

Course Type	Basic Courses
Division at course	Master's Course
Class Format	Lecture
Course Name	Automotive Engineering
Starts 1	1 Autumn Semester
Lecturer	Tsuyoshi INOUE Professor

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### Course Purpose

In this Advanced lecture, students will learn the fundamental and applied subjects of the dynamical system. Particle system, planar rigid multibody system with constraints will be described. Moreover, the analytical techniques, concepts in the dynamical analysis for these systems will be described. The goal of this lecture is to be able to do the following: 1. Model the mechanical system and explain its dynamical characteristics 2. Build a planar multibody dynamics model of a mechanical structure 3. Perform numerical analysis of its motion

### Prerequisite Subjects

Mathematics I,II with Exercises, Mechanics I,II with Exercise, Dynamical System Theory, Numerical Analysis Vibration I,II with Exercise

### Course Topics

1. Dynamics of a particle and multi degree of freedom system (Linear and Nonlinear system) 2. Basic analytical concept of Pendulum: Fixed point and its stability 3. Dynamics of a Pendulum in phase space 4. Advanced analytical concept: Analysis using first integral 5. Advanced analytical concept: Manifolds 6. Bifurcation in the dynamics of Pendulum 7. Map: fixed point and its stability 8. Bifurcation in map 9. Logistic map and period doubling bifurcation 10. Introduction to dynamics of a rigid body: Planer multibody dynamics 11. Planer multibody dynamics: Pin joint constraint 12. Planer multibody dynamics: Slider joint constraint 13. Exercise of Planer multibody dynamics modeling (Holonomic constraint) 14. Introduction to flexible multibody dynamics 15. flexible multibody dynamics: floating frame method After the lecture, students are required to solve examples of the handouts and report assignments

### Textbook

Printed material will be distributed, or download page will be prepared.

### Additional Reading

Analytical Dynamics, Haim Baruh Applied Nonlinear Dynamics, A.H.Nayfeh Dynamics of Multibody Systems A.A.Shabana

### Grade Assessment

Evaluate based on the attendance rate and short report at each time (60%) and Reports at the end of each part (2-3 times) (40%). Students must obtain a score of 60 or higher to pass the course.

### Notes

There is no condition for taking this lecture

### Contacting Faculty

Students can ask questions at any time during classes. Questions during off-class hours can be asked at the lecturers' rooms

Course Type	Basic Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

In this course, students will learn about recent advances in automotive engineering.

Course objectives include the following.

- (1) Developing understandings of automated driving systems and improvement of internal combustion engines
- (2) Reviewing revolutionary enabling technologies for direct injection gasoline engines and other combustion system engines

### Prerequisite Subjects

Thermodynamics and Fluid Mechanics are preferable, but not prerequisite.

### Course Topics

1. Introduction of Automated Driving Systems
  - 1.1. Overview and History of Automated Driving Systems
  - 1.2. Technologies and Examples of Automated Driving Systems
  - 1.3. Challenges in Automated Driving Systems
2. Evaluation of Vehicle Propulsion Systems
  - 2.1. Codes and Regulations for Automobiles
  - 2.2. Trends in Evaluation Methods of Automobiles
  - 2.3. Life Cycle Assessment for Vehicle Propulsion Systems
3. Improvement of Internal Combustion Engines
  - 3.1. Improving Methods of Thermal Efficiency
  - 3.2. Introduction of Direct Injection Gasoline/Gas Engines
  - 3.3. Perspectives on Various Types of Combustion Systems

No preparation is required.

### Textbook

Printed handouts will be provided.

### Additional Reading

Not required but the book below is recommendable.

Internal Combustion Engine Fundamentals, 2nd Edition 2018, McGraw-Hill, John B Heywood

### Grade Assessment

Grades will be based on class participation and reports.

- 30% for attendance
- 30% for interim report
- 40% for final report

The total score above equal to or higher than 60% out of 100% will pass.

### Notes

No other specific requirements.

### Contacting Faculty

Students can ask questions to the lecturer at any time during classes.

Questions during off-class hours can be asked via e-mail: [takimotof@nuem.nagoya-u.ac.jp](mailto:takimotof@nuem.nagoya-u.ac.jp)

## Automotive Engineering Seminar 1A (2.0credits) (自動車工学セミナー1A)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

This seminar deals with the basis of fundamental science and engineering related to automobiles.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the seminar.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

## Automotive Engineering Seminar 1B (2.0credits) (自動車工学セミナー1B)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

This seminar deals with the basis of fundamental science and engineering related to automobiles.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the seminar.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

## Automotive Engineering Seminar 1C (2.0credits) (自動車工学セミナー1C)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	2 Autumn Semester	2 Autumn Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

This seminar deals with the basis of fundamental science and engineering related to automobiles.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the seminar.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

## Automotive Engineering Seminar 1D (2.0credits) (自動車工学セミナー1D)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Seminar	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	2 Spring Semester	2 Spring Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

This seminar deals with the basis of fundamental science and engineering related to automobiles.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the seminar.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

## Advanced Thermal Engineering (2.0credits) (熱工学特論)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Mechanical Systems Engineering	Automotive Engineering
Starts 1	Spring Semester ,every other year	1 Spring Semester
Lecturer	Hosei NAGANO Professor	

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### Course Purpose

-To understand how to utilize knowledge of heat transfer in real world, and think about their purposes (thermal management, serious energy problem, and global warming) -To understand the importance of thermal management.-To understand about trend of research and development for thermal & energy management in engineering field.

### Prerequisite Subjects

Thermodynamics, Heat Transfer Engineering

### Course Topics

Lectures, presentations and discussions on; 1. Fundamentals of heat transfer2. Application of thermodynamics and heat transfer3. Trend of research and development for thermal & energy management in engineering field.

### Textbook

Prints

### Additional Reading

References will be introduced upon on your requests.

### Grade Assessment

Based on reports, presentations, and discussions S(>90), A(>=80), B(>=70), C(>=60), F(<60).

### Notes

This class is conducted in English.

### Contacting Faculty

By e-mail



Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Mechanical Systems Engineering	Automotive Engineering
Starts 1	Spring Semester ,every other year	1 Spring Semester
Lecturer	ShogoOKAMOTO Associate Professor	

### Course Purpose

Substantial difficulties of dynamic systems in the real world lie in the involvement of a large number of related factors that deviate statistically. Multivariate analyses and statistics are common tools for understanding and modeling these intricate systems. This course is arranged for those who had few opportunities to study statistics, multivariate analyses, and some basis for these mathematics. We learn intermediate topics of classic multivariate analyses and related statistics. We also practice how to apply each method of multivariate analysis on real data and interpret the results throughout the course.

### Prerequisite Subjects

Mathematics, especially, linear algebra and statistics of undergraduate level.

### Course Topics

- 1-2 h: Introduction. Multivariate regression analysis
- 3 h: Outlier analysis
- 4-5 h: Principal component analysis
- 6 h: Factor analysis
- 7 h: Discriminative analysis: k-means method and linear discriminative analysis
- 8-9 h: Structural equation modeling (Covariance structure analysis)
- 10-11 h: Graphical modeling using partial correlation coefficients (Covariance selection)
- 12-15 h: Final presentation from students

### Textbook

Available on the course website [http://www.mech.nagoya-u.ac.jp/asi/ja/lecture/okamoto\\_system.html](http://www.mech.nagoya-u.ac.jp/asi/ja/lecture/okamoto_system.html)

### Additional Reading

Provided on site.

### Grade Assessment

Three reports (60%) and one presentation (40%) are collectively evaluated. All or randomly selected students have to prepare for the final presentation, on which real world data is examined with one of the analysis methods. Course grading will follow the standard rule: S, A, B, C, and F for those who acquire 100%-90%, 89%-80%, 79-65%, 64%-60%, and less than 59%.

### Notes

NA

### Contacting Faculty

Any time by e-mails or direct visits.

## Advanced Lectures on Strength and Fracture of Materials (2.0credits) (材料強度学特論)

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Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Mechanical Systems Engineering	Automotive Engineering
Starts 1	Spring Semester ,every other year	Spring Semester ,every other year
Lecturer	Dai OKUMURA Professor	

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### Course Purpose

In this course, the fundamentals of nonlinear solid mechanics will be lectured.

The aims of this course:

1. Study tensor analysis
2. Study deformation
3. Study stress and balance principles
4. Study constitutive material models

### Prerequisite Subjects

Mechanics of Materials, Solid mechanics, Continuum mechanics

### Course Topics

1. Tensor analysis, 2. Deformation, 3. Stress, 4. Balance principles, 5. Constitutive material models

Read the part of the textbook before each class. After the class, solve the examples and end-of-chapter problems. Submit reports on request.

### Textbook

Non-linear Elastic Deformations, R.W. Ogden, Dover.

### Additional Reading

Nonlinear Solid Mechanics, G.A. Holzapfel, Wiley.

### Grade Assessment

Overall points are used.

### Notes

NA

### Contacting Faculty

After classes.

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Toshiro MATSUMOTO Professor	

### Course Purpose

The finite element method (FEM) is widely used in various engineering problems, and the students study the advanced physical modelling of the phenomena, constructing the corresponding mathematical models, advanced computational algorithms of FEM, and how to develop the computer code.

The lecture is based on the handouts and the students are going to cope with the assignments for formulating FEM and example numerical demonstrations.

By finishing this class, the students are targeted to have the capability of doing the following skills:

1. Developing the advanced physical model
2. Developing the advanced mathematical model corresponding to the above derived physical model
3. Formulation of the multi-dimensional finite element method
4. Developing and using a finite element code

### Prerequisite Subjects

Mathematics I, II (Calculus, Linear Algebra), Vector Analysis, Elasticity

### Course Topics

1. Vector, tensor, index notation
2. Formula of integration by parts
3. Cauchy's formula and stress tensor
4. Balance of force and moment, derivation of equilibrium equation and symmetry of stress tensor
5. Strain tensor
6. Generalized Hooke's law
7. Navier's equation
8. Virtual work principle
9. Weighted-residual form and weak form
10. Discretization of weak form and introduction of shape functions
11. Expression of weight-function (virtual displacement) with shape function
12. Derivation of stiffness matrix and equivalent nodal force vector by means of element integration
13. Computation algorithm of finite element method
14. Numerical examples through actual finite element code

### Textbook

Handouts are delivered and other documents are put on Web and downloaded.

### Additional Reading

Introduction to Approximate Solution Techniques, Numerical Modeling, and Finite Element Methods, Marcel Dekker Inc

### Grade Assessment

The understanding of the theory and computation algorithm of FEM is evaluated through assignments and achievement test. Students can pass when the basic formulation of the weak-form of finite element method and its corresponding computational algorithm are understood. The grade is evaluated accordingly when they can formulate the finite element method for more complicated problem and can develop a finite element computer code.

### Notes

No special requirements are imposed.

### Contacting Faculty

Students can ask questions at any time during classes.

Questions during off-class hours can be asked at the lecturers' rooms:

Room 323, Engineering Building No.2 North Wing 3F, (2780), E-mail: [t.matsumoto@nuem.nagoya-u.ac.jp](mailto:t.matsumoto@nuem.nagoya-u.ac.jp)

Course Type	Specialized Courses		
Division at course	Master's Course		
Class Format	Lecture		
Course Name	Automotive Engineering	Automotive Engineering	
Starts 1	1 Spring Semester	1 Spring Semester	
Lecturer	Masaaki KATAYAMA Professor Keita Takahashi Associate Professor	Takaya YAMAZATO Professor	"FUJII Toshiaki" Professor

### Course Purpose

In this course, students are to study wireless communication and image processing technologies which are fundamental to automotive engineering. The goal of this course is as follows.- To understand the basic of wireless communication technology and to apply it for the problems in automotive engineering.- To understand the basic of image processing technology and to apply it for the problems in automotive engineering.

### Prerequisite Subjects

Digital Circuit and Exercise, Digital Signal Processing, Programming and Exercise, Information Theory, Wireless Communication System

### Course Topics

- Basics of wireless LAN- Experimental practice on wireless LAN - Basics of image signal processing- Programming exercises on image signal processing Students are expected to study the specified material in advance to the class. Students are also expected to complete the exercises before the next class.

### Textbook

Books and papers will be introduced during the classes when necessary.

### Additional Reading

Books and papers will be introduced during the classes when necessary.

### Grade Assessment

The achievement is evaluated by presentations during the classes and reports.

### Notes

No prerequisite.

### Contacting Faculty

Questions are attended during and after the classes.

## Industrial Uses of Radiation (2.0credits) (工業における放射線利用)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Lecture	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Akira URITANI Professor	

### Course Purpose

In this course, students study ionizing radiations, activity, radiation detections, and so on. Students will also study how ionizing radiations are used as powerful tools in manufacturing industries. By taking this course, students will gain a deep knowledge of the reality and importance of the use of radiation in industry.

### Prerequisite Subjects

This is a general lecture, so no background subjects are specified.

### Course Topics

Radioactivity and ionizing radiation

Environmental radiation

Generation of ionizing radiation, nuclear reactions, accelerators

Radiography(X-rays, neutrons)

Radiation detection and measurement

Utilization of ionizing radiations in manufacturing industries

Lab tours (Visiting candidates: National Institute on Nuclear Fusion, Accelerator Facility in the Higashiyama Campus, Aichi Synchrotron Center, Hamaoka Nuclear Power Station, etc. Travel expenses will be supported by Nagoya University for G30 students.)

Reports and pre-study assignments will be provided for each class and tour.

### Textbook

There are no specific textbooks, but materials will be distributed as needed.

### Additional Reading

There is no specific reference book, but materials will be distributed as needed.

### Grade Assessment

Grades will be assigned based on reports.

If you generally understand the lectures and the contents of the tour, you will pass this lecture. If you can acquire more advanced knowledge, I reflect it in your grades accordingly.

### Grade points

100-95A+

94-80A

79-70B

69-65C

64-60C-

under59F

### Notes

No course requirements are required.

### Contacting Faculty

I can respond at any time during and after class. If you come to my office (Room 451, Eng. Bldg. #5), make an appointment by e-mail in advance.

## Advanced Experiments and Exercises in Automotive Engineering A (1.0credits) (自動車工学特別実験及び演習A)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Experiment and Practice	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Autumn Semester	1 Autumn Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles through experiments.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

1. Interim presentation and discussions on their own research results. 2. Summary and discussions on the literature on their own research topic.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the experiments.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

## Advanced Experiments and Exercises in Automotive Engineering B (1.0credits) (自動車工学特別実験及び演習B)

Course Type	Specialized Courses	
Division at course	Master's Course	
Class Format	Experiment and Practice	
Course Name	Automotive Engineering	Automotive Engineering
Starts 1	1 Spring Semester	1 Spring Semester
Lecturer	Faculty of Automotive Engineering	

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### Course Purpose

The aim of this course is to help students acquire deep understanding of the fundamental science and engineering related to automobiles through experiments.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

1. Interim presentation and discussions on their own research results. 2. Summary and discussions on the literature on their own research topic.

### Textbook

Textbooks may be provided by the supervisor.

### Additional Reading

Will be introduced in the class as needed.

### Grade Assessment

Grading will be decided based on attendance and the quality of the students' contribution to the experiments.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.



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

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.

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

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

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### Course Purpose

The aim is to expand the ability as a researcher by conducting thesis research at different laboratories.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

Conducting thesis research at different laboratories. U2, U3; short term basic research, U4, U6, U8; long term advanced research

### Textbook

None in particular

### Additional Reading

None in particular

### Grade Assessment

Credits will be awarded to those students who score 'Pass'. Thesis supervisor will make overall evaluation based on 1) credit hours, 2) research report and 3) evaluation by the host researcher.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

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

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

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### Course Purpose

The aim is to expand the ability as a researcher by conducting thesis research at different laboratories.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

Conducting thesis research at different laboratories. U2, U3; short term basic research, U4, U6, U8; long term advanced research

### Textbook

None in particular

### Additional Reading

None in particular

### Grade Assessment

Credits will be awarded to those students who score 'Pass'. Thesis supervisor will make overall evaluation based on 1) credit hours, 2) research report and 3) evaluation by the host researcher.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

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

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

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### Course Purpose

The aim is to expand the ability as a researcher by conducting thesis research at different laboratories.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

Conducting thesis research at different laboratories. U2, U3; short term basic research, U4, U6, U8; long term advanced research

### Textbook

None in particular

### Additional Reading

None in particular

### Grade Assessment

Credits will be awarded to those students who score 'Pass'. Thesis supervisor will make overall evaluation based on 1) credit hours, 2) research report and 3) evaluation by the host researcher.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

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

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

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### Course Purpose

The aim is to expand the ability as a researcher by conducting thesis research at different laboratories.

### Prerequisite Subjects

All courses in undergraduate course.

### Course Topics

Conducting thesis research at different laboratories. U2, U3; short term basic research, U4, U6, U8; long term advanced research

### Textbook

None in particular

### Additional Reading

None in particular

### Grade Assessment

Credits will be awarded to those students who score 'Pass'. Thesis supervisor will make overall evaluation based on 1) credit hours, 2) research report and 3) evaluation by the host researcher.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.



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

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

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### Course Topics

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### Textbook

None in particular

### Additional Reading

None in particular

### Grade Assessment

Credits will be awarded to those students who score 'Pass'. Thesis supervisor will make overall evaluation based on 1) credit hours, 2) research report and 3) evaluation by the host researcher.

### Notes

No other specific requirements

### Contacting Faculty

Students can contact their supervisor.

**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