

|                                                      |                                |
|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO2000EA                      |
| Course Name                                          | Microeconomics II              |
| Instructor                                           | XING Yuqing                    |
| Email Address                                        |                                |
| Term/Day/Period                                      | Fall (Session II) 秋後/Fri 金/2 3 |
| Credits                                              | 2                              |

### 1. Course Description and the Learning Objectives :

#### [Course Description]

In this course, we incorporate information, time and uncertainty into the decision processes of economic agents and analyze the equilibria of imperfect market. Particularly, we will discuss how economic agents make optimal decisions when they face uncertainty, asymmetric information, and choices of consumption over time. In addition, we will introduce basic concepts of game theory and its applications in economics.

#### [Related Diploma Policy (DP)]

Macroeconomic Policy Program (MEP1) (MEP2) – DP1

Public Finance Program – DP1,2

Economics, Planning and Public Policy Program – DP2,3

#### [Course Goals]

Students can learn how to analyze the behaviors of consumers and firms when uncertainty presents, information is asymmetric, or the interactions of market players are involved. Also, students will be able to learn how to do cost benefit analysis about environmental issues.

### 2. Course Outline :

Week 1 (two periods ) Uncertainty (chapter 4)

Week 2 (two periods ) Game Theory (chapter 5)

Week 3 (two periods ) Monopoly (chapter 11)

Week 4 (two periods) Imperfect Competition (chapter 12)

Week 5 (period 1) Imperfect Competition (chapter 12)

Week 5-6 (two periods ) Asymmetric Information (chapter 15)

Week 6-7 (two periods) Externality and Public Goods

Week 7-8 (two periods ) Behavioral Economics (chapter 17)

#### [Out-of-class Learning]

Students should read the relevant chapters of the textbook before the class to grasp the outline. After class, students should review the contents of the lecture and prepare for the next class. Besides the textbook, The Economist and Nikkei Asia are highly recommended reading materials for understanding the real economy and the impacts of economic policies on the world economy as well as individual countries.

### 3. Grading :

Course Requirement: Homework (30%) and final exam (70%). Over due homework will not be accepted. Group discussions are encouraged for doing homework. But, each individual student should write his/her answers independently. All the homework should be handwritten. Computer prints will not be accepted.

[Evaluation Criteria]

Student's achievement of the Course Goals is:

Outstanding: A

Superior: B

Satisfactory: C

Minimum acceptable: D

Below the acceptable level: E

4. Textbooks : (4-1:Required 4-2:Others)

Walter Nicholson and Christopher Snyder Theory and Application of Intermediate Microeconomics (12th edition)

5. Software Used in Lectures :

6. Auditing ; Allow or Not Allow :

Not Allow

7. Note :

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|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO2000EB                      |
| Course Name                                          | Microeconomics II              |
| Instructor                                           | HATANAKA Kaori／畠中 薫里           |
| Email Address                                        |                                |
| Term／Day／Period                                      | Fall (Session II) 秋後／Tue 火／2 3 |
| Credits                                              | 2                              |

## 1. Course Description and the Learning Objectives :

**1-1. Course Description** This course is the following course to Microeconomics I, which treats consumption theory, production theory and partial equilibrium analysis in perfect competition.

First, using the knowledge of Microeconomics I, we learn general equilibrium analysis, which is useful for the analysis of tax or customs. Then we will learn imperfect competition, which is much more realistic than perfect competition. In addition, we will learn game theory and information economics to focus on actions of individuals or organizations. These topics can be applied to the analysis of politics.

### 1-2 Course Goals

The course goals are to obtain the ability

1. to utilize the general equilibrium analysis in various kinds of cases and policies
2. to understand market failure and the policies to solve it
3. to obtain the equilibrium under imperfect competition
4. to apply game theory and information economics to the real examples

### 1-3 Related Diploma Policy

1 year and 2 years master's program : DP2 DP3

## 2. Course Outline :

Class

- 1-2 Review of perfect competition
- 3 General Equilibrium
- 4 Monopoly
- 5 Price Regulation for Natural Monopolies
- 6-7 Externalities
- 8-9 Public goods
- 10-11 Game theory (Nash Equilibrium and Prisoner's Dilemma)
- 12-13 Imperfect competition (Cournot Equilibrium)
- 14-15 Subgame perfect Nash Equilibrium
- 16 Final Examination

### [out of class learning]

1. I will offer you the problem sets of Homework once in 2 weeks (3 times in total)
2. By reading the textbook or the article I assigned before each class, you can grasp the contents of each class.

## 3. Grading :

Homework 30%(3 times)

Final Examination 70% : closed Book. (You cannot bring your computer.)

**[Grading Criteria]**

A: Achieved the goal at a high level

B: Achieved the goal at a satisfactory level

C: Achieved the goal at a generally acceptable level

D: Achieved the goal at a minimum acceptable level

E: Did not achieve the goal

**4. Textbooks : (4-1:Required 4-2:Others)**

**4-1 Required**

Nicholson, Walter and Christopher M.Snyder, *Theory and Application of Intermediate Microeconomics*, South-Western College Publication 12th edition, 2016.

**4-2 Others**

1. Hal R.Varian and Mark J.Melitz *Intermediate Microeconomics : A Modern approach* 10th Edition, Norton 2024
2. Gibbons, Robert. *Game Theory for applied Economics*, Princeton University Press 1992

**5. Software Used in Lectures :**

None

**6. Auditing ; Allow or Not Allow :**

Allow

**7. Note :**

The knowledge of consumption theory, production theory and perfect competition is necessary.

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|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO2060EA                      |
| Course Name                                          | Macroeconomics II              |
| Instructor                                           | KITAO Sagiri／北尾 早霧             |
| Email Address                                        |                                |
| Term／Day／Period                                      | Fall (Session II) 秋後／Tue 火／1 2 |
| Credits                                              | 2                              |

### 1. Course Description and the Learning Objectives :

This is the second course in the macroeconomics sequence. In this course, students will learn basic macroeconomic models that are used to study the effects of economic policies.

Students will acquire basic understandings of features of business cycles, IS-LM model of fiscal and monetary policy, aggregate demand-supply model to study transitional dynamics, inflation and Phillips curve, Mundell-Fleming model to study exchange rate policies in open economies, how financial markets work, and issues related to government debt.

#### Related diploma policy

Economics, Planning and Public Policy Program (EPP) 2,3

One-year Master's Program of Public Policy (MP1) 2

Two-year Master's Program of Public Policy (MP2) 2

Public Finance Program (PF) 1,2

### 2. Course Outline :

The preliminary schedule below is subject to changes and will be updated as we progress.

1. Short-run economic fluctuations
2. Keynesian cross and IS curve
3. Real money market and LM curve
4. IS-LM Model
5. AD-AS model
6. Short-run trade-off between inflation and unemployment
7. Open economy
8. Mundell-Fleming model
9. Topics in stabilization policies
10. Financial system and crisis, financial policies
11. Government debt

#### Out-of-class Learning

Students are expected to spend approximately 60 hours of out-of-class and undertake the following tasks.

- Weekly preparation for the class 20 hours
- Weekly review of the class 20 hours
- Solving homework 10 hours
- Preparing for the final exam 10 hours

### 3. Grading :

Grading is based on two problem sets and the final exam. Each problem set accounts for 20% of total score and the final exam accounts for 60%.

**Grading criteria**

A: Achieved the goal at a high level

B: Achieved the goal at a satisfactory level

C: Achieved the goal at a generally acceptable level

D: Achieved the goal at a minimum acceptable level

E: Did not achieve the goal

**4. Textbooks : (4-1:Required 4-2:Others)**

Mankiw, Gregory. Macroeconomics (12th ed) MacMillan, 2025.

**5. Software Used in Lectures :**

N/A

**6. Auditing ; Allow or Not Allow :**

Allow

**7. Note :**

Auditing is allowed upon permission of the instructor.

Office location: B910

Office hour: by appointment

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|                                                      |                                |
|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO2060EB                      |
| Course Name                                          | Macroeconomics II              |
| Instructor                                           | FUJIMOTO Junichi／藤本 淳一         |
| Email Address                                        |                                |
| Term／Day／Period                                      | Fall (Session II) 秋後／Thu 木／1 2 |
| Credits                                              | 2                              |

## 1. Course Description and the Learning Objectives :

### [Course Description]

This is the second course in the macroeconomics sequence. In contrast to Macroeconomics I, in which students learn the long-run behaviors of the economy, in this course students will mostly explore the short-run behaviors of the economy. Students will study in detail such models as the IS-LM model, Mundell-Fleming model, and the Dynamic AD-AS model and explore how monetary and fiscal policy affect the economy in each model. Students are expected to acquire not only analytical skills but also the ability to provide economic intuition for the obtained results, which will be useful beyond the study of macroeconomics.

This course is related to the following SDGs: 8 (Economic Growth).

### [Course Goals]

- Students can understand the short-run behavior of a closed economy.
- Students can understand the short-run behavior of a small open economy.
- Students can explain how fiscal policy and monetary policy affect the economy in the short run and in the long run.

### [Relevant Diploma Policy (DP)]

Macroeconomic Policy Program (MEP1, Master of Public Policy)(1)

Macroeconomic Policy Program (MEP1, Master of Public Economics)(1)

Macroeconomic Policy Program (MEP2)(1)

## 2. Course Outline :

### [Themes of each class]

Session 1: Introduction. Overview of the course.

Session 2: Introduction. Overview of the classical model and the Keynesian model.

Session 3: IS-LM model: LM curve

Session 4: IS-LM model: IS curve

Session 5: IS-LM model: Key properties of the short-run equilibrium

Session 6: IS-LM and AD-AS analysis: Effectiveness of fiscal and monetary policy.

Session 7: IS-LM and AD-AS analysis: Sources of the short-run fluctuations of the economy and the role of policy.

Session 8: Open economy: Nominal exchange rate, real exchange rate, and purchasing power parity.

Session 9: Open economy: Long-run behavior of a small open economy.

Session 10: Open economy: Mundell-Fleming model and the short-run behavior of a small open economy under floating exchange rates.

Session 11: Open economy: Mundell-Fleming model and the short-run behavior of a small open economy

under a fixed exchange rate.

Session 12: Short-run trade-off between inflation and unemployment.

Section 13: Dynamic AD-AS model. Derivation of the dynamic AD and AS curves and the adjustment process of the economy.

Session 14: Dynamic AD-AS model. Short-run and long-run effects of monetary policy.

Session 15: Wrap-up lecture and final exam: We will review the key concepts and models learned in class. During the remaining time, we will have the final exam.

### **[Out-of-class learning]**

Before each class, students must read the lecture notes and relevant textbook chapters as instructed by the instructor. Students must also review materials after each lecture. Students must submit four problem sets and self-study past final exams.

### **3. Grading :**

- Course grades will be determined by problem sets (20%) and a final exam (80%).
- Each problem set must be handed in at the beginning of class (the due date will be in the problem set sheet). A missing problem set or a late submission will be assigned zero credit. Students are encouraged to have a group discussion, but everyone has to hand in your own answers to get credit. The final exam must be taken on the assigned schedule.

### **[Grading Criteria]**

Student's achievement of the Course Goals is:

Outstanding: A

Superior: B

Satisfactory: C

Minimum acceptable: D

Below the acceptable level: E

### **4. Textbooks : (4-1:Required 4-2:Others)**

4-1: "Macroeconomics" Eleventh Edition, Gregory Mankiw, Macmillan International.

The textbook is the same as in Macroeconomics I. Students are required to have the textbook.

### **5. Software Used in Lectures :**

### **6. Auditing ; Allow or Not Allow :**

Allow

### **7. Note :**

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|                                                      |                                |
|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO6010E                       |
| Course Name                                          | Advanced Microeconomics II     |
| Instructor                                           | YASUDA Yosuke／安田 洋祐            |
| Email Address                                        |                                |
| Term／Day／Period                                      | Fall (Session II) 秋後／Thu 木／4 5 |
| Credits                                              | 2                              |

## 1. Course Description and the Learning Objectives :

### [Course Description]

This is the second course in the sequence of advanced microeconomics, succeeding to Advanced Microeconomics I (ECO6000E). In Advanced Microeconomics II, we study individual economic decisions and their interactions, such as oligopoly markets, bargaining, and contract/mechanism design.

### [Course Goals]

Students will learn and apply mathematical frameworks of individual economic decisions and their interactions. The topics covered include (a) choice under uncertainty, (b) game theory, (c) asymmetric information, and (d) market design. The goal is to be able to model interactions of agents based on the above mathematical frameworks.

### [Related Diploma Policy (DP)]

#### Macroeconomic Policy Program (MEP1) (MEP2)

- DP1. Having the expertise in basic economics necessary for the analysis, formulation and implementation of macroeconomic policies, the ability to apply it to macroeconomic policy design and evaluation practices.

#### Policy Analysis Program (PA)

- DP1. The ability to devise and conduct a program of research under supervision.
- DP1. The ability to independently devise and conduct a program of research.
- DP2. The ability to apply quantitative methods to economic and social data.
- DP2. The ability to conduct quantitative analysis using the methods of modern economics.

## 2. Course Outline :

- Choice under Uncertainty (2-3 Lectures)
  - Preferences and Choice, Expected Utility
- Game Theory (7-8 Lectures)
  - Static Games, Oligopoly, Dynamic Games, Bargaining, Incomplete Information
- Asymmetric Information (2-3 Lectures)
  - Market for Lemon, Principal-Agent Model
- Market Design (2-3 Lectures)
  - Auction Theory, Matching Mechanisms

### [Out-of-class Learning]

- Students should read the relevant parts of textbooks before each class.
- Students should review the course slides after each class.

## 3. Grading :

Course grades will be determined by combining grades on assignments (40%) and a final exam (60%). We will have the final exam outside of class days. The dates will be decided in consultation with students.

[Grading Criteria]

Student's achievement of the Course Goals is:

- A: Outstanding
- B: Superior
- C: Satisfactory
- D: Minimum acceptable
- E: Below the acceptable level

#### 4. Textbooks : (4-1:Required 4-2:Others)

##### 4-1:Required

I use the following two books as main textbooks for this course. The copies of related chapters will be distributed in class (so you don't need to purchase them).

- Gibbons, R. (1992): Game Theory for Applied Economists
- Jehle, G. and Reny, P. (2010): Advanced Microeconomic Theory, 3rd ed.

##### 4-2:Others

Supplementary textbooks are:

- Tadelis, S.(2013): Game Theory: An Introduction
- Osborne, M and Rubinstein, A. (2023): Models in Microeconomic Theory, 2nd ed.
- Fudenberg, D. and Tirole, J (1991): Game Theory
- Kreps, D. (2023): Microeconomic Foundations II

#### 5. Software Used in Lectures :

#### 6. Auditing ; Allow or Not Allow :

Allow

#### 7. Note :

- Basic knowledge of multi-variable calculus and probability is assumed to be the prerequisites of the course.
- Working on the assigned problem sets is also an essential part of the course.
- Instructor will use his website to provide further information and materials for the course. The website's URL will be provided on the first day.
- Anyone in GRIPS (including faculty members) can audit this course.

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| 開講年度（4月-3月） | 2025                           |
| 科目番号        | ECO6060E                       |
| 授業名         | Advanced Macroeconomics II     |
| 担当者         | FUJIMOTO Junichi／藤本 淳一         |
| メールアドレス     |                                |
| 学期／曜日／時限    | Fall (Session II) 秋後／Mon 月／2 3 |
| 単位数         | 2                              |

## 1. 本授業の概要及び到達目標：

### [Course Description]

This is the second course in the Ph.D. macroeconomics sequence. In contrast to Advanced Macro I, in which students learn RBC models and growth models, in this course students will learn theoretical and quantitative implications of various models of money. Students will also study models of open economy macroeconomics.

Students are expected to acquire strong analytical skills and the ability to provide economic intuition for the obtained results, which will be useful beyond the study of macroeconomics.

This course is related to the following SDGs: 8 (Economic Growth).

### [Course Goals]

Students can:

- understand the basic structure of various models of money and open economy macroeconomics.
- derive and explain the key implications of various models of money and open macroeconomics.
- explain whether the equilibrium allocation is socially efficient, and when it is not, can propose policy that achieves the socially efficient allocation.

### [Relevant Diploma Policy (DP)]

Policy Analysis Program (1) (2)

Macroeconomic Policy Program (MEP1, Master of Public Policy) (1)

Macroeconomic Policy Program (MEP1, Master of Public Economics) (1)

Macroeconomic Policy Program (MEP2) (1)

## 2. 各授業のテーマ：

### [Themes of each class]

Session 1: Introduction. Overview of the course.

Session 2: OLG (overlapping generations) model of money: Basic model.

Session 3: OLG model of money: Extension 1.

Session 4: OLG model of money: Extension 2.

Session 5: Search model of money. First-generation search models of money.

Session 6: Search model of money. Second-generation search models of money.

Session 7: Search model of money. Third-generation search models of money.

Session 8: Classical Monetary Model. Basic structure.

Session 9: Classical Monetary Model. Key model properties and limitations.

Session 10: Basic New-Keynesian Model. Basic structure.

Session 11: Basic New-Keynesian Model. Key model properties.

Session 12: Basic New-Keynesian Model. Optimal monetary policy.

Session 13: Open Economy Macroeconomics. Basic structure.

Section 14: Open Economy Macroeconomics. Effects of such policies as temporary and permanent tariffs.

Session 15: Wrap-up lecture and final exam. We will discuss the strengths and weaknesses of the various models covered in the course. During the remaining time, we will have the final exam.

### **[Out-of-class learning]**

Before each class, students must read the lecture notes and other materials as instructed by the instructor. Students must also review materials after each lecture. Students must submit four problem sets and self-study past final exams.

### 3. 成績の評価方法 :

- Course grades will be determined by problem sets (20%) and a final exam (80%).
- Each problem set must be handed in at the beginning of class (the due date will be specified in the problem set sheet). A missing problem set or a late submission will be assigned zero credit.
- Everyone is encouraged to have a group discussion on the problem sets but must submit own answer sheets.

### **[Grading Criteria]**

Student's achievement of the Course Goals is:

Outstanding: A

Superior: B

Satisfactory: C

Minimum acceptable: D

Below the acceptable level: E

### 4. テキスト、参考文献等 : (4-1:必携のテキスト 4-2:その他)

#### 4-2: Others

There is no single textbook covering all topics in the course, so attending the lectures is very important. Parts of the textbooks below will be used as a reference in each lecture. These are not required textbooks, but if you are going to choose macroeconomics as a specialized field, you should seriously think of buying the first two.

- Ljungqvist, L. and T. Sargent, *Recursive Macroeconomic Theory 4th ed.*, MIT Press.

This textbook is considered as a main textbook in many 1st year Ph.D. macroeconomics courses, possibly due to its wide coverage of important topics in modern (classical) macroeconomics.

- Lucas, R. and N. Stokey with E.C. Prescott, *Recursive Methods in Economic Dynamics*, Harvard University Press.

As with Ljungqvist and Sargent's textbook above, this textbook is widely used in many Ph.D. macroeconomics courses. It is a good technical reference.

- Farmer, R. *Macroeconomics of Self-fulfilling Prophecies 2nd ed.*, MIT Press.

This textbook may be useful for those of you who find the two textbooks above too difficult.

- Gali, J., *Monetary Policy, Inflation, and the Business Cycle 2nd ed.*, Princeton University Press.

This is one of the popular textbooks in the field of monetary economics. It is more concise than other famous textbooks on this topic.

- Vegh, C., *Open Economy Macroeconomics in Developing Countries*, MIT Press.

This is a recently published textbook on open economy macroeconomics. The author is very good at using relatively simple models to convey important economic intuitions.

### 5. 授業で使用するソフトウェアについて :

### 6. 聴講の可否 :

可

7. 履修上の注意：

None

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|------------------------------------------------------|--------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                           |
| Course Number                                        | ECO6710E                       |
| Course Name                                          | Advanced Econometrics II       |
| Instructor                                           | LITSCHIG Stephan               |
| Email Address                                        |                                |
| Term/Day/Period                                      | Fall (Session II) 秋後/Tue 火/3 4 |
| Credits                                              | 2                              |

## 1. Course Description and the Learning Objectives :

### 1. Course Description and the Learning Objectives :

The objective of this course is to prepare students to conduct their own causal analysis using cross-sectional and longitudinal data. Specific research designs covered include: randomized control trials, natural experiments, the regression discontinuity design, selection on observables (exact matching, propensity score matching, screening and weighting, synthetic control) and difference-in-differences and fixed effects.

Students will acquire the ability to understand studies based on these research designs.

Students will acquire the ability to conduct their own study based on these research designs.

Related Diploma Policy:

Policy Analysis Program (PA): 1, 2

Macroeconomic Policy Program (MEP1, Master of Public Policy):1

Macroeconomic Policy Program (MEP1, Master of Public Economics):1

Macroeconomic Policy Program (MEP2):1

## 2. Course Outline :

### 2. Course Outline :

#### Session 1

OLS estimators in various forms

Conditional expectation function decomposition

Identification in randomized studies

Estimation with experimental data

#### Session 2

Interpretation of other coefficients in multiple regression

Improved precision with covariates

Check for randomization, improve randomization

Conditional randomization and conditional mean independence

PS 1 on RCTs assigned

#### Session 3

PS 1 solutions

#### Session 4

Average treatment effect (ATE)

Systematic effect heterogeneity / subgroup analysis  
External validity

#### PS 2 on effect heterogeneity assigned

##### Session 5

PS 2 solutions

Imperfect compliance and constant effect

Two-sided non-compliance and heterogeneity: WATE vs ATE

One-sided non-compliance and heterogeneity: ATT vs ATE

##### Session 6

Two-sided non-compliance, heterogeneity and monotonicity: LATE

LATE example: cash transfer study

Quasi-experiments good example: Snow and Cholera

#### PS 3 on natural experiment and IV assigned

##### Session 7

PS 3 solutions

##### Session 8

Identification with constant effects in sharp and fuzzy RDD

Estimation of RD-gaps

Maimonides example in class

#### PS 4 on RDD assigned

##### Session 9

PS 4 solutions

##### Session 10

Optimal bandwidth and polynomial order

Identification with non-compliance, ATE, ATT, LATE at the cutoff

2 precise meanings of weak instruments: relative bias and size distortion

Solutions for weak instruments

##### Session 11

Bad control: definition, bias using formula, solution

Adjusting for unobservables with example

Exact matching vs regression control

##### Session 12

OLS vs probit/logit

P-score matching theory and practice

P-score screening, weighting

#### PS 5 on observational studies assigned

##### Session 13

PS 5 solutions

difference in differences two groups over time: identification and estimation

Vertical integration study

#### Session 14

Staggered adoption and strict exogeneity

Equivalence of fixed effects regression and weighted diff in diff

Event study graphs

#### PS 6 on fixed effects assigned

#### Session 15

PS 6 solutions and review

It is not necessary to read the lecture notes in advance. However, it is essential to review the material seen in class and ask any clarifying questions by email or at the beginning of the next lecture. To achieve the course goals, it is also crucial to work on the problems sets, both individually and in collaboration with other students.

### 3. Grading :

There will be 6 problem sets, worth 60% of the course grade, and a final exam, worth 40%.

[Grading Criteria]

A: Achieved the goal at a high level

B: Pass: Achieved the goal at a satisfactory level

C: Pass: Achieved the goal at a generally acceptable level

D: Achieved the goal at a minimum acceptable level

E: Did not achieve the goal

### 4. Textbooks : (4-1:Required 4-2:Others)

The course is based on lecture notes.

### 5. Software Used in Lectures :

Stata.

### 6. Auditing ; Allow or Not Allow :

Allow

### 7. Note :

The prerequisite for this course is Advanced Econometrics I or an equivalent course.

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| Academic Year<br>(April - March of<br>the next year) | 2025                               |
| Course Number                                        | ECO6770E                           |
| Course Name                                          | Computer Programming for Economics |
| Instructor                                           | PORAPAKKARM Ponpoje                |
| Email Address                                        |                                    |
| Term/Day/Period                                      | Fall (Session II) 秋後/Mon 月/3 4     |
| Credits                                              | 2                                  |

## 1. Course Description and the Learning Objectives :

### [Course Description]

The course will cover numerical methods to solve complex economic models using MATLAB program. The objective is to make students familiar with MATLAB programming and to introduce some numerical methods used in applied economic research. The covered topics are useful for students who plan to take Advanced Macroeconomics III, IV, and doctoral research. The best way to learn about programming is learning-by-doing; so the teaching style of this course emphasizes learning from sample codes, implementing algorithms, or solving specific economic problems.

### [Pre-requisite]

No prerequisite course, prior programming skills, or econometric knowledge is needed for this course. However, it is strongly recommended that students should be familiar with Optimal Growth Models and Dynamic Programming, taught in Advanced Macroeconomics I (Fall I); examples, homework, and the final project will be related to numerical solutions of this class of models. In addition, students are expected to have basic knowledge of matrix algebra and multivariate calculus.

### [Course Goals]

Students are expected to be able to numerically solve various economic models using algorithms taught in the course. More importantly, students are expected to be able to explain the economic intuitions behind the numerical results.

### [Related Diploma Policy]

Policy Analysis Program (PA)

2.The ability to apply quantitative methods to economic and social data

2.The ability to conduct quantitative analysis using the methods of modern economics

Macroeconomic Policy Program (MEP1, Master of Public Policy)

2.Ability to analyze a wide range of public policy issues from a multidisciplinary perspective

Macroeconomic Policy Program (MEP1, Master of Public Economics)

2. Ability to analyze and present optimal policies from a cross-sectoral perspective with broad knowledge of applied fields in economics and public policy

Macroeconomic Policy Program (MEP2)

2. Ability to analyze and present optimal policies from a cross-sectoral perspective with broad knowledge of applied fields in economics and public policy

## 2. Course Outline :

The lectures over 8 weeks will cover the following topics.

1.Introduction to MATLAB program

2.Root finding and Optimization methods

3.Interpolation

4.Simulation

5.Programming application: solving a simple RBC model

6.Programming application: Solving a market equilibrium

Final exam : TBA

### [Out-of-class Learning]

There will be around 4-5 homework assignments. The due date will be in the problem set sheet.

Importantly, learning and practicing from the homework are as important as learning from the class lecture. So, everyone should spend a good amount of time working on the assigned problems. Everyone is encouraged to participate in a group discussion while working on homework, but you must submit your own assignments to receive credit.

### 3. Grading :

Homework (20%)

Final project (80%)

The final project must be completed by the determined deadline. A makeup final project is allowed only in an extreme case, eg. serious accident or hospitalization.

### [Evaluation Criteria]

Student's achievements of the Course Goal is:

Outstanding: A

Superior: B

Satisfactory: C

Minimum acceptable: D

Below the acceptable level: E

### 4. Textbooks : (4-1:Required 4-2:Others)

There is no required textbook. There will be short lecture notes for topics in this course. However, these are useful references.

- **Moler, C. (2004)** Numerical Computing with MATLAB, available at <http://www.mathworks.se/moler/chapters.html>
- MATLAB Primer, available at [http://www.mathworks.com/help/pdf\\_doc/matlab/getstart.pdf](http://www.mathworks.com/help/pdf_doc/matlab/getstart.pdf)

Additional textbooks if you are interested in numerical methods (optional)

- Judd, K. (1998) : *Numerical Method in Economics*, MIT Press
- Press, W.H., Teukolsky, S.A., Vetterling, W.T., and Flannery, B.P. (1992). *Numerical Recipe in Fortran 77* (2nd Ed.), University of Cambridge. Also available at <http://homepage.univie.ac.at/mario.barbatti/papers/NRF/bookfpdf.html>
- Otto, S.R. and J.P. Denier, L.P. (2005) *An Introduction to Programming and Numerical Methods in MATLAB*, Springer
- Woodford, C. and Phillips, C. (2012) *Numerical Methods with Worked Examples: MATLAB Edition*, 2 Ed., Springer

If you prefer a formal textbook for MATLAB, you should check GRIPS library, which also carries quite a few textbooks about MATLAB introduction and MATLAB primer. More references will be in each lecture note.

### 5. Software Used in Lectures :

MATLAB

### 6. Auditing ; Allow or Not Allow :

Not Allow

7. Note :

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|             |                              |
|-------------|------------------------------|
| 開講年度（4月-3月） | 2025                         |
| 科目番号        | GEN5090J                     |
| 授業名         | AI政策実践論                      |
| 担当者         | MIYAMOTO Daisuke／宮本 大輔       |
| メールアドレス     |                              |
| 学期／曜日／時限    | Fall (Session II) 秋後／Tue 火／3 |
| 単位数         | 1                            |

## 1. 本授業の概要及び到達目標：

### 【本授業の概要】

近年の生成AIの普及により、AI技術が社会のあらゆる分野において重要な役割を果たすようになってきた。本講義では、AI技術を実際に触れながら学び、その知識を政策研究に応用するためのスキルを身につけることを目指す。本講義を通じて、受講者はAI技術の基本概念から最新の法的小および倫理的課題まで幅広い知識を身につけ、政策研究における実践的なスキルを習得することが期待される。また、AI技術を正しく理解し、社会におけるAIの利活用について深く考える能力を養うことを目指す。

本授業を通じ、学生はAIの利用におけるリスクとその対応方法についての全体像を得られる。また、今日のAI技術についての技術動向・法規制動向・政策動向について知見が得られる。

### 【到達目標】

- ・AIの長所・短所について歴史的経緯などから理解でき、論理的に説明できる。
- ・AIによるリスクを理解し、その影響の度合いを認識し説明できる。
- ・AIのリスクについて適切な管理を行うための手法を学び、ガバナンスを分析できる。
- ・各国のAI政策について理解し、組織における適切なAI活用について検討できる。

### 【関連するディプロマ・ポリシー】

公共政策プログラム地域政策コース

DP②公共政策に係る幅広い知識を持ち、的確な分析、総合的な判断、効果的な実践を行うことができる能力

公共政策プログラムインフラ政策コース

DP②インフラを取り巻く他分野の広範な知識を有し、それらを踏まえて俯瞰できる能力

公共政策プログラム防災・危機管理コース

DP④課題の解決に向けて、データの収集・分析等により、研究論文や政策提言としてまとめ、発表することができる能力

DP⑤公共政策に係る多角的な知識や各行政分野の現状・課題に深い理解を持ち、視野の広いリーダーとして活躍することができる能力

公共政策プログラム医療政策コース

DP②医療政策にかかる幅広い知識を持ち、多角的な視野から学術的な分析に基づいた課題解決に向けた政策分析ができる能力

公共政策プログラム科学技術イノベーション政策コース

DP②公共政策に係る知識を持ち、それらの文脈の中で科学技術イノベーション政策をとらえ、分析ができる能力

公共政策プログラムまちづくり政策コース

DP② 公共政策に係る幅広い知識を持ち、学術的な知見に基づいて多角的に政策分析ができる能力

公共政策プログラム地域創造・金融コース

DP① 地域経済、地域金融、官民連携に関する必要な専門知識を持ち、関心や関係する地域の様々な特性に即して課題を適切に設定できる能力

公共政策プログラム文化産業・地域創造コース

DP② 文化を含め多様な政策領域に共通する基礎的な知識や課題解決・社会実装の手法を踏まえて、事象を的確に分析して課題を抽出し、効果的な対応や実践に向けた提言を組み立てることができる能力

## 2. 各授業のテーマ：

第1回目は生成AIの使い方についてのチュートリアルを行う。受講者は生成AIの基本概念とその仕組みを学び、実際にツールを使ってAIを生成する体験をする。

第2回目はAIの歴史についての講義を行う。AI技術の発展の歴史と重要なマイルストーン、代表的なAI研究者の貢献を通じて、現代におけるAIの影響を理解する。また、授業後半30分程度は、授業内容をまとめ、サマリーを作成する演習を行う。

第3回目はAIが我々の社会に与える影響・リスクについての講義を行う。特に、AI技術と人権に関する基本的な概念や倫理的課題、AIの責任について学ぶ。後半30分は同様の演習を行う。

第4回目はAIと法律についての講義を行う。特に欧州AI法に焦点を当て、その概要と主要な規定、施行に伴う影響と課題について説明する。後半30分は同様の演習を行う。

第5回目は日本、米国、中国などの国のAIに関する法規制動向について学ぶ。特に日本の法の特異性について説明する。後半30分は同様の演習を行う。

第6回目はAIのリスク管理について検討する。AIの諸問題について、どのようなリスクに対応する必要があるか。リスク管理はどのように行ふべきか。各国のリスク管理のガイドラインを参照しながら、基本概念と手法について学ぶ。

第7回目は「AIの法的課題とセキュリティリスク：著作権とサイバー攻撃」というテーマで、AIに関連する著作権の問題やAIを悪用したサイバー攻撃について講義する。

第8回目は最終回として、これまでの授業の振り返りを行う。また、受講者はプロンプトを入力し、様々な論点からAI政策を説明する演習を行う。また、ディスカッションとフィードバックの共有を通じて研究結果をまとめ、発表する。

#### **[授業外学修]**

- ・講義中に指示された課題を行い、プロンプト作成技法についてもまとめること。
- ・ゲストスピーカーを招き、講演とあわせてグループ討議を行う事がある。事前に準備を行うこと。

### **3. 成績の評価方法：**

中間レポート（30%）及び最終レポート（70%）によって評価する

中間レポート及び最終レポートの期限終了後の提出は認めない。

中間レポートは第4回の講義中に課される。

最終レポートは第8回の講義中に課される。

例外は、感染症などのやむを得ない場合とする。

#### **[成績評価基準]**

A 90-100 合格 到達目標を高い水準で達成している

B 80-89 合格 到達目標を満足できる水準で達成している

C 70-79 合格 到達目標を概ね達成している

D 60-69 合格 到達目標を最低限の水準で達成している

E 0-59 不合格 到達目標を達成していない

### **4. テキスト、参考文献等：（4-1:必携のテキスト 4-2:その他）**

#### **4-1:必携のテキスト**

#### **4-2:その他**

5. 授業で使用するソフトウェアについて：

Microsoft Copilotなど

6. 聴講の可否：

可

7. 履修上の注意：

特になし

戻る

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|                                                      |                              |
|------------------------------------------------------|------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                         |
| Course Number                                        | LAN0150E                     |
| Course Name                                          | Thesis Writing for MSP       |
| Instructor                                           | O'NEILL Gavin                |
| Email Address                                        |                              |
| Term/Day/Period                                      | Fall (Session II) 秋後/Thu 木/6 |
| Credits                                              | 1                            |

## 1. Course Description and the Learning Objectives :

### 1.1 Description

This course is designed to support Maritime Safety and Security Policy Program (MSP) students in the culminating writing task that they must undertake at the end of their study at GRIPS and the Japan Coast Guard Academy (JCGA). The course guides students through the key competencies needed to complete the final paper according to the discourse conventions in their field. It will explore each section of the final paper, indicating the required information for each section.

### 1.2 Learning Objectives

Students will be able to

1. Explain the difference between professional and academic policy documents
2. Explain the goals of each part of a research report: introduction, literature review, methodology, Results/findings, discussions, and conclusions
3. Create outlines for each section of a research report
4. Insert citations in appropriate areas in a research report
5. Format table and figures in Chicago formatting style

### 1.3 Related Diploma Policy

Maritime Safety and Security Policy Program – DP4, 5

## 2. Course Outline :

(LO = Learning Objective):

### 1. Course Introduction and Review of Research Projects (LO 1)

The contents of the course will be explained. Students will have an opportunity to briefly discuss their research plans and progress to date. The instructor will also explain some of the key differences between the kinds of documents that are prepared in professional settings and those prepared in academic settings in order to help the students understand what is required of them for their final paper.

Preparation: Prepare a short 2–3-minute description of your research plan.

Review: None in particular.

### 2. Literature Review and Gaps (LO 2, 3, 4)

The students will learn about the purposes and structure of literature reviews. The students will also learn about the conventions surrounding the academic social practice of citation.

Preparation: Bring a journal article that you are reading/have read for your final paper.

Review: Create an outline of your literature review (if that section has not already been written)

### 3. RQs and Methodologies (LO 2, 3)

In this session, students will learn how to report the methods that they use to answer their research questions. They will understand the rhetorical moves used by professional researchers when explaining methods as well as the key concepts of validity and reliability.

Preparation: Bring a sample methods section from a journal article that the student is reading/has read for their final paper.

Review: Create an outline of your methods section (if that section has not already been written)

#### 4. Results/Thematic Sections (LO 2, 3)

In this session, students will learn how to report their results (quantitative methods) or findings (qualitative methods). They will look at model results or findings sections from published papers.

Preparation: Bring a sample results/findings section from a journal article that the student is reading/has read for their final paper.

Review: Create an outline of your results/findings section (if that has not already been written)

#### 5. Tables and Figures (LO 2, 5)

In the session, students will learn how to format tables and figures following Chicago formatting guidelines. Students will have a chance to practice formatting both a table and a figure.

Preparation: None in particular

Review: Create an outline of your results/findings section (if that has not already been written)

#### 6. Discussions and Conclusions (LO 2, 4)

In this session, students will learn the key difference between the information included in a discussion section and in a conclusion section. They will learn how to tie their own research to previous research, to account for the limitations of their research, to speculate on the implications of their research, and how to make suggestions for future research.

Preparation: Bring a sample discussion/conclusion section from a journal article that the student is reading/has read for their final paper.

Review: Create an outline of your discussion/conclusion section(s) (if that has not already been written)

#### 7. Introductions (LO 2, 4)

In this session, students will learn how to use the CARS model to craft an academic introduction. Based on the outlines created in previous lessons, students will be able to create a plan for an introduction.

Preparation: Bring a sample results/findings section from a journal article that the student is reading/has read for their final paper.

Review: Create an outline of your results/findings section (if that has not already been written)

#### 8. Abstracts & Course Wrap-Up (LO 2)

In this final session, students will learn how to write an academic abstract or executive summary.

Students will have a chance in class to write the abstract or executive summary for their paper.

Preparation: Bring a sample abstract/executive summary section from a journal article that the student is reading/has read for their final paper.

### 3. Grading :

#### 3.1 Grading Methods

This course is graded based on the production of a portfolio of outlines for their final paper.

The portfolio will include a draft or an outline of

Criterion 1. Abstract/Executive Summary/Introduction/Literature Review\*

Criterion 2. Methodology/Results/Findings\*

Criterion 3. Discussion/Conclusion\*

Criterion 4. Table/Figure formatting

\* The names of these sections may differ based on each student's organizing system for their own paper.

Criteria 1-3 will be graded as follows:

- 30 pts = Student has included all the required information for these sections
- 20 pts = Student has included most of the required information for these sections
- 10 pts = Student has not included most of the required information for these sections
- 0 pts = Student has included none of the required information for these sections or the sections are missing

Criterion 4 will be graded as follows

- 10 pts = Student has formatted a table and/or figure following Chicago formatting style.

- 5 pts = Student has formatted a table and/or figure following Chicago formatting style but with some errors
- 0 pts = Student has not formatted a table and/or figure following Chicago formatting style or no table/figure was created

### 3.2 Grading Criteria

- 60-100 pts = Pass
- 0-60 pts = Fail

### 4. Textbooks : (4-1:Required 4-2:Others)

4.1 None

4.2 Petchko, K. (2018). How to write about economics and public policy. Academic Press.

### 5. Software Used in Lectures :

None

### 6. Auditing ; Allow or Not Allow :

Allow

### 7. Note :

None

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|                                                      |                                 |
|------------------------------------------------------|---------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                            |
| Course Number                                        | MOR2050E                        |
| Course Name                                          | Introduction to Data Science II |
| Instructor                                           | TAKENOUCHI Takashi／竹之内 高志       |
| Email Address                                        |                                 |
| Term／Day／Period                                      | Fall (Session II) 秋後／Thu 木／3 4  |
| Credits                                              | 2                               |

## 1. Course Description and the Learning Objectives :

### [Course Description]

Statistics and machine learning are among basic tools in policy studies for mining data and model building. In this course, we study several important statistical methods and machine learning using examples and learn the process of analyzing the practical data based on programming language R. The basic knowledge taught in Introduction to Data Science or an equivalent introductory course on statistics is assumed.

### [Course Goals]

To understand the principles of major data analysis techniques and to learn how to practically apply them using R.

### [Related Diploma Policy (DP)]

Economics, Planning and Public Policy Program (EPP): 2, 3

Macroeconomic Policy Program (MEP1, Master of Public Policy): 1

Macroeconomic Policy Program (MEP1, Master of Public Economics): 1

Macroeconomic Policy Program (MEP2): 1

One-year Master's Program of Public Policy (MP1): 5

Two-year Master's Program of Public Policy (MP2): 5

Public Finance Program (PF): 2, 4

Young Leaders Program (YLP): 2

## 2. Course Outline :

1. Introduction
2. How to use R
3. Probability
4. Statistics
5. Supervised learning
6. Maximum Likelihood Estimation
7. Regression
8. Model selection
9. Cross validation
10. Classification
11. Classification method based on Probabilistic model
12. Decision tree, Random Forest
13. Unsupervised learning
14. PCA
15. Clustering

[Out-of-class Learning]

Please check lecture materials uploaded on Teams.

### 3. Grading :

Based on reports of each week.

[Grading Criteria]

Student's achievement of the Course Goals is:

A : Achieved the goal at a high level

B : Achieved the goal at a satisfactory level

C : Achieved the goal at a generally acceptable level

D : Achieved the goal at a minimum acceptable level

E : Did not achieve the goal

### 4. Textbooks : (4-1:Required 4-2:Others)

4-1:Required

Reference will be given in class.

4-2:Others

### 5. Software Used in Lectures :

[RStudio] or [R and your favorite text-editor] is required.

### 6. Auditing ; Allow or Not Allow :

Allow

### 7. Note :

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|             |                                          |
|-------------|------------------------------------------|
| 開講年度（4月-3月） | 2025                                     |
| 科目番号        | STI2070J                                 |
| 授業名         | 科学技術外交論                                  |
| 担当者         | HIROKI Kenzo, SUNAMI Atsushi／廣木 謙三, 角南 篤 |
| メールアドレス     |                                          |
| 学期／曜日／時限    | Fall (Session II) 秋後／Sat 土／1 2           |
| 単位数         | 2                                        |

## 1. 本授業の概要及び到達目標：

近年、科学技術外交が世界であらためて注目されはじめた。学術的にも『科学技術外交』という考え方が議論され始めたのも最近になってのことであるが、実際に科学技術が外交の手段として、あるいは、科学技術が国境を越えて国家間の関係と深い影響を持つことについては長い歴史がある。例えば、科学技術外交が戦後の日米関係の再構築に大きな役割を果たし、米ソ冷戦の時に米国と旧ソ連との間の信頼関係に貢献したともいわれている。欧米のみならず中東でも、イスラエル・パレスチナ、アラブ諸国との関係構築をはじめ、中南米やアジア、アフリカにおいても同様の多くの事例が存在している。

一方地球規模課題については、「持続可能な開発のための2030アジェンダ」（SDGs）が世界的な科学技術外交のプラットフォームとなっている。SDGsの個々の目標を横断的且つ包括的に解決していくメカニズムのひとつが科学技術イノベーションであるとして期待が寄せられているなか、感染症や気候変動といった地球規模の課題を解決するためには、科学技術イノベーションと国際間協同がうまく機能することが不可欠であるという認識が広まってきたことが背景にある。同様に、気候変動と海洋環境については、現在、「国連海洋科学の10年」がユネスコを中心に展開されている。また、水問題については「持続可能な開発のための水行動の10年」が各国政府および国連水関連30機関の参加を得て実施され、防災については「仙台行動枠組み」に基づき国連防災機関（UNDRR）の事務局支援を得て各国政府により進められている。

以上を踏まえ、本講義は、総論部分と特論部分に分かれる。

（総論部分）

### 科学技術外交の類型化

科学技術外交とは、科学技術と外交という本来性質の異なる二つの世界がつながることによって、国境を越えた課題の解決に向け実効的な外交を展開するためのアプローチのひとつである。2010年に英国の王立協会が出した

「New Frontiers in Science Diplomacy」では、真理を探究する科学と国益を駆け引きする外交とは、本来全く異質の存在であるが、科学技術と外交の間には長い歴史のなかで密接な関係が築かれてきたと指摘している。また、科学技術外交に関する研究や教育でリーダー的な役割を担っているアメリカ科学振興協会（AAAS）は、科学技術外交を専門とする部署を設置し、歴代の国務長官の科学顧問を中心に専門誌の発行や教育プログラムの作成など活発な活動を行っている。

先述した「New Frontiers in Science Diplomacy」は、科学技術外交を次の三つ側面から整理している。①「外交の中の科学(science in diplomacy)」、②「科学のための外交(diplomacy for science)」、③「外交のための科学(science for diplomacy)」である。①「外交の中の科学」とは、外交政策の意思決定過程に科学技術の知見を助言や提言などによってインプットすることである。②「科学のための外交」とは、外交を通じて国際的な科学技術分野における協力を促進することを意味する。そのなかには、グローバルに展開する科学技術イノベーションやオープンイノベーションに大きな影響を与える国際ルールや標準化、知財管理、そして人（研究開発人材）の国際移動にかかわる取り決めをめぐる外交も含まれる。③「外交のための科学」は、科学技術分野における国際協力や世界的な研究者のネットワークやコミュニティを、国家間の関係構築に役立てることである。かつて米国の国際政治学者のジョセフ・ナイ(Joseph Nye)は、国力のひとつの形として「ソフトパワー」の重要性を論じた際に、科学技術もその源泉のひとつであるとしている。

このように、科学技術外交と一言で言っても、「外交の中の科学」、「科学のための外交」や「外交のための科学」といった三つの側面が存在する。これらは、相互に補完的であり、実効的な科学技術外交には三者をバランスよく実施していくことが必要である。これまで日本は、比較的に「科学のための外交」においてある一定程度の成果を挙げてきてはいるものの、他方で、「外交のための科学」の展開には、より戦略的な取り組みや、それを実施

するためのより実効的な基盤の強化が肝要である。換言すると、明確な外交戦略のもとにある国益と科学技術イノベーションの源泉である研究者のモチベーションをうまく重ね合わせ、二つを共生させることである。

また、社会科学全体を広く見渡すと、科学技術外交の研究に関連する研究も存在する。科学を知識として社会学のアプローチで分析する知識社会学や、国際関係論のなかでいう構成主義や比較政治学という新制度主義では、知識と政治社会の関係をとり上げてきている。加えて、科学を科学者が構成するコミュニティとして捉え、STS（科学技術社会論）のなかでも、政治と科学、あるいは国家と科学の関係についても研究されている。こうした関連する先行研究は、科学技術外交研究を学術的に発展させるうえで重要なレファレンスとして活用されることが期待される。

以上の総論部分においては上記科学技術外交の類型化、分析の理論と実際を習得し、事例研究を通じそれらを国内外の政策に応用する能力を身に着ける。

#### （特論部分）

特論部分においては事例として水と災害分野を（水防災を中心に）取り上げる。まず防災の国内政策の要諦を学んだうえでその科学技術外交への展開について議論する。また世界の水問題を概観したうえで現在進行している国際水議論の内容を把握する。それらを踏まえたうえで、水・防災における国連その他の国際議論プロセス（＝同分野の国連等における科学技術外交プロセス）について議論し、科学技術分野の国内・国際政策の結節とそれらの一体的推進を行うための政策分析・形成能力の向上を図る。さらに国際河川における水・災害分野を中心とした事例分析を通じて、国家間利害調整の実際と問題（＝現場における科学技術外交プロセス）を学び、科学技術と地域外交の関係についての分析を行うことで、科学技術外交の現場における政策実行能力の向上を図る。

#### 【関連するディプロマポリシー(DP)】

科学技術イノベーション政策プログラム

特に強く関連するDP：① ④ ⑤

関連するDP：②

### 2. 各授業のテーマ：

総論部分（ディプロマポリシー1,2）

科学技術外交の類型化と分析のフレームワークの概要

事例研究：日本（1）対先進国、同志国、経済安全保障など

事例研究：日本（2）対途上国、グローバルサウスなど

事例研究：米国

事例研究：中国

事例研究：欧州、中東、その他

事例研究：地球規模課題

プレゼンテーション

特論部分（ディプロマポリシー 1, 2）

防災・技術・外交

世界の水問題と水の国際議論

水に関する国際議論プロセス

国際河川における水外交と統合水資源管理

### 3. 成績の評価方法：

総論2, 特論1の割合で成績を総合評価する。

総論部分

→レポート（科学技術外交に関するケーススタディ）1本：80%

→クラスディスカッション：20%

特論部分

→講義への参加及び議論への貢献：50%

→セミナーにおける発表：50%

#### 【成績評価基準】

- A: 到達目標について高い水準で達成している
- B: 到達目標について満足できる水準で達成している
- C: 到達目標について概ね達成している
- D: 到達目標について最低限の水準は達成している
- E: 到達目標について達成できていない

#### 4. テキスト、参考文献等：(4-1:必携のテキスト 4-2:その他)

New Frontiers in Science Diplomacy Royal Society, UK

<https://royalsociety.org/-/media/policy/publications/2010/4294969468.pdf>

Science and Diplomacy, AAAS, US

<https://www.sciencediplomacy.org/>

(特論部分：参考文献)

“Sendai Framework for Disaster Risk Reduction (DRR)”:

[https://www.preventionweb.net/files/43291\\_sendaiframeworkfordrren.pdf](https://www.preventionweb.net/files/43291_sendaiframeworkfordrren.pdf)

“UN Convention on the Law of the Non-navigational Uses of International Watercourses”:

[http://legal.un.org/ilc/texts/instruments/english/conventions/8\\_3\\_1997.pdf](http://legal.un.org/ilc/texts/instruments/english/conventions/8_3_1997.pdf)

#### 5. 授業で使用するソフトウェアについて：

#### 6. 聴講の可否：

否

#### 7. 履修上の注意：

戻る

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|                                                      |                                        |
|------------------------------------------------------|----------------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                                   |
| Course Number                                        | STI2230E                               |
| Course Name                                          | Energy Data Analysis                   |
| Instructor                                           | TAKAHASHI Kazuaki, ETO Ryo／高橋 一彰, 江藤 諒 |
| Email Address                                        |                                        |
| Term／Day／Period                                      | Fall (Session II) 秋後／Fri 金／3 4         |
| Credits                                              | 2                                      |

## 1. Course Description and the Learning Objectives :

### [Course Description]

Energy data analysis is the foundation for developing sound national energy policies as it shows where interventions are required and what opportunities are available. Many countries struggle to make informed policy decisions at the national level because of lacking qualified energy data analysis. The pressures and complexities of international energy markets and the imperatives of global issues such as climate change mean that countries need to understand and comply with international conventions on monitoring and reporting. The job of energy data analysis is more complex than ever before and requires the ability to ensure the quality, consistency and compatibility of energy data.

You will gain a broad understanding of energy systems as a whole, covering supply and demand, the interrelationships and dependencies between different sectors and a multi-vector multi-sector approach to analysis. You will learn about the theory and practice of data analysis and will gain practical experience of the challenges of working with different data sets relating to energy throughout the program and modules.

We will provide software to develop an economic outlook model and energy data base by free of charge. Especially Master Course students could use the outcome of this course for writing their policy papers or independent studies with energy and economic outlook.

This course is jointly conducted with the Institute of Energy Economics, Japan.

This course is related to the following SDGs:

7 (Energy), 8 (Economic Growth), 13 (Climate Action)

### [Related Diploma Policy (DP)]

One-year Master's Program of Public Policy (MP1): ⑤

Two-year Master's Program of Public Policy (MP2): ⑤

Science, Technology and Innovation Policy Program (STI)(Master): ①②③④⑤

### [Course Goals]

Students can:

- (1) identify the challenges to be solved for developing sustainable energy policy
- (2) discuss the challenges and potential solutions
- (3) raise the issues that need to be studied in more detail to get meaningful policy framework

## 2. Course Outline :

|         |                                         |                                        |
|---------|-----------------------------------------|----------------------------------------|
| Week1-1 | Introduction                            | Structure and schedule of the class    |
| Week1-2 | Introduction (cont.)                    | Introduction of model analysis         |
| Week2-1 | Introduction of Energy<br>Balance Chart | Energy flow, Self-sufficient rate etc. |

|         |                                   |                                                                                         |
|---------|-----------------------------------|-----------------------------------------------------------------------------------------|
| Week2-2 | Analysis of Energy Balance Chart  | Explanation and exercise                                                                |
| Week3-1 | Statistics of Energy              | Examples of major statistics (IEA, BP etc.), Unit conversion                            |
| Week3-2 | Introduction of Model Analysis    | Explanation of useful models such as Optimization model, General equilibrium model etc. |
| Week4-1 | Introduction of Model Development | Economate, Simple Model                                                                 |
| Week4-2 | Exercise of Model                 | Exercises based on given tasks                                                          |
| Week5-1 | Model Analysis                    | Make a model based on Energy Balance Chart                                              |
| Week5-2 | Model Analysis                    | Analysis on each sector such as residential, transportation, industry etc.              |
| Week6-1 | Exercise of Model                 | Exercises based on given tasks                                                          |
| Week6-2 | Exercise of Model                 | (Individual guidance to improve the Model)                                              |
| Week7   | Exercise of Model                 | (Preparation for the presentation)                                                      |
| Week8-1 | Presentation                      | Presentation                                                                            |
| Week8-2 | Presentation and wrap up          | Presentation and comprehensive discussion based on what has been learnt in this course  |

※Contents of the Course might be changed due to inquiries or expectations of students.

#### [Out-of-class Learning]

Students are expected to be active participants in the class. After class, students should review the contents of the lecture and prepare for presentation.

### 3. Grading :

Discussion at the class 20%, Homework 20%, Presentation 60%.

A: Can identify challenges and propose solutions for a meaningful policy framework through in-depth analysis of energy data

B: Can identify challenges and propose solutions for a meaningful policy framework through general analysis of energy data

C: Can identify challenges for a meaningful policy framework through general analysis of energy data

D: Can analyze energy data for a meaningful policy framework

E: Not acquire basic knowledge of sustainable energy policy and cannot explain what it is.

### 4. Textbooks : (4-1:Required 4-2:Others)

1. Statistical Review of World Energy
2. Eurostat Statistic Explained - Energy Balance
3. World Energy Balances Highlights, International Energy Agency (IEA)
4. 2024 EDMC Handbook of Japan's & World Energy & Economic Statistics - The Energy Data and Modelling Center, The Institute of Energy Economics, Japan

### 5. Software Used in Lectures :

Economate

### 6. Auditing ; Allow or Not Allow :

Allow

## 7. Note :

Registered students should have their own PC running Microsoft Windows 7,10 or 11, not a Mac in the class. The Economate software will be provided for free of charge, which is a PC-based software package designed to forecast and analyze policy options using the econometric method. We will deliver the Economate at the end of the course on Week 2. If you cannot successfully install it on your PC, it might be difficult to take this course. We will also provide the Access Code and Password to the EDMC data bank, which is an energy database provided by IEEJ for free.

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|------------------------------------------------------|----------------------------------------|
| Academic Year<br>(April - March of<br>the next year) | 2025                                   |
| Course Number                                        | STI7231E                               |
| Course Name                                          | Energy Data Analysis                   |
| Instructor                                           | TAKAHASHI Kazuaki, ETO Ryo／高橋 一彰, 江藤 諒 |
| Email Address                                        |                                        |
| Term／Day／Period                                      | Fall (Session II) 秋後／Fri 金／3 4         |
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## 1. Course Description and the Learning Objectives :

### [Course Description]

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You will gain a broad understanding of energy systems as a whole, covering supply and demand, the interrelationships and dependencies between different sectors and a multi-vector multi-sector approach to analysis. You will learn about the theory and practice of data analysis and will gain practical experience of the challenges of working with different data sets relating to energy throughout the program and modules.

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This course is jointly conducted with the Institute of Energy Economics, Japan.

This course is related to the following SDGs:

7 (Energy), 8 (Economic Growth), 13 (Climate Action)

### [Related Diploma Policy (DP)]

Science, Technology and Innovation Policy Program (STI)(Doctoral) ①②③④⑤

### [Course Goals]

Students can:

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