or more with 100 full marks.

Notes

No requirement for attending this course.

Contacting Faculty

Basically, it is accepted in the classroom during lecture time or at the end.

For questions beyond the time, arrange time in advance by telephone or e-mail to the teacher in charge.

Seminar on Visual Information 1A (2.0credits) (画像情報学セミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 1B (2.0credits) (画像情報学セミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 1C (2.0credits) (画像情報学セミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 1D (2.0credits) (画像情報学セミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Information Systems 1A (2.0credits) (情報システムセミナー1A)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

The aim of this seminar is: Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Control Engineering

Course Topics

Textbook

Will be introduced in the class.

Additional Reading

Will be introduced in the class.

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 1B (2.0credits) (情報システムセミナー1B)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Control Engineering

Course Topics

Textbook

Will be introduced in the class.

Additional Reading

Not specified.

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 1C (2.0credits) (情報システムセミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	Shinji DOKI Professor	Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 1D (2.0credits) (情報システムセミナー1D)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Control Engineering

Course Topics

Textbook

Will be introduced in the class.

Additional Reading

Not specified.

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 1A (2.0credits) (情報ネットワークセミナー1A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Associate Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 1B (2.0credits) (情報ネットワークセミナー1B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Autumn Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Associate Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 1C (2.0credits) (情報ネットワークセミナー1C)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Associate Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 1D (2.0credits) (情報ネットワークセミナー1D)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Autumn Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Associate Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must prepare a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Hideki ANDO Professor

Course Purpose

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Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

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Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Hideki ANDO Professor

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Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Seminar on Intelligent Systems 1A (2.0credits) (インテリジェントシステムセミナー1A)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises
Computer Programming with Exercises
Automata and Formal Languages
Algorithms and Data Structures

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During each seminar.

Seminar on Intelligent Systems 1B (2.0credits) (インテリジェントシステムセミナー1B)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises
Computer Programming with Exercises
Automata and Formal Languages
Algorithms and Data Structures

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Reading skills of technical documents
4. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Seminar on Intelligent Systems 1C (2.0credits) (インテリジェントシステムセミナー1C)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises
Computer Programming with Exercises
Automata and Formal Languages
Algorithms and Data Structures

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Seminar on Intelligent Systems 1D (2.0credits) (インテリジェントシステムセミナー1D)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises
Computer Programming with Exercises
Automata and Formal Languages
Algorithms and Data Structures

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Seminar on Information Engineering 1A (2.0credits) (数理情報工学セミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 1B (2.0credits) (数理情報工学セミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced

Additional Reading

To be introduced

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 1C (2.0credits) (数理情報工学セミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 1D (2.0credits) (数理情報工学セミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Communication Systems 1A (2.0credits) (無線通信システムセミナー1A)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 1B (2.0credits) (無線通信システムセミナー1B)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 1C (2.0credits) (無線通信システムセミナー1C)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 1D (2.0credits) (無線通信システムセミナー1D)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for one semester and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for two semesters and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Advanced Lecture on Image Signal Processing (2.0credits) (画像信号処理特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor

Course Purpose

Image and visual information processing is one of the key components in the area of information and communication engineering. In this course, students learn the basic theory and its application systems of image information processing in a practical manner through computer programming exercises.

Goal: it is expected that students completing this course can

- understand the basic principles of image signal processing
- implement basic image processing through computer programming

Prerequisite Subjects

Computer Programming, Digital Signal Processing, Statistics and Numerical Analysis

Course Topics

1. Introduction to image processing programming
2. Image filtering
3. Binarization and error diffusion
4. Histogram processing
5. Geometric transform
6. Frequency analysis
7. Advanced image filters
8. Image compression
9. Image deconvolution

Lecture slides are made available online.

Each lecture includes computer programming exercises on specific topics.

Students are expected to complete the exercises until the next lecture.

Textbook

Specified during the lectures when necessary.

Additional Reading

Specified during the lectures if necessary.

Grade Assessment

Reports are evaluated.

To pass the course, students are required to sufficiently understand the basics of this course, and to implement them through computer programming. In accordance with the depth of understanding and progress in implementation, different scores (S, A, B, C) are given.

Notes

No prerequisite. Basic programming experiences in C/C++ languages are desirable.

Contacting Faculty

We accept questions during the classes and via email.

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

The purpose of this lecture is to understand the fundamentals of digital communications through lectures focusing on the vehicle to vehicle and vehicle to infrastructure communication (V2X).

Main goals are:

1. To acquire ability to explain the connected cars and autonomous cars
2. To acquire ability to explain V2X
3. To acquire ability to explain the the digital modulation schemes for V2X
4. To acquire ability to explain the communication protocols for V2X

The educational aim of this lecture is a basic skill for communications and computer science. This year's lecture will be provided by Prof. Takaya Yamazato.

Prerequisite Subjects

Wireless Communication Systems (undergraduate subject of Nagoya University), basics of mathematics including complex function theories, probability and random process theories, and basics of information/communication theories.

Course Topics

1. The connected cars and autonomous cars
2. The vehicle to vehicle and vehicle to infrastructure communication (V2X)
3. The digital modulation schemes for V2X
4. The communication protocols for V2X
5. Future perspective of V2X

Homework will be assigned after the class.

Students are asked to submit their homework at the next lesson.

Textbook

Handouts (maybe in Japanese) will be provided.

Additional Reading

Proakis, Digital Communications, McGraw Hill

Grade Assessment

60% or more of the total score of midterm (if provided) and final examinations is necessary to pass the course.

Submission of all home works is required to take the final examination.

[students enrolled after 2020]

100-95 points: A +, 94-80 points: A, 79-70 points: B, 69-65 points: C, 64-60 points: C-, 59 points or less: F

[students enrolled before 2019]

100-90 points: S, 89-80 points: A, 79-70 points: B, 69-60 points: C, 59 points or less: F

Notes

Contacting Faculty

Questions in the class are welcome and encouraged.

Questions just after the lecture are accepted if time allows.

Students may send questions by emails to yamazato_at_nuee.nagoya-u.ac.jp.

Meetings may be arranged if requested by emails.

Questions about individual results may not be answered

except for possible mistake in grading reported by the formal procedure.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Hiroshi HASEGAWA Professor

Course Purpose

The purpose of this course is to describe various important technologies that are used to create present information transport networks. As a precondition, finish of Communication Network is expected. After attending this course, students are expected to understand the basics of telecommunication networks from classical telephone networks to latest optical networks. The knowledge will provide the basis to build future information transport networks.

Prerequisite Subjects

Information Networks

Course Topics

1. Advances in transport technologies
2. Basics of optical communication technologies
3. Optical networking technologies
4. MPLS (Multi-Protocol Label switching) (Flow router/IP router technologies)
5. GMPLS (Generalized MPLS)/SDN (Software Defined Network)

Students are requested to understand the above topics through the study of presentation materials in lectures. The averaged scores of two (intermediate/final) examinations must satisfy the grade requirements.

Textbook

No textbook is specified. Presentation materials in the PDF format are distributed through the website of the department.

Additional Reading

Advances in Transport Network Technologies: photonic networks, ATM, and SDH, K. Sato (Artech House).
High speed networks, M. Boisseau et al. Wiley.
Network Recovery, Mario Pickavet et al. Morgan Kaufmann Pub.)

Grade Assessment

Mid-term and final examinations are expected to measure the achievement. Based on the averaged score, the grade will be calculated as follows.

Those who entered the graduate school after April 2020:

100-95:A+, 94-80:A, 79-70:B, 69-65:C, 64-60:C-, 59-0:F.

Those who entered the graduate school before April 2020:

100-90; S, 89-80; A, 79-70; B, 69-60; C, below 59; F.

Notes

No mandatory requirement.

Contacting Faculty

Questions and discussions are encouraged during classes and when they are necessary.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	Autumn Semester ,every other year
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students study the architecture of state-of-the-art microprocessors. In particular, this course focuses on the schemes that exploit instruction-level parallelism (ILP) in superscalar and VLIW processors.

Goals:

1. Students can understand and explain the organization of ILP processors.
2. Students can understand the tradeoffs between hardware complexity and ILP improvements.
3. Students can understand and explain basic instruction scheduling schemes.

Prerequisite Subjects

Computer Engineering and Computer Architecture

Course Topics

1. Superscalar processors
 - 1.1 Dynamic instruction scheduling
 - 1.2 Reorder buffer
 - 1.3 Register renaming
 - 1.4 Scheduling of load/store instructions
 - 1.5 Branch prediction
 - 1.6 Speculative execution
 - 1.7 Memory-level parallelism
2. VLIW processors
 - 1.1 Local instruction scheduling
 - 1.2 Register allocation
 - 1.3 Global instruction scheduling

Reading assignments (textbook and papers) are given every lecture. For students who are interested in more in-depth and higher-level knowledge, optional papers to read are given.

Textbook

H. Ando, Instruction-level parallel processing -- processor architecture and compilers, Corona Publishing Co., LTD.

Additional Reading

J. L. Hennessy and D. A. Patterson, Computer Architecture : A Quantitative Approach, Morgan Kaufmann Publishing Inc.

Grade Assessment

The degree of students' achievement is evaluated by the final examination. If the result is greater than or equal to C rank, a pass is given.

For each goal, if basic problems can be solved, a pass is given. If more difficult problems can be solved, a higher grade is given.

Notes

Advanced Lecture on Computer Architecture (2.0credits) (計算機アーキテクチャ特論)

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions after each lecture are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	Autumn Semester ,every other year
Lecturer	Shinji DOKI Professor

Course Purpose

System control engineering with a focus on modern control theory is studied,
Achievement

1. Modeling of a given plant with state space representation
2. Stabilization of a give control system
3. Design a state observer for a given plant
4. Understanding of Optimal control, Disturbance suppression and Robust control and apply them to a give control system

Prerequisite Subjects

Control engineering, Digital signal processing, Mathematics2 with exercise

Course Topics

1. Modeling
2. Stability
3. State observer
4. Optimal control
5. Disturbance suppression
6. Robust control

Textbook

Introduction to Linear Control Systems (CORONA PUBLISHING Co.,LTD)

Additional Reading

not specified

Grade Assessment

Report score of 60% or more is necessary to pass the course.

<Student enrolled in 2011>

S:90%-100%

A:80%-89%

B:70-79%

C:60-69%

<Student enrolled before 2010>

A:80%-100%

B:70-79%

C:60-69%

Notes

Contacting Faculty

After the lecture, or telephone/e-mail.
(ext.2778,doki@nagoya-u.jp)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Information and Communication Engineering	
Starts 1	Spring Semester ,every other year	
Lecturer	Nobuo KAWAGUCHI Professor	Tetsu IWATA Associate Professor

Course Purpose

This course is an introduction to modern cryptography. We study various cryptographic primitives and their applications, and how to evaluate their security. We also introduce the fundamental technologies of advanced information systems.

Students understand fundamentals of the above topics and are able to explain them.

Prerequisite Subjects

Discrete mathematics with exercise, linear algebra

Course Topics

1.Symmetric-key cryptosystems 2.Public-key cryptosystems 3.Digital signature 4.Message authentication
5. Fundamentals of Information systems

For each lecture, students are requested to submit a report.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

The score is evaluated based on homework. The credit is given if student's score is more than or equal to 60% of the full score.

Notes

None.

Contacting Faculty

During and after lectures.

Advanced Information Systems (2.0credits) (先端情報システム特論)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Information and Communication Engineering	
Starts 1	Spring Semester ,every other year	
Lecturer	Nobuo KAWAGUCHI Professor	Tetsu IWATA Associate Professor

Course Purpose

This lecture introduces basics and applications of the advanced information systems which utilize computers and networks.

Especially for the infrastructure of current information systems and fundamental technologies of ubiquitous systems.

As a result, this lecture intends to develop creativity and total ability of attendees.

Students understand The Internet, Advanced Networking, Cloud Computing, Device Coordination, and Ubiquitous Systems, and be able to explain them.

Prerequisite Subjects

Computer Programming

Course Topics

1. The Internet
2. Advanced Networking
3. Cloud Computing
4. Device Coordination
5. Ubiquitous Systems

Students are requested to submit reports, and prepare for quizzes.

Textbook

To be introduced during lectures.

Additional Reading

To be introduced during lectures.

Grade Assessment

Report 70% and Quiz 30%

A total of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During or after lectures.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	Autumn Semester ,every other year
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

Understanding of advanced statistical analysis, multi-variate analysis, and soft computing for analysis/synthesis of intelligent systems and practicing of methods for data analyses.:

Targets::

1. Understanding of advanced statistical analysis and getting know-how to use tools for the analysis.:
2. Understanding of fundamentals of multi-variate analysis and getting know-how to use tools for the analysis.:
3. Understanding of fundamentals of soft computing.

Prerequisite Subjects

Probability theory and statistics, Mathematics 1, 2

Course Topics

1. Advanced statistics:
2. Fundamentals of multi-variate analysis:
3. Fundamentals of soft computing

Textbook

Printed handouts will be provided.

Additional Reading

Grade Assessment

Your final grade will be calculated according to the following process:

Reports 70% and Usual performance score 30%.

Notes

No requirement for attending this course.

Contacting Faculty

Students can ask questions at any time during classes.

yoshikawa@cse.nagoya-u.ac.jp

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	Autumn Semester ,every other year
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

Understanding of advanced statistical analysis, multi-variate analysis, and soft computing for analysis/synthesis of intelligent systems and practicing of methods for data analyses.:

Targets::

1. Understanding of advanced statistical analysis and getting know-how to use tools for the analysis.:
2. Understanding of fundamentals of multi-variate analysis and getting know-how to use tools for the analysis.:
3. Understanding of fundamentals of soft computing.

Prerequisite Subjects

Probability theory and statistics, Mathematics 1, 2

Course Topics

1. Advanced statistics:
2. Fundamentals of multi-variate analysis:
3. Fundamentals of soft computing

Textbook

Printed handouts will be provided.

Additional Reading

Grade Assessment

Your final grade will be calculated according to the following process:

Reports 70% and Usual performance score 30%.

Notes

No requirement for attending this course.

Contacting Faculty

Students can ask questions at any time during classes.

yoshikawa@cse.nagoya-u.ac.jp

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor

Course Purpose

This is an introductory course on machine learning and neural networks, which are important methods of artificial intelligence and many applications.

The goals of this course are to

1. be able to understand and explain the mathematical foundation of machine learning and neural networks.
2. be able to implement a system that solves a specific problem by using a tool of machine learning and neural networks.

This course is taught in Japanese.

Prerequisite Subjects

Linear Algebra I, II

Calculus I, II

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Course Topics

1. machine learning and deep learning
2. neural networks
3. learning by gradient descent
4. regularization in deep learning
5. back-propagation
6. convolutional neural networks

Textbook

The textbook is not fixed yet. We will announce the textbook in September.

The expected textbook is:

Masato Taki. Introduction to Deep Learning. Kodansya, 2017.

Additional Reading

Introduction to Deep Learning. <https://tutorials.chainer.org/>

Grade Assessment

The final grade will be calculated according to the oral presentation in the class and the final reports.

Notes

No requirement for attending this course.

All students must attend the first class. We will assign the presentation day of each student group.

Contacting Faculty

During and after lectures.

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Part-time Faculty	Part-time Faculty	Part-time Faculty

Course Purpose

Lectures by instructors who are active in various fields on the latest research and development trends in electrical engineering, electronic engineering, and information and communication engineering, are aimed at cultivating creativity, comprehensive power, and oversight. The objective of this course is to gain a deep understanding of the attractiveness and trends of research and development in this field, and to utilize it in future courses and research.

Prerequisite Subjects

No specific requirements.

Course Topics

Each time, lecturers who are active in related field will introduce the latest research and development contents. Before each lecture, check the web page about the company to which the lecturers belongs. After the lecture, a report will be imposed every time, so submit the contents that you understood.

Textbook

Textbooks are not specified, but some materials will be distributed as needed.

Additional Reading

Some books will be introduced in the lecture.

Grade Assessment

Evaluation will be based on the submitted report. Pass if the goal is achieved

Notes

No specific requirements.

Contacting Faculty

Each lecturer will answer your questions during the break time after the lecture.

Course Type	Specialized Courses
Division at course	Master's Course
Class Format	Experiment and Exercise
Course Name	Information and Communication Engineering
Starts 1	1 Spring and Autumn Semester
Lecturer	Associated Faculty

Course Purpose

Perform experiments and exercises on the latest issues in the field. The aim is to acquire skills related to these issues through experiments and exercises, deepen understanding through exercises, and acquire basic and applied skills to carry out research in this field. Through this experiment and practice, the goal is to be able to learn and utilize the related technologies required for conducting one's own research.

Prerequisite Subjects

Although there is nothing in particular, general subjects of this department are the background.

Course Topics

In each belonging laboratory, for a given research theme, conduct experiments and exercises. At that time, if necessary, a literature search and its consideration are expected. In addition, perform some computer simulations and experiments for evaluate the contents and the your ideas. Read textbooks and documents in related fields to facilitate experiments and exercises on your own. In addition, discussions on the contents research will be conducted as appropriate. Therefore, the contents should be organized and compiled according to the progress of the research.

Textbook

Specified when necessary.

Additional Reading

Specified when necessary.

Grade Assessment

Evaluate the degree of achievement for achievement goals based on daily experiments and exercises, the report and the presentations. Pass if the goal is achieved.

Notes

No specific requirements

Contacting Faculty

Staffs in your lab will answer your questions appropriately.

Innovation Practice Course (4.0credits) (イノベーション体験プロジェクト)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Experiment and Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Under the instruction of the company engineer (DP, Directing Professor), I carry out the project for the problem solution by the team of several people consisting of different specialisms. In this way, it is intended to let you sense ability for problem discovery, the importance of the general intellectual power of compound eyes on the basis of real world bodily.

I know a point of view, the plan as the company and perform a discussion, exchange of opinions between the different specialty and aim for the breeding of the viewpoint general, to see engineering by examining it as the problem solution person concerned from different angles.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

I organize different specialty, the team (several/team) consisting of the students of the department several sets, and DP is the instruction in each each team. Based on the project theme that DP determined, I set the problem that a student carries out concretely. For 75 hours (principle one day a week), I accomplish the project for the problem solution.

Prior lecture to affect a project theme by the DP

Setting (opinion, information exchange, allied investigation, examination, discussion) of the concrete problem by the student

Enforcement of the problem solution project

Summary, report of the result

I assume this a main component.

In addition, I may be given an investigation and the consideration in conjunction with the theme as a problem from DP. Report it in a date (the next time lectures) when it was appointed, and announce it; and a thing corresponding to the exchange of opinions in the team.

Textbook

documents that a lecturer (DP) introduces it and shows.

Additional Reading

documents that a lecturer (DP) introduces it and shows.

Grade Assessment

I evaluate it through accomplishment, the discussion of the project, result announcement. If a consideration power, the adjustability for the problem solution, the expansion of the field of vision are accepted, it is said that I pass.

Notes

There are no prerequisites

Contacting Faculty

A lecturer (DP) and this project staff of the university accept questions at any time.

Research Internship 1 U2 (2.0credits) (研究インターンシップ 1 U2)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

I am given in the following on 20th in the total days that engaged in the training in the company.

I do that I announce the result to the university in a result briefing session to perform after the training if essential.

I evaluate it based on result announcement contents and an evaluation book of the training staff making. I recognize an experience-based effect in the training by oneself, and will to plan reflection to a study, the study at the university does it with a pass if admitted.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U3 (3.0credits) (研究インターンシップ 1 U3)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 21 and 40 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U4 (4.0credits) (研究インターンシップ1 U4)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 41 and 60 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U6 (6.0credits) (研究インターンシップ 1 U6)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

It is strongly recommended to take the industry-university joint educational courses such as Focus on Venture Business and ,etc.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days between 61 and 80 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Research Internship 1 U8 (8.0credits) (研究インターンシップ1 U8)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Through the training to affect technology development, the study of the company in the company is advanced, and experience the challenge to a practical problem. In this way, it is aimed for upbringing of human resources tying engineering to creation of the social value.

It is wider in a technique and a study, and a consciousness, ability to catch in a general viewpoint (utility, economy) and communication power is bred and aims for what is reflected by a study, the study at the university.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

In the company accepting an intern, I make the training (study) about the study theme that a company shows.

Orientation to affect the overall company concerned and the training medium

Enforcement (including cooperation, the adjustment with the company staff) of the training theme

Summary, report of the training result

I assume a report (presentation) of the training result to the university a main component.

As the associated document, documents investigation may not support during the working hours that a company sets, I do the attendance of the lecture about "the handling, a point to keep in mind by basic knowledge and the study internship of intellectual property rights" to need what I study in the training overtime by oneself, and to perform on the university side prior to the company training again with

requisiteness.

Textbook

documents that the staff instructing the training in the company introduces it and shows

Additional Reading

documents that the staff instructing the training in the company introduces it and shows

Grade Assessment

The credits will be given to the students who have had the working days more than or equal to 81 days in the internship company.

Notes

The student that I subscribed for the training theme of the company, and acceptance was accepted.

Contacting Faculty

The training staff of the company and the study internship staff of the university accept questions at any time.

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

To research in advanced engineering, it is necessary to learn the latest research trends through practice. Through symposium-style academic discussions, students will be able to study cutting-edge science and engineering research and discuss the latest trends in the subject areas.

Prerequisite Subjects

Knowledge of the subject areas.

Course Topics

Participated in special lectures set every year from the fields of biochemistry, analysis, semiconductors, polymers, and startups related to cutting-edge science and engineering, and participated in a symposium where research presentations on cutting-edge engineering were presented. By participating, students will study cutting-edge science and engineering research and discuss the latest trends in the subject areas. After taking the course, study and study the relevant field in detail.

Textbook

Distribute as appropriate.

Additional Reading

Distribute as appropriate.

Grade Assessment

Report. A score of 60 or more out of 100 will be passed. Pass if you have a broad understanding of the subject area. Highly appreciate the point of contact with your own research, new business and research

proposals.

Notes

There are no special requirements. Students who are interested in startups are preferred.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Advanced Experiments for Frontier Technologies and Sciences (1.0credits) (最先端理工学実験)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Experiment		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

To research in advanced engineering, it is necessary to learn the latest research trends through practice. The purpose of this experiment is to find the research issues on one's own and conduct research experiments using the latest experimental equipment and molecular simulation technology.

Through this experiment, you will be able to understand the principles of the Raman spectrometer, ionization potential measurement, X-ray diffraction etc. and molecular simulation software and learn how to use them practically. The goal is to comprehensively acquire the knowledge, skills, and presentation techniques related to advanced experiments necessary for conducting the research that was the subject.

Prerequisite Subjects

it is advisable to acquire basic knowledge on the subject research.

Course Topics

When students choose the prepared subject, students perform the curriculum using one of a Raman spectrometer, an ionization potential measurement and an X-ray diffractometer and learn the principles and practical and advanced usage of these equipment. In the case of an experiment proposed by students (original experiment), students proposes a molecular simulation experiment or research using the above-described equipment, and conduct the experiment with the instructor to produce results. Ultimately, students discuss the results, present their results, and learn how to use the advanced equipment and simulation skills.

Textbook

Distribute as needed. Please check the required documents by yourself.

Additional Reading

Distribute as needed. Please check the required documents by yourself.

Grade Assessment

Exercise (50%) and presentation of research results (50%) will be evaluated. Understanding the measurement principle and usage is used as a criterion for acceptance, but the research achievements and new approaches to research are highly evaluated. A score of 60 or more out of 100 is a passing score.

Notes

No course requirements.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Introduction to Academic Communication (1.0credits) (コミュニケーション学)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Graduate Chemistry
	Graduate Chemistry	Automotive Engineering	Automotive Engineering
	Civil and Environmental Engineering Graduate		
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester		
Lecturer	ReikoFURUYA Associate Professor		

Course Purpose

Students will learn presentation skills for academic purposes, which may include giving academic presentations.

Japanese students are expected to present in English and international students in Japanese in the seventh or eighth class meeting.

By taking this class, students are expected to be able to do the following:

- Give a solid presentation with confidence and without hesitation
- Grasp the characteristics of successful presentations
- Use techniques learned in class in their own presentation

Prerequisite Subjects

English language classes for Japanese students

Japanese language classes for international students

Course Topics

- (1) Ways to convey messages in presentation
- (2) The language of a presentation
- (3) Tips for making effective slides
- (4) Observation and analysis of video-taped presentation by a past student
- (5) Paper vs presentation
- (6) Preparation for individual presentation
- (7) Individual presentations I

(8) Individual presentations

This course requires students to work outside of the classes for individual presentation.

Textbook

Handouts will be distributed in class

Additional Reading

1The Japan Times

2:

Grade Assessment

Individual presentation: 50%

Active class participation: 50%

Grades: A+: 100%-95%, A: 94%-80%, B: 79%-70%, C: 69%-65%, C-: 64%-60%, F: 59%-0%

Grading will be decided based on the ability to give an effective academic presentation.

Notes

There are no requirements for taking this class.

Contacting Faculty

Questions will be answered before class, in class, after class or by e-mail.

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Automotive Engineering
	Automotive Engineering		
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester		
Lecturer	Yukio ISHIDA Designated Professor		

Course Purpose

This course is intended to study the latest advanced technology of automobile engineering from top researchers of universities and industries. The topics of lectures are related to almost all fields of automotive industries, such as hibrid cars, electric cars, automated driving and crash safety. It is asle intended to develop the English hearing/speaking ability. The attainment targets are as follows:

1. Understand the latest technology of automotive engineering.
2. Underatand company's automotive production system.
3. Improve English ability in the field of socience and engineering.
4. Strengthen communication skills and presentation skills in English by studying with international students.

Prerequisite Subjects

lectures related to fundamental physics, mechanical, electrical and information engineering.

Course Topics

A. Lectures

1. The Car Industry, Market Trend, Circumstance and Its Future.
2. Overview of Automotive Development Process.
3. Observation and Evaluation of Drivers' Behavior Perspective.
4. Car Materials and Processing.
5. Movements and Control of a Car.
6. Safety Engineering for the Prevention of Accidents.
7. Crash Safety.
8. Automobile Embedded Computing System.
9. Wireless Technologies in ITS.

- 10.Applications of CAE to Vehicle Development.
- 11.Energy Saving Technology for Automobiles.
- 12.Automated Driving.
- 13.Traffic Flow Characteristics.
- 14.Cars and Roads in Urban Transportation Context.
- 15.Automobile in Aging Society.

B. Factory Visits

- 1.Toyota Motors Corp., 2. Mitsubishi Motors Corp., 3. Toyota Boshoku Corp., 4.Suzuki Museum,
- 5.Toyota Commemorative Museum, 6. Traffic Safety and Environmental Lab.

C. Group Research Project

Several students form one group and each group selects one topic. They investigate and discuss about this topic and make presentations.

After each lecture is finished, read the handout and write a report about each lecture with your comments.

Textbook

Handout delivered in each lecture

Additional Reading

Introduced in the lectures

Grade Assessment

Evaluation will be based on (a) Discussions in the lectures 20%, (b) report for each lecture 20%, (c) group presentation 30%. and (d) report on research subject 30%. It is necessary to attend factory visits. In each item, the understanding of the concepts is especially evaluated.

Summing up the all scores from (a) to (d) and the students with evaluation A, B, or C can pass this subject.

Notes

1. There are limits of enrollment capacity. Full course student limit is about 10. Auditor limit for each lecture is about 10.
2. English ability is checked before accepted as a student.

Contacting Faculty

Mainly accepted during each lecture. Other general questions are accepted by Professor Yukio Ishida.

<Contact> TEL: 052-747-6797, Email: ishida@nuem.nagoya-u.ac.jp

Advanced Lectures on Scientific English (1.0credits) (科学技術英語特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	Automotive Engineering
	Automotive Engineering	Civil and Environmental Engineering Graduate	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
Lecturer	Part-time Faculty		

Course Purpose

This is a course to acquire basic skills to summarize research as a paper in English. By the end of the course, students will be able to ...

- explain the basic structure of science and technology research paper
- list essential components of each section of research paper
- type short multiple-paragraph essays with appropriate punctuation
- orally express logically structured opinion

Prerequisite Subjects

Various subjects relating to English

Course Topics

1. Basics of academic writing in English (1)
2. Basic structure of science & technology research paper (1)
3. Writing (1), feedback and opinion exchange
4. Basics of academic writing in English (2)
5. Basic structure of science & technology research paper (2)
6. Writing (2), feedback and opinion exchange
7. Basic structure of science & technology research paper (3)
8. Writing (3), feedback and opinion exchange

Students are expected to spend a few hours each week reviewing key points of the lecture and working on the writing assignment.

Textbook

None. Students will receive handouts in each class session.

Additional Reading

Glasman-Deal, H. (2010). Science Research Writing For Non-Native Speakers of English. Imperial College Press.

Swales, J.M. & Feak, C.B. (2012). Academic Writing for Graduate Students. The University of Michigan Press.

Wallwork, A. (2013). English for Academic Research: Grammar, Usage and Style. Springer.

Wallwork, A. (2016). English for Writing Research Papers. Springer.

Grade Assessment

Submitting three short writing assignments that show understanding of research paper structure with appropriate punctuation is required for a passing grade. Speaking English contributing to discussion and opinion exchange, as well as raising questions in class, is strongly encouraged.

Notes

There are no prerequisites

Contacting Faculty

Email address to be announced in the first class

Focus on Venture Business I (2.0credits) (ベンチャービジネス特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

People often point out that the layer of startup companies should assume the leading edge is thin. Part of the cause depends on the system, but in many cases, it is due to the difference in perceptions of the entrepreneurship between East and Western researchers. In this course, you study the basic knowledge and goals required as engineers and researchers when commercializing/starting a “university research.” We will show examples of technology development and commercialization based on research results of universities, entrepreneurship in companies and venture startups, and consider venture business utilizing research. Through this lecture, entrepreneurs' mindsets will be formed as well as minimum knowledge of patents.

Prerequisite Subjects

Course Topics

Textbook

Distribute materials as appropriate.

Additional Reading

Grade Assessment

Evaluate based on self-made problem report Understanding the problems and solutions for startups that respond to the problems in the lecture is a criterion for success. The contents of the report are comprehensively evaluated, and a score of 60 or more is considered acceptable. New business proposals will be appreciated.

Notes

Do not have any special requirements. We hope students who are interested in startups.

Contacting Faculty

the break after the lecture.

Focus on Venture Business II (2.0credits) (ベンチャービジネス特論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor	Akitoshi EDAGAWA Visiting Professor	

Course Purpose

By referring to the examples of commercialization, in-company entrepreneurship and venture entrepreneurship given in the special lecture on venture business I, you study the specialized knowledge necessary for entrepreneurship and start-up from a public accountant, SME consultant, etc. Talks are held with specialists in Japan to acquire the knowledge needed for venture business management.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Safety and Reliability in Engineering (2.0credits) (安全・信頼性工学)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
	Department of Energy Engineering	Department of Applied Energy	
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	
Lecturer	"YAMAMOTO Akio" Professor Part-time Faculty	Masahiro Arai Professor	Takaya INAMORI Associate Professor

Course Purpose

Safety and reliability are one of the most important issues in all engineering fields. In this lecture, the aerospace engineering field and nuclear engineering field, which are the symbolic entities of integrated engineering, will be linked, and the lecturers who have many years of experience in the space, aviation, and nuclear industries will understand students from other fields. The aim is to learn the basics and practice of safety and reliability engineering, while giving consideration to it. In addition, by attending this lecture with assignments and exercises, you can acquire the concept of ensuring safety and reliability in all industrial fields, and acquire useful skills regardless of progress in any field in the future.

By learning this lecture, the goal is to acquire the following skills.

- (1) Understand and apply basic concepts of safety and reliability.
- (2) Understand and apply safety concepts and application examples in the aerospace field.
- (3) Understand and apply safety concepts and application examples in the field of nuclear power.

Prerequisite Subjects

There are no special subjects required to take this course.

Course Topics

- (1) Basics of Safety and reliability engineering including FMEA and FTA
- (2) Safety and reliability in aerospace engineering
- (3) Safety fundamentals and safety design in nuclear engineering
- (4) Hazard assessments in nuclear engineering
- (5) Accidents in nuclear facilities and lessons learned

Gather information on relevant areas before each lecture. After the lecture, review the content and work on the examples again. To submit a report assignment in the first and second half, submit it.

Textbook

Materials will be distributed in each lecture. Introduce textbooks as necessary.

Additional Reading

References in Japanese, regarding to reliability analysis and FMEA, FTA.

Grade Assessment

Evaluate the degree of achievement for the achievement target in the report. Understand the basic concepts of safety and reliability in the aerospace and nuclear fields, and pass if applicable.

Notes

No registration requirements required

Contacting Faculty

As a general rule, it corresponds to the break time during class hours and after the class ends. In other cases, it is possible to respond at any time.

Ethics and Security in Engineering (2.0credits) (工学のセキュリティと倫理)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
	Department of Energy Engineering	Department of Applied Energy	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	
Lecturer	Tatsuya SUZUKI Professor		

Course Purpose

The aim of the lecture is to understand ethics, intellectual property rights, information security required at the start of master thesis research. After taking this course, the students are expected to have abilities on:

1. Understanding of Ethics for engineers
2. Understanding of Ethics for researcher
3. Understanding of Intellectual property rights
4. Understanding of Information security

Prerequisite Subjects

None because this is one of the common basic subject for future activity as a researcher or an engineer.

Course Topics

- 1) Introduction,
- 2) Ethics for engineers,
- 3) Ethics for researchers,
- 4) Intellectual property rights,
- 5) Information security,
- 6) Summary

Submission of the report after each class is mandatory.

Textbook

Instead of using textbook, original lecture notes will be provided at each class.

Additional Reading

Original lecture notes will be provided at each class.

Grade Assessment

Credits will be awarded to those students who score 'Pass' based on the reports and /or subjects given by each lecture.

Notes

None because this is one of the common basic subject for future activity as a researcher or an engineer.

Contacting Faculty

After each class student can ask in person.

Otherwise, contact to:

Pro. Suzuki

Ext. 2700, t_suzuki@nuem.nagoya-u.ac.jp

Internship A (1.0credits) (学外実習 A)

Course Type	Comprehensive engineering courses
Division at course	Master's Course
Class Format	Practice
Course Name	Information and Communication Engineering
Starts 1	1 Spring and Autumn Semester
Lecturer	Associated Faculty

Course Purpose

Through short-term internships and practical training at companies, etc., students will learn how to proceed with work in society, and at the same time, use them for future courses and research, and aim to foster their comprehensive abilities. The objective of this course is to be able to: 1. You can learn the work contents and required abilities of engineers in actual research laboratories and factory floors. 2. Understand how graduate courses are useful.

Prerequisite Subjects

All studies that have been offered in this department

Course Topics

Training according to the instructor of each company. After the internship/training destination is decided, conduct a sufficient survey on the internship/training destination company for your internship/training. During the internship/training period, preparation for the internship/training and summarization after the internship/training are done according to the instructor of the internship/training destination.

Textbook

Specified when necessary.

Additional Reading

Specified when necessary.

Grade Assessment

Evaluation is based on the report submitted from the internship/training site. Pass if the goal is achieved

Notes

No special conditions are required, but appropriate actions can be taken in line with social common sense.

Contacting Faculty

An instructor will respond appropriately at the internship/training site.

Internship B (1.0credits) (学外実習 B)

Course Type	Comprehensive engineering courses
Division at course	Master's Course
Class Format	Practice
Course Name	Information and Communication Engineering
Starts 1	1 Spring and Autumn Semester
Lecturer	Associated Faculty

Course Purpose

Through short-term internships and practical training at companies, etc., students will learn how to proceed with work in society, and at the same time, use them for future courses and research, and aim to foster their comprehensive abilities. The objective of this course is to be able to: 1. You can learn the work contents and required abilities of engineers in actual research laboratories and factory floors. 2. Understand how graduate courses are useful.

Prerequisite Subjects

All studies that have been offered in this department

Course Topics

Training according to the instructor of each company. After the internship/training destination is decided, conduct a sufficient survey on the internship/training destination company for your internship/training. During the internship/training period, preparation for the internship/training and summarization after the internship/training are done according to the instructor of the internship/training destination.

Textbook

Specified when necessary.

Additional Reading

Specified when necessary.

Grade Assessment

Notes

No special conditions are required, but appropriate actions can be taken in line with social common sense.

Contacting Faculty

An instructor will respond appropriately at the internship/training site.

Overview of space exploration and research (2.0credits) (宇宙研究開発概論)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester		
Lecturer	Leading Graduate		

Course Purpose

This lecture course helps students to acquire a wide-ranging, panoramic knowledge of space research and development given by variety of lecturers from different academic fields.

Prerequisite Subjects

Basic mathematics, Basic physics

Course Topics

1. Space Exploration Projects
 - 1.1 Overview of Space Exploration and Research
 - 1.2 Space Projects
 - 1.3 International Satellite and Spacecraft (HTV) Development
 - 1.4 Project Management/Systems Engineering
 - 1.5 Intellectual Properties in Business

2. Space Explorations on Observations
 - 2.1 Space Propulsion Engineering
 - 2.2 Materials Development for Space Applications
 - 2.3 Space Observation Technologies
 - 2.4 Introduction to Radiation Detectors and Electronics

3. Space-related Science
 - 3.1 Foundations of Astrophysics
 - 3.2 Earth and Planetary Science
 - 3.3 Space Environment Science
 - 3.4 Simulation Experiments

Report subject will be given at every lecture. The report should be submitted by the given deadline.

Textbook

We do not specify the textbook. Lecture notes will be given as necessary.

Additional Reading

Recommended readings will be give during lectures as necessary.

Grade Assessment

Report must be submitted for each lecture. Proper understanding of each lecture's contents is evaluated.

Passing average point is 60 out of 100.

Notes

Students in "Leadership program for Space exploration and Research" are required to take this course before the qualifying examination. This course is open to any graduate students in Nagoya University.

Contacting Faculty

Inquire contact method from the lecturer after the lecture

Advanced Mobility Program Basic Course (4.0credits) (先進モビリティ学基礎)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture and Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	1 Spring Semester
	1 Spring Semester	1 Spring Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to cultivate comprehensive knowledge not only on specialized technical elements but also service and social impact of the mobility. The class will be provided not only by professors but also by engineers in industry. The course is organized as follows:

1. Understand fundamentals of automobile
2. Understand the trend on electrification of automobile
3. Understand the trend on intelligence for automobile
4. Understand dependability, safety and human factor
5. Comprehensively study the mobility service
6. Comprehensively study the legal system for mobility

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

1. Fundamentals of automobile
2. Electrification of automobile
3. Intelligence for automobile
4. Dependability, safety and human factor
5. Mobility service
6. Legal system for mobility
7. Discussion and presentation

Read carefully the textbook before attending each class. After each class, solving the exercises in the

textbook is highly recommended. Submission of the report after each class is mandatory.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluation is based on total score of reports at each class and final presentation. You need more than mark of 60 out of 100 points. Special certificate will be provided for passed students.

Notes

No particular requirement.

Contacting Faculty

Office hour: Wed. 13:00-14:00 @ Green Vehicle Material Research Building 1F

Mail to: o_shimizu@nuem.nagoya-u.ac.jp

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise and Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to realization of autonomous drive by using 1/10 model car. Students develop the software system for autonomous driving. The course is organized as follows:

1. Understand architecture of autonomous drive
2. Understand the image processing for lane detection, and its implementation
3. Understand the control technique for lane following and its implementation

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

This course is aiming to realization of autonomous drive by using 1/10 model car. Students develop the software system for autonomous driving. The course is organized as follows:

1. Architecture of autonomous drive
2. Image processing for lane detection, and its implementation
3. Control technique for lane following and its implementation

Class is performed based on group activity.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluate based on attendance at lecture, total score of tasks set at each time, final presentation. Special certificate will be provided for passed students.

Notes

No particular requirement

Contacting Faculty

Office hour:Wed.13:00-14:00 @Green Vehicle Material Research Building 1F

Mail to: o_shimizu@nuem.nagoya-u.ac.jp

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise and Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	1 Autumn Semester
	1 Autumn Semester	1 Autumn Semester	
Lecturer	Faculty of Advanced Mobility Program		

Course Purpose

To train students who can be active in the mobility industry or research institute. This course is aiming to design and analysis of EV formula car. In addition, Test drive is carried out. The course is organized as follows:1. Understand the mechanism of electric vehicle2. Understand the characteristics of motor and battery3. Understand the way of analysis and design of vehicle

Prerequisite Subjects

Accepted basic engineering classes at Nagoya University Bachelor's degree, or equivalent knowledge.

Course Topics

This course is aiming to design and analysis of EV formula car. In addition, Test drive is carried out. The course is organized as follows:1. Mechanism of electric vehicle2. Characteristics of motor and battery3. Way of analysis and design of vehicle Class is performed based on group activity.

Textbook

Original lecture note will be provided.

Additional Reading

It will be announced in the class if necessary.

Grade Assessment

Evaluate based on attendance at lecture, total score of tasks set at each time, final presentation. You need more than mark of 60 out of 100 points. Special certificate will be provided for passed students.

Notes

No particular requirement

Contacting Faculty

Office hour:Wed.13:00-14:00 @Green Vehicle Material Research Building 1F
Mail to: o_shimizu@nuem.nagoya-u.ac.jp

International research project U2 (2.0credits) (国際プロジェクト研究 U2)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International research project U3 (3.0credits) (国際プロジェクト研究 U3)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International research project U4 (4.0credits) (国際プロジェクト研究 U4)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

- To design and conduct an original research project
- To develop experience with experimental/numerical/theoretical techniques
- To develop a working knowledge of relevant research literature
- To practice scientific writing and participate in the peer review process
- To be able to discuss the research and topic with other scientists and engineers

The objective of this project is to increase the capability to find and to solve research problems by learning the research approaches and ideas of different research fields.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

- Students will develop (with guidance) a research project proposal at the beginning of the semester that will provide initiative, outline and experimental strategy.
- Each student will present oral reports of research progress, relevant readings, and/or challenges at scheduled lab meetings.
- Students will take primary responsibility for conducting research and do so with professional attitudes and time commitments. This is a lab course and you are expected to spend a minimum of 20 hours of productive lab work per week. It is more realistic to expect to spend an average of 25-30 hours per week working and thinking about your project.
- Students will produce a manuscript (with active feedback from the instructor and peers) that can be published in part or whole by a peer reviewed research journal. Publishable manuscripts require many drafts,

reviews, and revisions.

- Students are encouraged to present research results at appropriate scientific meetings.
- Students will be self-motivated and work independently, approaching the instructor for guidance regularly.

Textbook

Will be designated by each supervisor.

Additional Reading

Will be designated by each supervisor.

Grade Assessment

The grade will be calculated according to the following criteria.

Written report following the same format as scientific paper... 50%; Presentation at the Workshop... 50%.

The acceptance standard is to understand the introduced research approaches and ideas.

Evaluation is done by the supervisor(s) at home and visiting universities.

Notes

No conditions for taking the course

Contacting Faculty

Supervisor of visiting university basically takes care.

International special lecture (1.0credits) (国際協働教育特別講義)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester		
Lecturer	Associated Faculty		

Course Purpose

Gain basic knowledge of general engineering through English lectures on various hot research topics and leading technologies. The objective of this lecture is to develop research abilities and communication skills, which are essential to carry out international collaborative researches.

Prerequisite Subjects

Basic engineering subjects, English, Technical English

Course Topics

Depends on the lecturer. This course will be divided in 4 chapters as follows: 1. Setting theme and reviewing literature 2. Designing research plan 3. Analysis and discussion of results 4. Brief summary and future prospects Homework will be given after the class and the report is required to be submitted in next class.

Textbook

Will be designated by the lecturer.

Additional Reading

Will be designated by the lecturer.

Grade Assessment

Written report and evaluation by the professors.

Notes

No conditions for taking the course

Contacting Faculty

In the class and E-mail.

International language exercise (1.0credits) (国際協働教育外国語演習)

Course Type	Comprehensive engineering courses		
Division at course	Master's Course		
Class Format	Exercise		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Process Engineering
	Chemical Systems Engineering	Electrical Engineering	Electronics
	Information and Communication Engineering	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering
	Aerospace Engineering	Department of Energy Engineering	Department of Applied Energy
	Civil and Environmental Engineering		
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester		
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to provide Japanese students with the English classes or provide international students with Japanese classes to improve communication skills for both academic and daily life.

Prerequisite Subjects

English, Technical English, Japanese

Course Topics

Wide variety of exercises including speaking, listening, writing, reading, and presentation in Japanese/English. Homework will be given after the class and the report is required to be submitted in next class.

Textbook

Will be designated by the lecturer.

Additional Reading

Will be designated by the lecturer.

Grade Assessment

Report, presentation, participation in discussion Grading will be based on understanding Japanese and English, and communication performance.

Notes

No conditions for taking the course

Contacting Faculty

Acceptance and response in the class or through E-mail.

Seminar on Visual Information 2A (2.0credits) (画像情報学セミナー2A)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 2B (2.0credits) (画像情報学セミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 2C (2.0credits) (画像情報学セミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Spring Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 2D (2.0credits) (画像情報学セミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Autumn Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Visual Information 2E (2.0credits) (画像情報学セミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	3 Spring Semester		
Lecturer	"FUJII Toshiaki" Professor	Keita Takahashi Associate Professor	Chihiro TSUTAKE Assistant Professor

Course Purpose

In this seminar, students are to study materials and papers that provide indispensable knowledge for conducting a research in image information processing and image processing systems. Students are expected to deeply understand the basics and recent trend in this area, and to cultivate the ability to conduct his/her research. Goal: the students completing this course are expected to- Read and understand the technical materials in the related areas in English.- Understand the current trend and ongoing problems in the related areas.

Prerequisite Subjects

Computer Programming, Mathematics II, Statistics and Numerical Analysis, Digital Circuit, Information Theory, Digital Signal Processing

Course Topics

1. Basics for image information processing
2. Basics for light field processing
3. Recent state-of-the-art in image information processing
Materials and papers are specified before or during the semester. Students are expected to study the materials in advance.

Textbook

Specified before and during the semester.

Additional Reading

Specified during the seminar if necessary.

Grade Assessment

Presentations and discussions during the seminar are evaluated. To pass the course, students are required to sufficiently understand the topics covered during the seminar.

Notes

No prerequisite.

Contacting Faculty

Questions accepted during the seminar and via email.

Seminar on Information Systems 2A (2.0credits) (情報システムセミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	Shinji DOKI Professor	Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 2B (2.0credits) (情報システムセミナー2B)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Control Engineering

Course Topics

Textbook

Will be introduced in the class.

Additional Reading

Not specified.

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 2C (2.0credits) (情報システムセミナー2C)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Spring Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 2D (2.0credits) (情報システムセミナー2D)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Autumn Semester
Lecturer	Shinji DOKI Professor Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Control Engineering

Course Topics

Textbook

Will be introduce in the class.

Additional Reading

Not specified.

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Systems 2E (2.0credits) (情報システムセミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	3 Spring Semester	
Lecturer	Shinji DOKI Professor	Yuki Funabora Assistant Professor

Course Purpose

Students will learn from the basics to the latest trends and applications on control, recognition and robotics, using documents/papers, and expand their basic skills, and cultivate applied skills that can be used in their own research. The purpose is to: The objective of this seminar is to be able to do the following. Can survey, present, and discuss trends in the latest technologies in these fields. Understand the position of each research in this field. The contents learned can be used for their own research.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 2A (2.0credits) (情報ネットワークセミナー2A)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Spring Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Assistant Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 2B (2.0credits) (情報ネットワークセミナー2B)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	1 Autumn Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Assistant Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 2C (2.0credits) (情報ネットワークセミナー2C)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	2 Spring Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Assistant Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 2D (2.0credits) (情報ネットワークセミナー2D)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	2 Autumn Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Assistant Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Information Networks 2E (2.0credits) (情報ネットワークセミナー2E)

Course Type	Specialized Courses	
Division at course	Doctor's Course	
Class Format	Seminar	
Course Name	Information and Communication Engineering	
Starts 1	3 Spring Semester	
Lecturer	Hiroshi HASEGAWA Professor	Yojiro MORI Assistant Professor

Course Purpose

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Spring Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Autumn Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	3 Spring Semester
Lecturer	Hideki ANDO Professor

Course Purpose

The purpose of this course is that students advance their innovative research about computer architecture by discussing it. Students also discuss research papers in a group.

Goals:

1. Students can understand and explain state-of-the-art computer architecture.
2. Students can find schemes that improve performance and/or power consumption, and evaluate them quantitatively.

Prerequisite Subjects

Computer Engineering, Computer Architecture

Course Topics

1. Superscalar processors
2. Thread-level parallel processing
3. Low-power techniques
4. Memory hierarchy

Students must turn in a report of their research progress. Students also must read related papers for preparing their presentation.

Textbook

No textbook is needed, but latest papers must be read.

Additional Reading

No additional books are needed.

Grade Assessment

The degree of students' achievement is evaluated by the research advancement (25%), reports (25%), discussions (25%) and presentations of papers (25%). If the overall evaluation result normalized by 100 points is greater than or equal to 60 points, a pass is given.

If the goals are achieved basically, a pass is given. If the goals are achieved in an advanced level, a higher grade is given.

Notes

There is no condition for taking this course, but it is preferable to acquire the credits of the prerequisite courses.

Contacting Faculty

Questions are accepted at the class room or in the office by appointment.

Seminar on Intelligent Systems 2A (2.0credits) (インテリジェントシステムセミナー2A)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Automata and Formal Languages

Algorithms and Data Structures

Intelligent Information Systems

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Seminar on Intelligent Systems 2B (2.0credits) (インテリジェントシステムセミナー2B)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Automata and Formal Languages

Algorithms and Data Structures

Intelligent Information Systems

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Seminar on Intelligent Systems 2C (2.0credits) (インテリジェントシステムセミナー2C)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Spring Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Automata and Formal Languages

Algorithms and Data Structures

Intelligent Information Systems

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Seminar on Intelligent Systems 2D (2.0credits) (インテリジェントシステムセミナー2D)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Autumn Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Automata and Formal Languages

Algorithms and Data Structures

Intelligent Information Systems

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after seminar.

Seminar on Intelligent Systems 2E (2.0credits) (インテリジェントシステムセミナー2E)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	3 Spring Semester
Lecturer	Satoshi SATOH Professor KoheiOGAWA Associate Professor Rei MIYATA Assistant Professor

Course Purpose

In this seminar, we improve research skills on natural language processing, and artificial intelligence by practical training.

The goals of this seminar are to

1. be able to understand and explain the recent research on natural language processing and artificial intelligence.
2. be able to read technical documents effectively and explain the contents.
3. be able to explain technical contents clearly.
4. be able to ask questions to improve mutual understanding.

Prerequisite Subjects

Fundamental Computer Programming with Exercises

Computer Programming with Exercises

Automata and Formal Languages

Algorithms and Data Structures

Intelligent Information Systems

Course Topics

1. Basic technologies of natural language processing
2. Basic technologies of intelligent information processing
3. Skills of Technical presentation and discussion

Textbook

The materials will be provided before each seminar.

Additional Reading

The materials will be provided before each seminar.

Grade Assessment

The final grade in this seminar will be calculated according the following process: Usual performance score 50%, Oral presentation 50%.

Notes

No requirement for attending this seminar.

Contacting Faculty

During and after each seminar.

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Spring Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	1 Autumn Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Spring Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	2 Autumn Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Course Type	Specialized Courses
Division at course	Doctor's Course
Class Format	Seminar
Course Name	Information and Communication Engineering
Starts 1	3 Spring Semester
Lecturer	Tomohiro YOSHIKAWA Associate Professor

Course Purpose

You will be required to report on textbooks/papers for your research on computational intelligence. This seminar is for your understanding of methodologies especially on multi-variate data analysis, machine learning, fuzzy logic, neural network, evolutionary computation. Research trend in the related areas are within the scope of this seminar. Target: 1. You will be able to execute calculations on statistics, multi-variate data analysis and machine learning. 2. You will understand some of methods for construction of computational intelligence systems.

Prerequisite Subjects

Statistics, Multi-Variate Analysis, Machine Learning, Artificial Intelligence, Robotics

Course Topics

1. Statistics, 2. Multi-Variate Data Analysis, 3. Machine Learning, 4. Computational Intelligence

Textbook

Textbooks for your reading will be selected in advance of semester. Papers will be selected in accordance with the progress of your study.

Additional Reading

Grade Assessment

The degree of achievement is evaluated based on your presentations and cross examinations in the seminar.

Notes

No requirement for attending this course.

Contacting Faculty

You can ask anytime. yoshikawa@cse.nagoya-u.ac.jp (3167)

Seminar on Information Engineering 2A (2.0credits) (数理情報工学セミナー2A)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 2B (2.0credits) (数理情報工学セミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 2C (2.0credits) (数理情報工学セミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Spring Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 2D (2.0credits) (数理情報工学セミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Autumn Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Information Engineering 2E (2.0credits) (数理情報工学セミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	3 Spring Semester		
Lecturer	Nobuo KAWAGUCHI Professor Kei HIROI Assistant Professor	Tetsu IWATA Associate Professor	Takuro YONEZAWA Associate Professor

Course Purpose

1. Research on the advanced information systems which utilize computers and networks. 2. Research on information security and cryptography through discussion. Students conduct research on the above topics.

Prerequisite Subjects

Computer Programming, Discrete mathematics with exercise

Course Topics

1. Advanced Networking 2. Cloud Computing 3. Device Coordination 4. Ubiquitous Systems 5. Information security 6. Cryptography Students are requested to prepare for presentation at seminars.

Textbook

To be introduced.

Additional Reading

To be introduced.

Grade Assessment

Presentation at the seminar and discussions on the presentation. A score of 60% out of the total score is needed to pass.

Notes

None.

Contacting Faculty

During seminars.

Seminar on Communication Systems 2A (2.0credits) (無線通信システムセミナー2A)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 2B (2.0credits) (無線通信システムセミナー2B)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	1 Autumn Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

none

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 2C (2.0credits) (無線通信システムセミナー2C)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 2D (2.0credits) (無線通信システムセミナー2D)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	2 Autumn Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

Grade Assessment

Notes

Contacting Faculty

Seminar on Communication Systems 2E (2.0credits) (無線通信システムセミナー2E)

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Information and Communication Engineering		
Starts 1	3 Spring Semester		
Lecturer	Masaaki KATAYAMA Professor	Takaya YAMAZATO Professor	Hiraku okada Associate Professor

Course Purpose

We learn technical trends in the information and communication engineering, and discuss their technical issues. In addition, we raise the ability of presentation and discussion of students. The students attending a lecture aim for acquiring the following knowledge and the ability in the end of the seminar. 1. The students can explain the latest technical trend in the information and communication engineering. 2. The students have their own thought for the technical issues in the information and communication engineering and can explain them.

Prerequisite Subjects

Course Topics

Textbook

Additional Reading

none

Grade Assessment

Notes

Contacting Faculty

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for one semester and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Course Type	Specialized Courses		
Division at course	Doctor's Course		
Class Format	Seminar		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by studying in an abroad laboratory and learn different methods and ways of thinking, as well as communicate on a daily base with foreign researchers.

By completing the course, the students are expected to acquire various research methods and ways of thinking, gain the ability to tackle research problems from multiple angles, and acquire a broad international perspective.

Prerequisite Subjects

Basic and specialized subjects related to the research subject, English, Advanced Lectures on Scientific English

Course Topics

Students will stay in an abroad laboratory that will be chosen based on the participant's research field and interest. The course consists of the following contents.

1. Theme setting and literature review
2. Formulating a research plan
3. Analyzing the results and discussion
4. Presentation of the results

After the class, students should review the analyzing processes of the research results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Conducting research in an abroad laboratory for two semesters and submitting a report is a prerequisite. Evaluation will be based on the student's report (50%) and oral presentation (50%). To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results.

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Teaching and Instruction Exercise 1 (1.0credits) (実験指導体験実習1)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

While attendance is raw, in "the innovation experience project," I stand with a company engineer (DP, Directing Professor) and carry an assistance, DP of the attendance straight instruction by the DP and the role of the interface of the attendance student. In this way, it is intended to let you do experience of the project management.

I aim for planning a researcher, improvement of the nature as the leader, the expansion of the field of vision by a simulated experience of instruction of the attendance life and the business management in the real world.

Prerequisite Subjects

"Innovation Practice Course" 75 hours(Principle one day a week)

Course Topics

In "the innovation experience project," I assist the project promotion by the DP.

Help of the understanding of a project theme and contents for the attendance life of various specialisms

I compile an opinion of the attendance life and let you make a purpose, the method of the project clear

Exchange of opinions between the attendance life, instruction, report of the discussion

Communication adjustment that DP and attendance are raw

I assume this a main component.

In addition, correspondence out of the lecture time is necessary when preparations, an investigation to affect project accomplishment are necessary.

Textbook

Teaching and Instruction Exercise 1 (1.0credits) (実験指導体験実習1)

documents that a lecturer (DP) introduces it and shows.

Additional Reading

documents that a lecturer (DP) introduces it and shows.

Grade Assessment

I evaluate it through accomplishment, the discussion of the project. If display of leadership, report ability and the leadership is accepted, it is said that I pass.

Notes

There are no prerequisites

Contacting Faculty

A lecturer (DP) and this project staff of the university accept questions at any time.

Teaching and Instruction Exercise 2 (1.0credits) (実験指導体験実習2)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Syusaku NAGANO Associate Professor		

Course Purpose

The purpose of this course is to provide guidance to semester students for advanced science and engineering experiments at the Venture Business Laboratory. Through this research guidance, students will be able to play a comprehensive role as a researcher / educator and instructor in the field in charge of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation, and will be able to provide research guidance. Useful for practical training as a research leader.

Prerequisite Subjects

Knowledge of the field in charge selected from the fields of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation.

Course Topics

In the student experiment, the instructor students provide guidance to attendant students on subject research and original research from the field of Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation with the professional teacher. Together with the attendant students, they perform practical use these equipment and software and get the results. They experience the leadership of the research, providing research guidance, report preparation guidance, and presentation guidance.

Textbook

Required documents is distributed.

Additional Reading

Teaching and Instruction Exercise 2 (1.0credits) (実験指導体験実習2)

Required documents is distributed.

Grade Assessment

Evaluate by compiling experiments / exercises, teaching (70%), and interviewing (30%). Students who understand each device and software and give appropriate guidance are accepted, and their research results and new approaches are highly evaluated. A score of 60 or more out of 100 is a passing score.

Notes

To have a deep understanding in one field from Raman spectroscopy, ionization potential measurement, X-ray diffraction measurement, and molecular simulation.

Contacting Faculty

Arranging the schedules by e-mail and etc.

Research Internship2 U2 (2.0credits) (研究インターンシップ2 U2)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days less than or equal to 20 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U3 (3.0credits) (研究インターンシップ2 U3)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 21 and 40 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U4 (4.0credits) (研究インターンシップ2 U4)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 41 and 60 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U6 (6.0credits) (研究インターンシップ2 U6)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days between 61 and 80 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Research Internship2 U8 (8.0credits) (研究インターンシップ2 U8)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Materials Design Innovation Engineering
	Materials Process Engineering	Chemical Systems Engineering	Electrical Engineering
	Electronics	Information and Communication Engineering	Mechanical Systems Engineering
	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering	Department of Energy Engineering
	Department of Applied Energy	Civil and Environmental Engineering	
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Hiroshi IKUTA Professor		

Course Purpose

Research internship is different from conventional internship for a working experience. Staffs in the faculty and instructors in a company cooperate with each other to set up research themes adequate to the doctoral course, and supervise a long-term internship for 1-6 months. This course aims at training of a person who has ability for an advanced research and development in not only a specialized field but also a multidisciplinary field, and a leader capable of making a proper judgment in a research project.

Prerequisite Subjects

Students attending Research Internship are strongly recommended to take short-term Patent Laws and Focus on Venture Business I or II before the attendance.

Course Topics

A student applies for a theme for research set up under the cooperation of a company and Nagoya University. Students should attend at the lecture at the university on the duty of confidentiality and the protection of intellectual property rights before starting the internship.

Textbook

not specified.

Additional Reading

not specified.

Grade Assessment

The credits will be given to the students who have had the working days more than or equal to 81 days in the internship company.

Notes

Contacting Faculty

The questions will be answered by the direct supervisors as needed at the internship.

Laboratory Visit 1 U2 (2.0credits) (研究室ローテーション 2 U2)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by conducting a research at a different laboratory and learn different methods and ways of thinking, as well as communicate with other researchers in related fields. By completing the course, the students are expected to acquire various research methods and ways of thinking, and gain the ability to tackle research problems from multiple angles.

Prerequisite Subjects

Basic and specialized subjects related to the research subject

Course Topics

Students will conduct research at a different laboratory. The host laboratory will be chosen based on the participant's research field and interest from other laboratories within the campus, other universities, research institutes and companies. The course consists of the following contents. 1. Theme setting and literature review 2. Formulating the research plan 3. Analyzing the results and discussion 4. Presentation of the results After the class, students should review the analyzing process of the obtained results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

Up to 20 days research in the host laboratory and submitting a report is a prerequisite. Evaluation will be based on the student's report and the evaluation by the supervisor in the host laboratory. To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results. Grading will be decided from P (pass) or NP (not passed).

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Laboratory Visit 1 U3 (3.0credits) (研究室ローテーション 2 U3)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by conducting a research at a different laboratory and learn different methods and ways of thinking, as well as communicate with other researchers in related fields. By completing the course, the students are expected to acquire various research methods and ways of thinking, and gain the ability to tackle research problems from multiple angles.

Prerequisite Subjects

Basic and specialized subjects related to the research subject

Course Topics

Students will conduct research at a different laboratory. The host laboratory will be chosen based on the participant's research field and interest from other laboratories within the campus, other universities, research institutes and companies. The course consists of the following contents. 1. Theme setting and literature review 2. Formulating the research plan 3. Analyzing the results and discussion 4. Presentation of the results After the class, students should review the analyzing process of the obtained results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

21 days or more and 40 days or less research in the host laboratory and submitting a report is a prerequisite. Evaluation will be based on the student's report and the evaluation by the supervisor in the host laboratory. To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results. Grading will be decided from P (pass) or NP (not passed).

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Laboratory Visit 1 U4 (4.0credits) (研究室ローテーション 2 U4)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by conducting a research at a different laboratory and learn different methods and ways of thinking, as well as communicate with other researchers in related fields. By completing the course, the students are expected to acquire various research methods and ways of thinking, and gain the ability to tackle research problems from multiple angles.

Prerequisite Subjects

Basic and specialized subjects related to the research subject

Course Topics

Students will conduct research at a different laboratory. The host laboratory will be chosen based on the participant's research field and interest from other laboratories within the campus, other universities, research institutes and companies. The course consists of the following contents. 1. Theme setting and literature review 2. Formulating the research plan 3. Analyzing the results and discussion 4. Presentation of the results After the class, students should review the analyzing process of the obtained results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

41 days or more and 60 days or less research in the host laboratory and submitting a report is a prerequisite. Evaluation will be based on the student's report and the evaluation by the supervisor in the host laboratory. To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results. Grading will be decided from P (pass) or NP (not passed).

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Laboratory Visit 1 U6 (6.0credits) (研究室ローテーション 2 U6)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by conducting a research at a different laboratory and learn different methods and ways of thinking, as well as communicate with other researchers in related fields. By completing the course, the students are expected to acquire various research methods and ways of thinking, and gain the ability to tackle research problems from multiple angles.

Prerequisite Subjects

Basic and specialized subjects related to the research subject

Course Topics

Students will conduct research at a different laboratory. The host laboratory will be chosen based on the participant's research field and interest from other laboratories within the campus, other universities, research institutes and companies. The course consists of the following contents. 1. Theme setting and literature review 2. Formulating the research plan 3. Analyzing the results and discussion 4. Presentation of the results After the class, students should review the analyzing process of the obtained results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

61 days or more and 80 days or less research in the host laboratory and submitting a report is a prerequisite. Evaluation will be based on the student's report and the evaluation by the supervisor in the host laboratory. To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results. Grading will be decided from P (pass) or NP (not passed).

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.

Laboratory Visit 1 U8 (8.0credits) (研究室ローテーション 2 U8)

Course Type	Comprehensive engineering courses		
Division at course	Doctor's Course		
Class Format	Practice		
Course Name	Molecular and Macromolecular Chemistry	Materials Chemistry	Biomolecular Engineering
	Applied Physics	Materials Physics	Chemical Systems Engineering
	Electrical Engineering	Electronics	Information and Communication Engineering
	Mechanical Systems Engineering	Micro-Nano Mechanical Science and Engineering	Aerospace Engineering
Starts 1	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
	1 Spring and Autumn Semester	1 Spring and Autumn Semester	1 Spring and Autumn Semester
Lecturer	Associated Faculty		

Course Purpose

The aim of this course is to expand the student's ability as a researcher by conducting a research at a different laboratory and learn different methods and ways of thinking, as well as communicate with other researchers in related fields. By completing the course, the students are expected to acquire various research methods and ways of thinking, and gain the ability to tackle research problems from multiple angles.

Prerequisite Subjects

Basic and specialized subjects related to the research subject

Course Topics

Students will conduct research at a different laboratory. The host laboratory will be chosen based on the participant's research field and interest from other laboratories within the campus, other universities, research institutes and companies. The course consists of the following contents. 1. Theme setting and literature review 2. Formulating the research plan 3. Analyzing the results and discussion 4. Presentation of the results After the class, students should review the analyzing process of the obtained results and investigate related literatures.

Textbook

Will be introduced at the host laboratory depending on the research subject

Additional Reading

Will be introduced at the host laboratory if necessary

Grade Assessment

81 days or more research in the host laboratory and submitting a report is a prerequisite. Evaluation will be based on the student's report and the evaluation by the supervisor in the host laboratory. To pass, the students have to demonstrate that they have the capacity to adequately analyze the results and have acquired the basic knowledge to interpret the results. Grading will be decided from P (pass) or NP (not passed).

Notes

Nothing particularly needed

Contacting Faculty

Questions will be answered by the supervisors at the host laboratory during the course.