Syllabus

International Master's Degree Program (2014-Spring Term)

(M40030010)Management Science[Management Science]

| Ouklast | Management | | • C - : 1 | | | | |
|--|--|--------------------------|----------------------|-----------------------|-------------------|--------------------|--|
| | Management Science[Management Science] | | | | | | |
| | 1440000010 | | 0.11 | | D · · | | |
| Schedule number | M40030010 | | Subject area | General | Required or | Elective | |
| T | 0 | | D C 11 | courses | elective | 0 | |
| lime of starting a | Spring term | | Day of the | Thu.2~2 | Grean(s) | Z | |
| | 0 1 1 0 | | week,period | | 0.11 | 1 0 | |
| гасилу | Graduate Pro | ogram for Master's De | egree | | Subject | 1~2 | |
| D | • | | | | grade | | |
| Department Offered | Common | | | | Beggining | | |
| Ohanna taaahan | 今日 漆 本(| | | | grade | | |
| Charge teacher | 古田 歳, 膝し | 京 今方 MITATA YUZ | uru, FUJIWARA I | акао | | | |
| name_roman | | | | | | | |
| alphabet markj | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| In Management Science | e 1, the class o | bjective is to learn t | he introductory fi | nance on the firm | value and capit | al cost from the | |
| management point of vi | ew. | | | | | | |
| | | | | | | | |
| In Management Science | e 2, the lecture | e will focus on the st | tatistical methodo | logy frequently an | plied in manage | ment science. In | |
| particular, multivariate a | analysis will be | emphasized in the le | cture. | | | | |
| In addition, this subject | is lectured in F | English for foreign stu | idents in English c | ourse. | | | |
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| management point of vi | ew. | | - | | | | |
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| In Management Calina | 0 +1 1+ | | | I f | | | |
| In Management Science | e 2, the lecture | e will focus on the st | tatistical methodo | logy frequently ap | plied in manage | ment science. In | |
| particular, multivariate a | analysis will be | emphasized in the le | cture. | | | | |
| In addition, this subject | is lectured in t | inglish for foreign stu | idents in English c | ourse. | | | |
| Contents of class | | | | | | | |
| In Management Scienc | e 1, the class | content will be exp | plained about the | fundamental ideas | s of pricing opt | tions in financial | |
| derivatives, based on th | ie basic probab | ulity, normal random v | /ariables, geometr | ic Brownian motior | n, interest rate, | arbitrage, Black- | |
| Scholes formula, valuing | g by expected u | utility, exotic options, | and so on. | | | | |
| 8th week will be examin | ation. | | | | | | |
| | | | | | | | |
| In Management Science | e 2, the lecture | includes mathematic | al expression of r | nultivariate statisti | cal data, multiv | ariate regression | |
| analysis, principal comp | onent analysis, | and so on. | | | | | |
| | | | | | | | |
| The handout will be dist | ributed to stud | lents. Students must | learn the content | s of the handout b | efore and after | each lecture. | |
| | | | | | | | |
| In Management Science | a 1 tha alacs | content will be eve | lained about the | fundamental idea | s of pricing opt | tions in financial | |
| dorivativos bosod on th | e I, trie class | ility permet rendem y | variables respective | in Provision motion | s of pricing opt | arbitraga Black- | |
| Sebeles formule veluin | te basic probab | utility, normal random v | and as an | IC Drownan motion | i, interest rate, | arbitrage, Diack- | |
| 9th week will be exemine | g by expected t | unity, exolic options, | and so on. | | | | |
| otri week will be examin | ation. | | | | | | |
| | | | | | | | |
| In Management Science | e 2, the lecture | includes mathematic | al expression of r | nultivariate statisti | cal data, multiv | ariate regression | |
| analysis, principal comp | onent analysis, | and so on. | | | | | |
| | | | | | | | |
| The handout will be dist | ributed to stud | lents. Students must | learn the content | s of the handout b | efore and after | each lecture. | |
| | | | | | | | |
| Self Prenaration and P | view | | | | | | |
| Management Spience 1 | Materiala will | he unloaded at model | a Proview is not | cible by them | | | |
| Management Science 1 | Materials will | be uploaded at most | | | | | |
| Belated autiont Science 1 | waterials will | ne nhinaned at mood | e. Preview is pos | sible by them. | | | |
| rtelated subjects | | | | | | | |
| Nothing in particular | | | | | | | |
| Nothing in particular | | | | | | | |
| Notes for textbook | | | | | | | |
| In Management Science | 2, the lecture | materials will be dist | ributed to student | s at the class. | | | |
| In Management Science | 2, the lecture | materials will be dist | ributed to student | s at the class. | r | | |
| Reference 1 | Book title | An Introduction to I | Mathematical Fina | nce | ISBN | 978- | |
| | | | | | | 0521770439 | |

| | Author | Sheldon M. Ross | Publisher | Cambridge | Publish | 1999 | | | | | | | | |
|---|-------------------------------------|------------------------------------|-----------------------------|----------------------|---------|--|--|--|--|--|--|--|--|--|
| | | | | University | year | | | | | | | | | |
| Deference? | Real Atta | Investment Saionae | | Press, | ICDN | 079_ | | | | | | | | |
| Referencez | DOOK LILLE | Investment Science | | | ISDN | 0199740086 | | | | | | | | |
| | Author | David G. | Publisher | Oxford | Publish | 1998 | | | | | | | | |
| | | Luenberger | | University | year | | | | | | | | | |
| | | | | Press | | | | | | | | | | |
| Notes for reference | | | | | | | | | | | | | | |
| Goals to be achieved | | | | | | | | | | | | | | |
| To understand the mathematical finance theory and multivariate analysis. | | | | | | | | | | | | | | |
| To understand the mat | hematical finan | ce theory and multiva | riate analysis. | | | | | | | | | | | |
| Evaluation of achieven | nent | | . | 0.00% | 0.0% | | | | | | | | | |
| In Management Science | e I, scoring ass | signment will consist o | t term examinat | tion 80% and repor | ts 20%. | | | | | | | | | |
| In Management Scienc | e 2 students w | ill be evaluated by a t | erm report on t | he lecture (100%) | | | | | | | | | | |
| In Management Science | e 1. scoring ass | signment will consist o | f term examinat | tion 80% and report | ts 20%. | | | | | | | | | |
| - | - | | | · | | | | | | | | | | |
| In Management Science | e 2, students w | ill be evaluated by a t | erm report on t | he lecture (100%). | | | | | | | | | | |
| Examination | | | | | | | | | | | | | | |
| レポートで実施 | | | | | | | | | | | | | | |
| Details of examination | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Other information | | | | | | | | | | | | | | |
| Management Science 1 | : Takao Fujiwa | ra,Office#:B−313,phon | e:44–6946,e-ma | il:fuji313@me.com | | | | | | | | | | |
| Office Hour: 4:00 to 5:0 | 00 PM, on Wedr | nesdays (Fujiwara) | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Management Science 2 | 2: Yuzuru Miyat | a, Office#:B-411, phor | ne:44-6955,e-m | ail:miyata@ace.tut.; | ac.jp | | | | | | | | | |
| Office Hour: 4 o clock | to 5 o clock in t | ine atternoon, Tuesda | y (Prot. Miyata) | | | | | | | | | | | |
| Management Science 1 | : Takao Fuiiwa | ra Office# [.] B−313 phon | e [.] 44–6946 e–ma | ilfuii313@me.com | | | | | | | | | | |
| Office Hour: 4:00 to 5:0 | 00 PM, on Wedr | nesdays (Fujiwara) | 0.11 00 10,0 110 | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Management Science 2 | 2: Yuzuru Miyat | a, Office#:B−411, phor | ne:44-6955,e-m | ail:miyata@ace.tut. | ac.jp | | | | | | | | | |
| Office Hour: 4 o'clock t | to 5 o'clock in t | he afternoon, Tuesda | y (Prof. Miyata) | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Reference URL | /kakan A / | | | | | | | | | | | | | |
| http://pm.hse.tut.ac.jp/ | /kakenA/ | | | | | | | | | | | | | |
| Office hours | | | | | | | | | | | | | | |
| Management Science 1 | l: Takao Fujiwa | ra,Office Hour: 4:00 to | 5:00 PM, on W | ednesdays | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| Management Science 2 | 2: Yuzuru Miyata Li Takaa Euiiwa | a,Office Hour: 4 o'cloc | k to 5 o'clock ii | n the afternoon, Tu | iesday | | | | | | | | | |
| Management Science | i: Takao Fujiwai | ra,Office Hour: 4:00 to | | ednesdays | | | | | | | | | | |
| Management Science 2: Yuzuru Miyata Office Hour: 4 oʻclock to 5 oʻclock in the afternoon. Tuesday | | | | | | | | | | | | | | |
| Relations to attainment objectives of learning and education | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | |
| Key words | | | | | | | | | | | | | | |
| finance, stochastic pro | cess, multivaria | ite analysis | | | | | | | | | | | | |
| finance, stochastic pro | cess, multivaria | ite analysis | | | | finance, stochastic process, multivariate analysis | | | | | | | | |

(M40030050)Japanese Life Today[Japanese Life Today]

| Subject name[English] | Japanese Life Today[Japanese Life Today] | | | | | | | |
|---------------------------|---|----------------------|--------------------|--------------------|-----------------|--|--|--|
| Schedule number | M40030050 | Subject area | General | Required or | Elective | | | |
| | | | courses | elective | | | | |
| Time of starting a course | Spring term | Day of the | Wed.3~3 | Credit(s) | 2 | | | |
| | | week,period | | | | | | |
| Faculty | Graduate Program | n for Master's Degre | Subject grade | 1~2 | | | | |
| Department Offered | Common | | | Beggining grade | M1, M2 | | | |
| Charge teacher name[Roman | Lim Pang Boey, 툇 | 泉田 英雄,澁谷 昇 | 昆,大門 裕之,齊萠 | を 大樹,穗積 直 裕 | 路,髙嶋 孝明,井 | | | |
| alphabet mark] | 佐原 均,藤原 | 孝男,寺嶋 一彦, | 加藤 三保子,柴 | 崎 一郎, 鈴木 新 | 一, 原 邦彦 Lim | | | |
| | Pang Boey, IZUN | 1IDA Hideo, SHIBU | YA Akira, DAIMON | N Hiroyuki, SAITO | H Taiki, HOZUMI | | | |
| | Naohiro, TAKASHIMA Takaaki, ISAHARA Hitoshi, FUJIWARA Takao, TERASHIMA Kazuhiko | | | | | | | |
| | KATOH Mihoko, S | HIBASAKI Ichiro, S | UZUKI Shinichi, HA | RA Kunihiko | | | | |
| Numbering | | | | | | | | |

Objectives of class

In this series of lectures, the excellent experts of our university from different areas will impart for the engineering students highly interesting insider knowledge. The participants will get to know Japan of today from technical, economic and social viewpoints.

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Contents of class

1. 4/9 Lim Pang Boey "Japanese Education System"

Learn about the Japanese education system and what the life of a student is like in Japan?

2. 4/16 Izumida Architecture undergoes deterioration soon after its completion, and may get damage by disaster. Japanese architect/engineer make an effort to restore the damaged architectural heritage.

3. 4/23 Shibuya This lecture aims to introduce Japan's international cooperation and mainly focuses on its historical background, basic implementation framework/system and activities of Official Development Assistance (ODA) of Japanese Government, and further, current issues for sustainable development of developing countries.

4. 5/7 Daimon "Working in Japanese Company"

Learn and discuss about working in Japanese company and what you should do for it.

5. 5/14 Daimon "Waste Management"

Learn and discuss about the policy and concept on waste management in Jpanese society.

6. 5/21 Saito "Earthquake safety of buildings in Japan"

The purpose of this lecture is to understand the history of earthquake disasters in Japan and lessons learned from those disasters for the safety of buildings.

7. 5/28 Hozumi "Japan's Modernization Suppoted by Electric Power" Japan's modernization started in the middle of 19 th centry when a long period of isolation policy has been terminated. Her repid growth until now has been strongly supported by electric power. Now Japan's power supply is recognized as the best quality in the world. In the lecture, history and state of the art of Japan's electric power will be presented.

8. 6/4 Takashima "A global company doing business in Japan"
IBM, a global enterprise, is running business in Japan more than 75 years.
A history and transformation of IBM's business in Japan are introduced.
An insight that the lecturer got from the experience of working in IBM for 32 years is also shared.

9. 6/11 Isahara "Computer and Japanese"

Japanese language is very much different from other languages. Problems caused by such differences during computer processing of Japanese are discussed in this lecture.

10. 6/18 Fujiwara "Japaneses-style Business Management"

Since 1980s, Japanese management style has become popular in automobile, electrical, and electronics industries in terms of employment,

promotion, and industrial relations for quality control and skill transfer. We will discuss its advantages and disadvantages.

11. 6/25 Terashima "Robot in Japan"

Robot is very popular in Japan. Especially, industry robot is number one all over the world.

The year of 1980 is said to be the first year of robotics in Japan.

Since then, Japanese robot has been extremely developed. In this lecture, history of robotics development and state of art in robot is lectured.

12. 7/2 Kato "Globalization and diversification of English"

English is the common international language. This lecture considers how English is used in the world, examining and contrasting the different varieties of English spoken by both native and non-native speakers. The many social and linguistic problems caused by the spread of English will be discussed.

13. 7/9 Shibazaki In this lecture, I will give an example of reseach and development of new technology by Japanese company. The thin film Hall element or Hall sensor is a high sensitivity magnetic sensor which can detect magnetic flux density by using Hall effect. The main application is magnetic sensors to detect angular velocity of permanent magnet rotor of DC brushless motor or Hall motor. Why the Hall element must be developed and used so much is an interesting story. It may be also shown that how mass prosuction technology of Hall sensors was developed.

14. 7/16 Suzuki "Relativety, Energy and Japan"Energy is one of the biggest issues for Japan.The class reviews the origin of the concept of nuclear energy and the relation between nuclear energy and Japan.

15. 7/23 Kunihiko Hara: "Excellent Leaders for creating tommorow of Japan"

Based on lecturer's work experiences, i.e. his career at DENSO Corporation as a member of the board and a director of DENSO Research Laboratories, Nippon Soken, Inc. as a senior executive director and a member of the board, and Genesis Research Institute, Inc. as an executive vice president and a member of the board, and teaching experience in "Taylor-Made and Baton-Zone" graduate course for three and half years in TUT, an insight what the excellent leaders should be will be introduced.

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| Self Preparation and Review | | |
|-----------------------------|--|--|
| | | |
| Related subjects | | |
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| ない。 | | |
| Notes for textbook | | |
| Notes for reference | | |
| Goals to be achieved | | |
| Evaluation of achievement | | |
| Examination | | |
| レポートで実施 | | |

| By Report |
|--|
| Details of examination |
| |
| Other information |
| |
| Reference URL |
| |
| Office hours |
| 授業の後 |
| 授業の後 |
| Relations to attainment objectives of learning and education |
| |
| |
| |
| |
| |
| Key words |
| 日本、日本人、文化、宗教、政治経済、技術 |
| 日本、日本人、文化、宗教、政治経済、技術 |

(M40030060)Intercultural Communication[Intercultural Communication]

| Subject name[English] | Intercultural Con | nmunication[Intercult | ural Communicati | on] | | | | | |
|--|--|---|------------------|---------------------|-------------------|--|--|--|--|
| Schedule number | M40030060 | Subject area | General | Required or | Elective | | | | |
| | | | courses | elective | | | | | |
| Time of starting a course | Spring term | Day of the | Mon.2~2 | Credit(s) | 2 | | | | |
| Faculty | Graduate Progra | Graduate Program for Master's Degree Subject made 1~9 | | | | | | | |
| Department Offered | Common | in for muscor o bogic | | Beggining grade | | | | | |
| Channe teacher neme[Berren | 하세 마원고 MI | | | | | | | | |
| charge teacher name_roman | | JANIATSO TUKIKO | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| This is a Japanese conversation | i class mixed with | n the international a | and Japanese | students of the reg | gular course. The | | | | |
| students will learn basic Japanes | e grammar to spea | ak Japanese. | | | | | | | |
| This is a Japanese conversatior students will learn basic Japanes | n class mixed wit e grammar to spea | h the international a ak Japanese. | and Japanese s | students of the reg | gular course. The | | | | |
| Contents of class | | | | | | | | | |
| This class has the following three | parts. | | | | | | | | |
| | | | | | | | | | |
| (1) Japanese grammar points for g | roup activities | | | | | | | | |
| (2)Group activities (conversation) | practice & discuss | ion) | | | | | | | |
| ③Elementary Japanese lessons | | , | | | | | | | |
| - · · | | | | | | | | | |
| You will learn the following lesson | s in Jananese text | book "Minna no Niho | ngo" | | | | | | |
| 1. Pronunciation of Japanese & L | esson 1 | | ingo . | | | | | | |
| 2. Pronunciation of Japanese & L | esson 2 | | | | | | | | |
| 3 Lesson 3 4 | | | | | | | | | |
| 4. Lesson 5.6 | | | | | | | | | |
| 5. Lesson 7.8 | | | | | | | | | |
| 6. Lesson 9,10 | | | | | | | | | |
| 7. Lesson 11,12 | | | | | | | | | |
| 8. Lesson 13,14 | | | | | | | | | |
| 9. Lesson 15,16 | | | | | | | | | |
| 10.Lesson 17,18 | | | | | | | | | |
| 11.Lesson 19,20 | | | | | | | | | |
| 12.Lesson 21,Nonverbal communio | cation | | | | | | | | |
| 13.Nonverbal communication | | | | | | | | | |
| 14.Lesson 22,23 | | | | | | | | | |
| 15.Lesson 24,25 | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |
| This class has the following three | parts. | | | | | | | | |
| | | | | | | | | | |
| Dulananese grammar points for m | roup activities | | | | | | | | |
| 2 Group activities (conversation | practice & discuss | ion) | | | | | | | |
| ③Elementary Japanese lessons | | , | | | | | | | |
| | | | | | | | | | |
| You will learn the following lesson | s in Jananese text | book "Minna no Nibo | ngo" | | | | | | |
| 1. Pronunciation of Japanese & J | esson 1 | | | | | | | | |
| 2. Pronunciation of Japanese & 1 | esson 2 | | | | | | | | |
| 3. Lesson 3.4 | | | | | | | | | |
| 4. Lesson 5.6 | | | | | | | | | |
| 5. Lesson 7.8 | | | | | | | | | |
| 6. Lesson 9.10 | | | | | | | | | |
| 7. Lesson 11.12 | | | | | | | | | |
| | | | | | | | | | |

8. Lesson 13,14
9. Lesson 15,16
10.Lesson 17,18
11.Lesson 19,20
12.Lesson 21,Nonverbal communication
13.Nonverbal communication
14.Lesson 22,23
15.Lesson 24,25

Self Preparation and Review

Related subjects

Extra-Curricular Japanese Classes (Nihongo Hokoo): If you want to know more details, please contact the International Affairs Division (Kokusaikooryuuka).

Extra-Curricular Japanese Classes (Nihongo Hokoo): If you want to know more details, please contact the International Affairs Division (Kokusaikooryuuka).

Notes for textbook

みんなの日本語 初級 I 翻訳・文法解説 英語版(Minnna no Nihongo 1 Translation & Grammatical Notes English) ¥2,000 みんなの日本語 初級 I 翻訳・文法解説 英語版(Minnna no Nihongo 1 Translation & Grammatical Notes English) ¥2,000 Notes for reference

Goals to be achieved

Evaluation of achievement Homework 40% The term examination (L.1~L.22)60% Homework 40% The term examination (L.1~L.22)60% Examination

Details of examination

Other information

office: B-513 e-mail: yukiko@las.tut.ac.jp phone: 44-6962 office: B-513 e-mail: yukiko@las.tut.ac.jp phone: 44-6962 Reference URL

Office hours

Monday 13:00-13:30 Monday 13:00-13:30

Relations to attainment objectives of learning and education

(M41610010)Seminar on Mechanical Engineering I[Seminar on Mechanical Engineering I]

| Subject name[English] | Seminar on Mech | anical Engineerin | ng I[| Seminar on Mechan | ical Engineering I] | | |
|-------------------------------------|-----------------------|-------------------|-------|----------------------|---------------------|-------------------|--|
| Schedule number | M41610010 | Subject area | | Advanced | Required or | Required | |
| | | | | Mechanical | elective | | |
| | | | | Engineering | | | |
| Time of starting a course | Year | Day of th | 10 | Intensive | Credit(s) | 4 | |
| | | week,period | | | | | |
| Faculty | Graduate Progran | n for Master's De | egre | e | Subject grade | 1~2 | |
| Department Offered | Mechanical Engine | eering | | | Beggining | | |
| | | | | | grade | | |
| Charge teacher name[Roman | S1糸教務委員 11 | kei kyomu Iin−S | | | | | |
| alphabet mark | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| The seminar aims to provide a br | road understanding | of the mechanica | al e | ngineering available | for the master the | sis research of a | |
| student. | | | | | | | |
| The seminar aims to provide a br | road understanding | of the mechanica | al e | ngineering available | for the master the | sis research of a | |
| student. | | | | | | | |
| Contents of class | | 6 1 1 1 | | | | | |
| The class provides both of funda | amental knowledge | of his/her maste | er t | hesis research worl | and the most ad | vanced results in | |
| the related field by reading rese | earch papers and n | nonographs. The | co | ntents of the class | aepend on the s | supervisor. To be | |
| The close provides both of fund | ors. | of his /hor most | or + | hadia radarah war | and the meet ad | unneed reculte in | |
| the related field by reading rece | americal knowledge | on his/her haste | | ntents of the class | depend on the c | upervisor. To be | |
| announced by individual supervise | ors | nonographs. The | | | | apervisor. To be | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
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| Notes for toutheak | | | | | | | |
| Taythack or material will be made | , available from the | | | | | | |
| Textbook or material will be made | available from the | supervisors. | | | | | |
| Notes for reference | | supervisors. | | | | | |
| | | | | | | | |
| Goole to be echieved | | | | | | | |
| To acquire fundamental knowledge | e of individual rese | arch fields | | | | | |
| To acquire the ability to find prob | lems the ability to | solve the proble | me | and the presentatio | n skill | | |
| | forme, and ability to | | | | | | |
| To acquire fundamental knowledge | e of individual rese | arch fields | | | | | |
| To acquire the ability to find prob | lems the ability to | solve the proble | ms | and the presentatio | n skill | | |
| | forme, and ability to | | | | | | |
| Evaluation of achievement | | | | | | | |
| Coursework presentation and/or | report. | | | | | | |
| Coursework, presentation and/or | report. | | | | | | |
| Examination | • | | | | | | |
| | | | | | | | |
| Details of examination | | | | | | | |
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| Other information | | | | | | | |
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| Beference LIBI | | | | | | | |
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| Office hours | | | | | | | |
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| Relations to attainment objective | es of learning and e | ducation | | | | | |
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(M41610020)Seminar on Mechanical Engineering II[Seminar on Mechanical Engineering II]

| Subject name[English] | Seminar on Mechanical Engineering II[Seminar on Mechanical Engineering II] | | | | | | |
|-------------------------------------|--|--------------|-----------|-----------------------|--------------------|--------------------|--|
| Schedule number | M41610020 | Subject a | area | Advanced | Required or | Required | |
| | | | | Mechanical | elective | | |
| | | | | Engineering | | | |
| Time of starting a course | Year | Day of | f the | Intensive | Credit(s) | 2 | |
| E h. | | week,per | iod | | 0.11 | 0.0 | |
| | Graduate Progran | n for Maste | r's Degre | e | Subject grade | 2~2 | |
| Department Offered | Mechanical Engine | eering | | | grade | | |
| Charge teacher name[Roman | S1系教務委員 1 | kei kyomu l | in-S | | 9 | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| The seminar aims to provide a br | oad understanding | of the mec | hanical e | ngineering available | for the master the | sis research of a | |
| student. | | | | | | | |
| The seminar aims to provide a br | oad understanding | of the mec | hanical e | ngineering available | for the master the | esis research of a | |
| student. | | | | | | | |
| Contents of class | | | | | | | |
| The class provides both of funda | amental knowledge | of his/her | master t | hesis research wor | k and the most ad | vanced results in | |
| the related field by reading rese | arch papers and n | nonographs | . The co | ontents of the clas | s depend on the s | supervisor. To be | |
| The class provides both of funde | ors. | of his /hor | montor t | hadia radarah war | k and the meet ad | vanaad raquita in | |
| the related field by reading rese | americal knowledge | or his/her | | nesis research wor | s depend on the s | supervisor. To be | |
| announced by individual superviso | ors | nonographs | . The co | filterits of the clas | s depend on the s | supervisor. To be | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| | | | | | | | |
| Notes for textback | | | | | | | |
| Textbook or material will be made | a available from the | supervisor | e | | | | |
| Textbook or material will be made | available from the | supervisor | s. s | | | | |
| Notes for reference | | caper neer | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the p | oroblems, | and the presentati | on skill. | | |
| | | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the p | oroblems, | and the presentati | on skill. | | |
| | | | | | | | |
| Evaluation of achievement | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | |
| Coursework, presentation and/or | report. | | | | | | |
| Examination | | | | | | | |
| | | | | | | | |
| Details of examination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |
| | | | | | | | |
| Reference URL | | | | | | | |
| | | | | | | | |
| Office hours | | | | | | | |
| | | | | | | | |
| Relations to attainment objective | s of learning and a | ducation | | | | | |
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(M41610030)Thesis Research on Mechanical Engineering[Thesis Research on Mechanical Engineering]

| Subject name[English] | Thesis Research | on Mechanical Engi | neering[Thesis Pess | arch on Mechanic | al Engineering] | | | |
|--|---------------------|------------------------|---------------------|---------------------|---------------------|--|--|--|
| | MA1610020 | Subject area | Advanced | Permined or | | | | |
| Schedule number | M41010030 | Subject area | Advanced | Required or | Required | | | |
| | | | Mechanical | elective | | | | |
| | | | Engineering | | - | | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 | | | |
| | | week,period | | | | | | |
| Faculty | Graduate Progra | am for Master's Degr | ee | Subject grade | 1~2 | | | |
| Department Offered | | | | Beggining | | | | |
| | | | | grade | | | | |
| Charge teacher name[Roman | S1系教務委員, | 各教員 1kei kyomu] | lin-S, KAKUKYOUIN | Kakukyouin | | | | |
| alphabet mark] | | | | | | | | |
| Numbering | | | | | | | | |
| | | | | | | | | |
| Objectives of class | | | | | | | | |
| The thesis research aims to p | rovide a practical | experience of rese | earch work, and to | acquire research | skills with deep | | | |
| understanding of the relevant kno | owledge. | | | | | | | |
| The thesis research aims to p | rovide a practical | experience of rese | earch work, and to | acquire research | skills with deep | | | |
| understanding of the relevant kno | owledge. | | | | | | | |
| Contents of class | | | | | | | | |
| The research subject depends | on the supervisor | r and the research | group you join. Ind | lividual students v | vill have different | | | |
| research subjects. Discuss with v | our supervisor. | | - | | | | | |
| The research subject depends | on the supervisor | r and the research | group you join. Ind | lividual students v | vill have different | | | |
| research subjects Discuss with y | our supervisor | | | | | | | |
| Self Prenaration and Review | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Related subjects | | | | | | | | |
| | | | | | | | | |
| Notes for textbook | | | | | | | | |
| Reference and material will be av | ailable from the su | Inervisor | | | | | | |
| Reference and material will be av | ailable from the su | inervisor | | | | | | |
| Notes for reference | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Goals to be achieved | | | | | | | | |
| To get something new on individu | al research fields. | | | | | | | |
| To develop your research skills in | ncluding planning a | nd presentation skills | S. | | | | | |
| To get something new on individu | al research fields. | | | | | | | |
| To develop your research skills in | cluding planning a | nd presentation skills | S. | | | | | |
| Evaluation of achievement | | | | | | | | |
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| Eveningtion | | | | | | | | |
| Examination | | | | | | | | |
| | | | | | | | | |
| Details of examination | | | | | | | | |
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| Other information | | | | | | | | |
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| Reference URL | | | | | | | | |
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| Office hours | | | | | | | | |
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| Peletions to attainment objectives of learning and education | | | | | | | | |
| Relations to attainment objectives of learning and education | | | | | | | | |
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| Key words | | | | | | | | |
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(M41610030)Thesis Research on Mechanical Engineering[Thesis Research on Mechanical Engineering]

| Subject name[English] | Thesis Research on Mechanical Engineering[Thesis Research on Mechanical Engineering] | | | | | | | |
|------------------------------------|--|-------------------|--|----------------------|---------------------|--|--|--|
| Schedule number | M41610030 | Subject area | Advanced | Required or | Required | | | |
| | | | Mechanical | elective | | | | |
| | | | Engineering | | | | | |
| Time of starting a course | 2Years | Day of t | he Intensive | Credit(s) | 6 | | | |
| | | week,period | | | | | | |
| Faculty | Graduate Progra | m for Master's D | egree | Subject grade | 1~2 | | | |
| Department Offered | Mechanical Engi | neering | | Beggining | M1, M2 | | | |
| | | | | grade | | | | |
| Charge teacher name[Roman | S1系教務委員 | 1kei kyomu Iin−S | | | | | | |
| alphabet mark | | | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class | | | | | | | | |
| The thesis research aims to pr | ovide a practical | experience of re | esearch work, and to | acquire research s | kills with a deep | | | |
| understanding of relevant knowle | dge. | | | | | | | |
| | | | | | | | | |
| The thesis research aims to pr | ovide a practical | experience of re | esearch work, and to | acquire research s | kills with a deep | | | |
| understanding of relevant knowle | dge. | | | | | | | |
| | | | | | | | | |
| Contents of class | | | | | | | | |
| The research subject depends | on the supervisor | and the resear | ch group you ioin. Ir | ndividual students w | vill have different | | | |
| research subjects. Discuss with | our supervisor. | | ا الم الم الم الم الم الم الم الم الم | | | | | |
| The research subject depends | on the supervisor | and the resear | ch group you join. Ir | ndividual students w | vill have different | | | |
| research subjects. Discuss with y | our supervisor. | | | | | | | |
| Self Preparation and Review | | | | | | | | |
| | | | | | | | | |
| Related subjects | | | | | | | | |
| | | | | | | | | |
| Nataa fay tauthaala | | | | | | | | |
| Notes for textbook | | | | | | | | |
| Reference and material will be av | allable from the su | ipervisor. | | | | | | |
| Notes for reference | | ipervisor. | | | | | | |
| | | | | | | | | |
| Goole to be achieved | | | | | | | | |
| Goals to be achieved | al uses such fields | | | | | | | |
| To get something new on individu | iai research heids. | nd nuccontation . | deille. | | | | | |
| To develop your research skills in | iciuaing planning a | nd presentation : | SKIIIS. | | | | | |
| To develop your research skills in | al research heids. | nd presentation | skille | | | | | |
| Evaluation of achievement | | | JANIO. | | | | | |
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| Examination | | | | | | | | |
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| Details of examination | | | | | | | | |
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| Other information | | | | | | | | |
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| Reference URL | | | | | | | | |
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| Office hours | | | | | | | | |
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| relations to attainment objective | s or learning and | BOUCATION | | | | | | |
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(M4161003T)Thesis Research on Mechanical Engineering[Thesis Research on Mechanical Engineering]

| Subject name[English] | Thesis Research | on Mecha | anical Engir | eering[Thesis Re | search on Mechanic | al Engineering] | | | | |
|---|---------------------------|------------------------|---------------|--------------------|--------------------|---------------------|--|--|--|--|
| Schedule number | M4161003T | Subjec | t area | Advanced | Required or | Required | | | | |
| | | | | Mechanical | elective | | | | | |
| | | | | Engineering | | | | | | |
| Time of starting a course | Year | Day | of the | Intensive | Credit(s) | 6 | | | | |
| E h. | | week,p | eriod | | 0.11 | 0.0 | | | | |
| Faculty Department Offered | Graduate Progra | m for Mas | ster's Degre | e | Subject grade | 2~2 | | | | |
| Department Offered | wechanical Engi | leering | | | Deggining | | | | | |
| Charge teacher name[Roman | S1系教務委員 1 | lkeikvom | u Iin-S | | 81000 | | | | | |
| alphabet mark] | | ·····, | | | | | | | | |
| Numbering | umbering | | | | | | | | | |
| Objectives of class | | | | | | | | | | |
| The thesis research aims to pro- understanding of relevant knowled | ovide a practical dge. | experienc | e of resea | rch work, and to | acquire research | skills with a deep | | | | |
| The thesis research aims to pro- understanding of relevant knowled | ovide a practical dge. | experienc | e of resea | rch work, and to | acquire research | skills with a deep | | | | |
| Contents of class | | | | | | | | | | |
| The research subject depends | on the supervisor | and the | research (| group you join. Ir | ndividual students | will have different | | | | |
| research subjects. Discuss with y | our supervisor. | and the | research | roup vou join Ir | ndividual studente | will have different | | | | |
| research subjects. Discuss with v | our supervisor. | | | 5. Jup you join. I | | have unerent | | | | |
| Self Preparation and Review | | | | | | | | | | |
| Related subjects Notes for textbook | | | | | | | | | | |
| Reference and material will be av | ailable from the su | pervisor. | | | | | | | | |
| Notes for reference | allable from the su | pervisor. | | | | | | | | |
| | | | | | | | | | | |
| Goals to be achieved | | | | | | | | | | |
| To get something new on individu | al research fields. | | | | | | | | | |
| To develop your research skills ir | ncluding planning a | nd presen [.] | tation skills | | | | | | | |
| To get something new on individu | al research fields. | | | | | | | | | |
| I o develop your research skills in | icluding planning ai | nd presen | tation skills | i. | | | | | | |
| Evaluation of achievement | | | | | | | | | | |
| Examination | | | | | | | | | | |
| Details of examination | | | | | | | | | | |
| Other information | | | | | | | | | | |
| Reference URL | Reference URL | | | | | | | | | |
| Office hours | Office hours | | | | | | | | | |
| Relations to attainment objective | es of learning and e | education | | | | | | | | |
| | | | | | | | | | | |

(M41610040)Seminar on Mechanical Engineering[Seminar on Mechanical Engineering]

| Subject name[English] | Seminar on Mech | anical Engi | neering[S | eminar on Mechani | cal Engineering] | |
|-------------------------------------|-----------------------|--------------|------------------|----------------------|--------------------|--------------------|
| Schedule number | M41610040 | Subject a | area | Advanced | Required or | Required |
| | | | | Mechanical | elective | |
| | | _ | | Engineering | | - |
| Time of starting a course | Year | Day o | f the | Intensive | Credit(s) | 6 |
| Feculty | Graduate Program | for Maste | iou r's Degra | | Subject grade | 2~2 |
| Department Offered | Mechanical Engine | eering | J 3 Dogio | | Beggining | |
| | 0 | 0 | | | grade | |
| Charge teacher name[Roman | S1系教務委員 11 | kei kyomu l | lin-S | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| The seminar aims to provide a br | oad understanding | of the mec | hanical e | ngineering available | for the master the | esis research of a |
| student. | | 6 | | | 6 | |
| The seminar aims to provide a br | oad understanding | of the mec | hanıcal e | ngineering available | for the master the | esis research of a |
| Contents of class | | | | | | |
| The class provides both of funda | mental knowledge | of his/her | master t | hesis research wor | k and the most ad | vanced results in |
| the related field by reading rese | arch papers and n | nonographs | . The co | ntents of the clas | s depend on the s | supervisor. To be |
| announced by individual supervise | ors. | | | | | |
| The class provides both of funda | mental knowledge | of his/her | master t | hesis research wor | k and the most ad | vanced results in |
| the related field by reading rese | arch papers and n | nonographs | . The co | ntents of the clas | s depend on the s | supervisor. To be |
| announced by individual superviso | ors. | | | | | |
| Self Preparation and Review | | | | | | |
| Delated as blocks | | | | | | |
| Related subjects | | | | | | |
| Notes for textbook | | | | | | |
| Textbook or material will be made | available from the | supervisor | | | | |
| Textbook or material will be made | available from the | supervisor | s. s | | | |
| Notes for reference | | - apoi nooi | | | | |
| | | | | | | |
| Goals to be achieved | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the p | problems, | and the presentation | on skill. | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the p | problems, | and the presentation | on skill. | |
| | | | | | | |
| Coursework, presentation and/or | report. | | | | | |
| Evamination | report. | | | | | |
| | | | | | | |
| Details of examination | | | | | | |
| | | | | | | |
| Other information | | | | | | |
| | | | | | | |
| Reference URL | | | | | | |
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| Office hours | | | | | | |
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| Relations to attainment objective | s of learning and e | ducation | | | | |
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(M41630070)Joining and Surfacing of Materials[Joining and Surfacing of Materials]

| Subject name[English] | Joining and Surfa | cing of Materials[Jo | ining and Surfacing | of Materials] | | | |
|---|----------------------|-----------------------|----------------------|---------------------|-------------------|--|--|
| Schedule number | M41630070 | Subject area | Advanced | Required or | Elective | | |
| | | - | Mechanical | elective | | | |
| | | | Engineering | | | | |
| Time of starting a course | Spring1 term | Day of the | Tue.1~1 | Credit(s) | 1 | | |
| | | week,period | | | | | |
| Faculty | Graduate Program | n for Master's Degr | ee | Subject grade | 1~2 | | |
| Department Offered | Mechanical Engine | eering | | Beggining | | | |
| - | | | | grade | | | |
| Charge teacher name[Roman | 福本 昌宏 FUKU | MOTO Masahiro | | | | | |
| alphabet mark | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| To understand fundamentals of | advanced technolo | gy in materials joir | ing, especially both | in high performar | nce thick coating | | |
| formation by Thermal Spraying, C | old Spraying, Aero- | sol Deposition, in n | on-melting diffusion | bonding by Friction | n Stir Welding. | | |
| To understand fundamentals of | advanced technolog | gy in materials joir | ing, especially both | in high performar | nce thick coating | | |
| formation by Thermal Spraying, C | old Spraying, Aero- | sol Deposition, in n | on-melting diffusion | bonding by Friction | n Stir Welding. | | |
| Contents of class | | | | | | | |
| 1. Fundamental of surface modifi | cation process and | technology | | | | | |
| 2. Fundamentals of thermal spray | / process, Splat for | mation problem | | | | | |
| 3. Process control with Transitio | n temperature & Tr | ansition pressure | | | | | |
| 4. Cold spraying and Aero-so | ol deposition proc | ess, Functional m | aterials coating: pł | notocatalyst, SOF(| C, nano coating, | | |
| intermetallic compound coating, e | tc. | | | | | | |
| 5. Fundamental of Friction Stir W | elding | | | | | | |
| 6. Joining between disimilar mate | erials by FSW | | | | | | |
| Friction spot welding, practical Fundamental of surface models | applications of FS | W | | | | | |
| 1. Fundamental of surface modifi | cation process and | technology | | | | | |
| 2. Fundamentals of thermal spray | / process, Splat for | mation problem | | | | | |
| 3. Process control with Transitio | n temperature & Tr | ansicion pressure | atorials posting ph | otoostalvet SOE(| C nano coating | | |
| intermetallic compound coating a | to | | ateriais coating. pr | lococatalyst, SOI | o, nano coating, | | |
| 5 Fundamental of Friction Stir W | lelding | | | | | | |
| 6. Joining between disimilar mate | erials by FSW | | | | | | |
| 7. Friction spot welding, practical | applications of FS | W | | | | | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| Basic knowledge on materials joining process is desirable. | | | | | | | |
| Basic knowledge on materials joining process is desirable. | | | | | | | |
| Notes for textbook | | | | | | | |
| Handouts will be prepared for par | ticipants. | | | | | | |
| (Reference) | | | | | | | |
| Required readings will be taken fr | om a variety of refe | erence books and re | esearch papers. | | | | |
| Handouts will be prepared for par | ticipants. | | | | | | |
| (Reference) | | | | | | | |
| Required readings will be taken fr | om a variety of refe | erence books and re | esearch papers. | | | | |
| Notes for reference | | | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| - Joining mechanism between dis | imilar matariala | | | | | | |
| -Soliting mechanism between dise | anniar materials | | | | | | |
| -Features and mechanism of Vari | vus joining metriods | ing | | | | | |
| -Features of functionally gradient | material and comp | nig osite material | | | | | |
| Inderstand following items | . materiai anu comp | | | | | | |
| -loining mechanism between disc | imilar materials | | | | | | |
| -Features and mechanism of various joining methods | | | | | | | |
| -Features and mechanism of thick | k and thin film coat | ing | | | | | |
| | | | | | | | |

| -Features of functionally gradient material and composite material |
|---|
| Evaluation of achievement |
| Interim report & presentation (40%) and term-end report (60%). |
| Interim report & presentation (40%) and term-end report (60%). |
| Examination |
| レポートで実施 |
| By Report |
| Details of examination |
| |
| Other information |
| Masahiro Fukumoto: |
| Room: D-503, ext.: 6692, e-mail: fukumoto@tut.jp |
| Masahiro Fukumoto: |
| Room: D-503, ext.: 6692, e-mail: fukumoto@tut.jp |
| Reference URL |
| http://isf.me.tut.ac.jp/ |
| http://isf.me.tut.ac.jp/ |
| Office hours |
| anytime to e-mail address: fukumoto@tut.jp |
| |
| anγtime to e−mail address: fukumoto@tut.jp |
| |
| Relations to attainment objectives of learning and education |
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| |
| Key words |
| Joining in dissimilar maretials, Surface modification, Thermal spraying, Cold spraying, FSW |

Joining in dissimilar maretials, Surface modification, Thermal spraying, Cold spraying, FSW

(M41630130)Modeling and Analysis of Dynamical Control Systems[Modeling and Analysis of Dynamical Control Systems]

| Subject name[English] | Modeling and Analysis of Dynamical Control Systems[Modeling and Analysis of Dynamical Control Systems] | | | | | | |
|---|---|---|----------------------|----------------------|-------------------|--|--|
| Schedule number | M41630130 | Subject area | Advanced | Required or | Elective | | |
| | | | Mechanical | elective | | | |
| Time of starting a course | Spring2 term | Day of the week period | Thu.2~2 | Credit(s) | 1 | | |
| Faculty | Graduate Program | n for Master's Degre | ee | Subject grade | 1~2 | | |
| Department Offered | Mechanical Engin | eering | | Beggining grade | | | |
| Charge teacher name[Roman alphabet mark] | 寺嶋 一彦 TERA | 寺嶋 一彦 TERASHIMA Kazuhiko | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| Understand Nonlinear Systems Advanced Stability Theory, and C | Analysis from the control Design | e viewpoints of Pł | nase Plane Analy | sis, Fundamental L | yapunov Theory, | | |
| Understand Nonlinear Systems Advanced Stability Theory, and C | Analysis from the control Design | e viewpoints of Pł | nase Plane Analy | sis, Fundamental L | yapunov Theory, | | |
| Contents of class We provide the following schedule students. | e. Because this cou | urse is for master s | tudents, we can co | onsider the requests | s from the master | | |
| 1st week: Introduction- Why nolin 2nd week: Phase Plane Analysis 3rd week: Fundamentals of Lyapu 4th week: System Analysis Based 5th week: Control Design Based of 6th week: Lyapunov Analysis of N 7th week: Existence of Lyapunov 8th week: Examination (Report) We provide the following schedule students. 1st week: Introduction- Why nolin 2nd week: Phase Plane Analysis 3rd week: Fundamentals of Lyapu 4th week: System Analysis Based 5th week: Control Design Based of 6th week: Lyapunov Analysis of N 7th week: Existence of Lyapunov 8th week: Examination (Report) Self Preparation and Review | near control ? nov Theory- Conce l on Lyapunov's Direct on Lyapunov's Direct lon-autonomous sy Functions e. Because this cou near control ? nov Theory- Conce l on Lyapunov's Direct lon-autonomous sy Functions | ept of stability ect Method st Method stems urse is for master st ept of stability ect Method st Method stems | tudents, we can co | onsider the requests | s from the master | | |
| . | | | | | | | |
| Fundamentals of linear algebra di | fferential equation | mechanics measure | ement and control | theory and robotics | e | | |
| Fundamentals of linear algebra, differential equation, mechanics, measurement and control theory, and robotics. Fundamentals of linear algebra, differential equation, mechanics, measurement and control theory, and robotics. | | | | | | | |
| Notes for textbook | | | | | | | |
| Handouts will be prepared. | | | | | | | |
| Reference: Applied Nonlinear Control: Jean- Handouts will be prepared. | Jacques E.Slotine, \ | Neiping Li;Prentice I | Hall International I | nc.(1991) | | | |
| Reference: Applied Nonlinear Control: Jean- | Jacques E.Slotine, \ | Weiping Li;Prentice | Hall International I | nc.(1991) | | | |

Notes for reference

| Goals to be achieved |
|--|
| (1) Understand Analysis methods of Nonlinear Dynamical Systems |
| (2) Understand Phase Plane Method |
| (3) Understand Stability |
| (4) Understand Lyapunov Analysis |
| (5) Understand Control Design based on Lyapunov Direct Method |
| |
| (1) Understand Analysis methods of Nonlinear Dynamical Systems |
| (2) Understand Phase Plane Method |
| (3) Understand Stability |
| (4) Understand Lyapunov Analysis |
| (5) Understand Control Design based on Lyapunov Direct Method |
| |
| Evolution of achievement |
| |
| Report (100 %) |
| |
| A:Score of the report is 80 or higher. |
| B:Score of the report is 65 or higher. |
| C:Score of the report is 55 or higher. |
| Report (100 %) |
| |
| A:Score of the report is 80 or higher. |
| B:Score of the report is 65 or higher. |
| C:Score of the report is 55 or higher. |
| Examination |
| レポートで実施 |
| By Report |
| Details of examination |
| |
| Other information |
| Tel 0532-44-6699 |
| E-mail:terasima@metut.ac.in |
| Tel 0532-44-6699 |
| F-mail terasima@me tut ac in |
| |
| Students who are interesting with nonlinear systems and control are welcome |
| Basic control theory and mathematical knowledge are required |
| Students who are interesting with nonlinear systems and control are welcome |
| Basic control the more stand with Holmanical systems and executed |
| Define on a for a formation and the formation of the form |
| Thursday 4–6om (Tarashima D–510) |
| Thursday 4 -6pm (Tarashina D -510) |
| Palations to attainment objectives of learning and education |
| |
| (DT) Ability for Solving problems with expertise |
| |
| (D1) Ability for solving problems with expertise |
| |
| Key words |
| Nonlinear analysis, Nonlinear control, Lyapunov function, Phase plane analysis, Stability |
| Nanlinear analysis, Nanlinear, control Lyanungy function, Phase plane analysis, Stability |

(M41630180)Applied Fluid Dynamics[Applied Fluid Dynamics]

| Subject name[English] | Applied Eluid Dur | amics Applied Eluid | Dynamical | | | | |
|--------------------------------------|-----------------------|---|----------------------|------------------------|----------|--|--|
| | M/1630100 | Subject area | Advanced | Doguined an | Elective | | |
| | 1000100 | | Machanical | olective | LIECTIVE | | |
| | | | wiechanical | 818CTIV8 | | | |
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| lime of starting a course | Spring2 term | Day of the | Tue.3~3 | Gredit(s) | | | |
| | <u> </u> | week,period | | | | | |
| Faculty | Graduate Program | n for Master's Degre | ee | Subject grade | 2~2 | | |
| Department Offered | Mechanical Engin | Mechanical Engineering Beggining | | | | | |
| | | grade | | | | | |
| Charge teacher name[Roman | 鈴木 孝司,関下 | 鈴木 孝司, 関下 信正 SUZUKI Takashi, SEKISHITA Nobumasa | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
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| (T.Suzuki) Gain and develop the k | nowledge on nume | rical method of gas- | liquid two-phase fl | ows. | | | |
| | | | | | | | |
| (T.Suzuki) Gain and develop the k | nowledge on nume | rical method of gas- | liquid two-phase fl | ows. | | | |
| Contents of class | | | | | | | |
| (N.Sekishita) | | | | | | | |
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| | | | | | | | |
| (T Suzuki) Numerical analysis of t | he liquid flow with t | free surface | | | | | |
| 5th Introduction to finite different | tial method (Taking | the one dimensiona | I heat-conduction | equation as an eva | mple) | | |
| 6th MAC type semi-explicit meth | ad for colving the t | rancient flow equati | one of incompressi | equation as an example | npic/ | | |
| 7th Dynamic and kinematic condi | | | ons of incompressi | | | | |
| /th Dynamic and Kinematic condi- | tion at tree surface | / Capturing and Ke | eping track of free | surface | | | |
| (N.Sekisnita) | | | | | | | |
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| | | | | | | | |
| (T.Suzuki) Numerical analysis of t | he liquid flow with f | free surface | | | | | |
| 5th Introduction to finite different | tial method (Taking | the one dimensiona | I heat-conduction e | equation as an exa | mple) | | |
| 6th MAC type semi-explicit meth | od for solving the t | ransient flow equati | ons of incompressil | ble viscous liquid | | | |
| 7th Dynamic and kinematic condi | tion at free surface | / Capturing and ke | eping track of free | surface | | | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| (T Suzuki) Basic knowledge of ma | thematics hydrody | namics and heat-tr | ansfer is Prerequisi | te | | | |
| (T Suzuki) Basic knowledge of ma | thematics, hydrody | namics and heat-tr | ansfer is Prerequisi | te | | | |
| Notes for textbook | ichomacios, riyurouy | | | | | | |
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| l | | | | | | | |
| (T.Suzuki) Handouts will be prepa | red for participants | | | | | | |
| | | | | | | | |
| (T.Suzuki) Handouts will be prepa | red for participants | | | | | | |
| Notes for reference | | | | | | | |
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| Ocele to be acking d | | | | | | | |
| Goals to be achieved | | | | | | | |
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| Evaluation of achievement | | | | | | | |
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| (T Suzuki) Class Poport | | | | | | | |
| (1.Suzuki) Glass Report | | | | | | | |
| | | | | | | | |
| (T.Suzuki) Class Report | | | | | | | |
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Details of examination

Other information

(T.Suzuki) D-308, Ext.6667, E-mail takashi@me.tut.ac.jp

(T.Suzuki) D-308, Ext.6667, E-mail takashi@me.tut.ac.jp Reference URL

Office hours

Relations to attainment objectives of learning and education

(M41630220)Advanced Mechanical Systems Design II[Advanced Mechanical Systems Design II]

| Subject name[English] | Advanced Mechanical Systems Design II[Advanced Mechanical Systems Design II] | | | | | | | |
|-------------------------------------|--|---------------|----------|----------------------|---------------------|-------------------|--|--|
| Schedule number | M41630220 | Subject a | rea | Advanced | Required or | Elective | | |
| | | | | Mechanical | elective | | | |
| | | | | Engineering | | | | |
| Time of starting a course | Spring term | Day of | the | Mon.4~4 | Credit(s) | 2 | | |
| E h | | week,peri | , D | | 0.11.1 | 1.0 | | |
| Faculty | Graduate Program | 1 for Master | 's Degre | e | Subject grade | 1~2 | | |
| Department Offered | Mechanical Engine | eering | | | Deggining | | | |
| Charge teacher name[Roman | S1 系教 務 委 昌 11 | kei kvomu lii | n-S | | grauo | | | |
| alphabet mark] | C WWW Z | | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class | <u>L</u> | | | | | | | |
| This lecture aims to provide a br | oad understanding | of the mech | anical s | vstems design avai | lable for the maste | r thesis research | | |
| work of a student | | | | ystems design avai | | | | |
| This lecture aims to provide a br | oad understanding (| of the mech | anical s | vstems design avai | lable for the maste | r thesis research | | |
| work of a student. | U | | | , , | | | | |
| Contents of class | | | | | | | | |
| The class provides both of funda | amental knowledge | of his/her n | naster t | hesis research wor | k and the most ad | vanced results in | | |
| the related field by reading rese | arch papers and m | nonographs. | The co | ontents of the clas | s depend on the s | supervisor. To be | | |
| announced by individual superviso | ors. | | | | | | | |
| The class provides both of funda | amental knowledge | of his/her n | naster t | hesis research wor | k and the most ad | vanced results in | | |
| the related field by reading rese | arch papers and m | nonographs. | The co | ontents of the clas | s depend on the s | supervisor. To be | | |
| announced by individual superviso | ors. | | | | | | | |
| Self Preparation and Review | | | | | | | | |
| | | | | | | | | |
| Related subjects | | | | | | | | |
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| Notes for textbook | | | | | | | | |
| Textbook or material will be made | available from the | supervisors | | | | | | |
| Textbook or material will be made | available from the | supervisors | | | | | | |
| Notes for reference | | | | | | | | |
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| Goals to be achieved | | | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the pr | oblems | and the presentation | on skill. | | | |
| | | | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the pr | oblems | and the presentation | on skill. | | | |
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| Evaluation of achievement | | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | | |
| Examination | | | | | | | | |
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| Details of examination | | | | | | | | |
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| Other information | | | | | | | | |
| | | | | | | | | |
| Reference URL | | | | | | | | |
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| Office hours | | | | | | | | |
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| Relations to attainment objective | s of learning and o | lucation | | | | | | |
| | Nolauons w attainment objectives of learning and education | | | | | | | |
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(M41630240)Advanced Materials and Manufacturing Process II[Advanced Materials and Manufacturing Process II]

| (M41030240/Advanced Materials | and manufacturing | g Process IILAdvance | o maloriais and m | anutacturing Proces | នយ្ | | | |
|-------------------------------------|---|--|----------------------|-----------------------|-------------------|--|--|--|
| Subject name[English] | ubject name[English] Advanced Materials and Manufacturing Process II[Advanced Materials and Manufacturing | | | | | | | |
| <u></u> | Process II | | | | - | | | |
| Schedule number | M41630240 | Subject area | Advanced | Required or | Elective | | | |
| | | | Mechanical | elective | | | | |
| | | | Engineering | | | | | |
| Time of starting a course | Spring term | Day of the | Tue.4~4 | Credit(s) | 2 | | | |
| | | week,period | | | | | | |
| Faculty | Graduate Progra | Graduate Program for Master's Degree Subject grade 1~2 | | | | | | |
| Department Offered | Mechanical Engi | neering | | Beggining | | | | |
| • | | ahara | | | | | | |
| Charge teacher name[Roman | S1系教務委員 | 1kei kvomu Iin-S | | 0 | | | | |
| alphabet mark] | | | | | | | | |
| Numbering | | | | | | | | |
| Rumbering | | | | | | | | |
| Objectives of class | | | | | | | | |
| This lecture aims to provide a br | oad understanding | of the materials and | d manufacturing pr | ocess available for t | he master thesis | | | |
| research work of a student. | | | | | | | | |
| This lecture aims to provide a br | oad understanding | of the materials and | d manufacturing pr | ocess available for t | he master thesis | | | |
| research work of a student. | - | | | | | | | |
| Contents of class | | | | | | | | |
| The class provides both of funds | mental knowledge | of his/her master t | hesis research wa | ork and the most ad | vanced results in | | | |
| the related field by reading rece | arreh papers and | monographs The or | incolor rescarch we | ss depend on the s | upervisor To be | | | |
| che related her individual auromia | | monographs. The co | Sincerins of the Gia | ss depend on the s | upervisor. To be | | | |
| The second by individual supervise | ors. | C1: /I | | | | | | |
| The class provides both of funda | imental knowledge | of his/her master t | nesis research wo | ork and the most adv | vanced results in | | | |
| the related field by reading rese | earch papers and | monographs. The co | ontents of the cla | ss depend on the s | upervisor. To be | | | |
| announced by individual superviso | ors. | | | | | | | |
| Self Preparation and Review | | | | | | | | |
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| Related subjects | | | | | | | | |
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| Notes for textbook | | | | | | | | |
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| | available from the | e supervisors. | | | | | | |
| l extbook or material will be made | e available from the | e supervisors. | | | | | | |
| Notes for reference | | | | | | | | |
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| Goals to be achieved | | | | | | | | |
| To acquire fundamental knowledg | e of individual rese | earch fields. | | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the problems | and the presentat | ion skill. | | | | |
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| To acquire fundamental knowledg | e of individual rese | earch fields | | | | | | |
| To acquire the ability to find prob | lems the ability to | solve the problems | and the presentat | ion skill | | | | |
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| Evolution of achievement | | | | | | | | |
| | | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | | |
| Examination | | | | | | | | |
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| Details of examination | | | | | | | | |
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| Other information | | | | | | | | |
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| Defense a LIDI | | | | | | | | |
| Keterence UKL | | | | | | | | |
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| Office hours | Office hours | | | | | | | |
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| Relations to attainment objective | s of learning and a | education | | | | | | |
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(M41630260)Advanced System, Control and Robotics II[Advanced System, Control and Robotics II]

| Subject name[English] | Advanced System, Control and Robotics II[Advanced System, Control and Robotics II] | | | | | | |
|-------------------------------------|--|--------------------------|-----------------------|-------------------|-------------------|--|--|
| Schedule number | M41630260 | Subject area | Advanced | Required or | Elective | | |
| | | | Mechanical | elective | | | |
| | | | Engineering | | | | |
| Time of starting a course | Spring term | Dav of the | Thu.4~4 | Credit(s) | 2 | | |
| C . | | week,period | | | | | |
| Faculty | Graduate Progran | n for Master's Degr | ee | Subject grade | 1~2 | | |
| Department Offered | Mechanical Engin | eering | | Beggining | | | |
| | _ | grade | | | | | |
| Charge teacher name[Roman | S1系教務委員1 | S1系教務委員 1kei kyomu lin−S | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| This lecture aims to provide a bro | ad understanding o | of the control and r | photics available for | the master thesis | research work of | | |
| a student | | | | | | | |
| This lecture aims to provide a bro | ad understanding o | of the control and r | obotics available for | the master thesis | research work of | | |
| a student. | | | | | | | |
| Contents of class | | | | | | | |
| The class provides both of funda | amental knowledge | of his/her master t | hesis research wor | k and the most ad | vanced results in | | |
| the related field by reading rese | arch papers and n | nonographs. The co | ontents of the class | s depend on the s | upervisor. To be | | |
| announced by individual supervise | ors. | | | | | | |
| The class provides both of funda | amental knowledge | of his/her master t | hesis research wor | k and the most ad | vanced results in | | |
| the related field by reading rese | arch papers and n | nonographs. The co | ontents of the class | s depend on the s | upervisor. To be | | |
| announced by individual supervise | ors. | | | | | | |
| Self Preparation and Review | | | | | | | |
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| Related subjects | | | | | | | |
| Noiatou subjocts | | | | | | | |
| N | | | | | | | |
| Notes for textbook | | | | | | | |
| Textbook or material will be made | e available from the | supervisors. | | | | | |
| Textbook or material will be made | e available from the | supervisors. | | | | | |
| Notes for reference | | | | | | | |
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| Goals to be achieved | | | | | | | |
| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the problems | and the presentatio | n skill. | | | |
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| To acquire fundamental knowledg | e of individual resea | arch fields. | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the problems | and the presentatio | n skill. | | | |
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| Evaluation of achievement | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | |
| Coursework, presentation and/or | report. | | | | | | |
| Examination | | | | | | | |
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| Details of examination | | | | | | | |
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| Other information | | | | | | | |
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| Office hours | | | | | | | |
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| Relations to attainment objective | s of learning and e | ducation | | | | | |
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(M41630280)Advanced Energy and Environmental Engineering II[Advanced Energy and Environmental Engineering II]

| Subject name[English] | Advanced Energ | y and Environment | al Engineering II[/ | Advanced Energy ar | nd Environmental | | | |
|--|--|--|--|--|--|--|--|--|
| | Engineering II] | | | | | | | |
| Schedule number | M41630280 | Subject area | Advanced Mechanical Engineering | Required or elective | Elective | | | |
| Time of starting a course | Spring term | Day of the week.period | Fri.3~3 | Credit(s) | 2 | | | |
| Faculty | Graduate Progra | m for Master's Degr | ee | Subject grade | 1~2 | | | |
| Department Offered | Mechanical Engin | neering | | Beggining grade | | | | |
| Charge teacher name[Roman alphabet mark] | S1系教務委員1 | S1系教務委員 1kei kyomu Iin-S | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class This lecture aims to provide a bro- research work of a student. This lecture aims to provide a bro- research work of a student. Contents of class | oad understanding oad understanding | of the energy and | nvironmental engir nvironmental engir | neering available for t | the master thesis | | | |
| The class provides both of funda the related field by reading rese announced by individual superviso The class provides both of funda the related field by reading rese announced by individual superviso | amental knowledge earch papers and r ors. amental knowledge earch papers and r ors. | of his/her master t monographs. The co of his/her master t monographs. The co | thesis research wo ontents of the cla thesis research wo ontents of the cla | ork and the most ad ass depend on the s ork and the most ad ass depend on the s | vanced results in supervisor. To be vanced results in supervisor. To be | | | |
| Self Preparation and Review | | | | | | | | |
| Related subjects | | | | | | | | |
| Notes for textbook Textbook or material will be made Textbook or material will be made Notes for reference | e available from the e available from the | e supervisors. e supervisors. | | | | | | |
| Goals to be achieved | | | | | | | | |
| To acquire fundamental knowledg | e of individual rese | arch fields. | | | | | | |
| To acquire the ability to find prob | lems, the ability to | solve the problems | and the presentat | tion skill. | | | | |
| To acquire fundamental knowledg To acquire the ability to find prob | e of individual rese lems, the ability to | arch fields. solve the problems | and the presentat | ion skill. | | | | |
| Evaluation of achievement | | | | | | | | |
| Coursework, presentation and/or | report. | | | | | | | |
| Examination | | | | | | | | |
| Details of examination | | | | | | | | |
| Other information | | | | | | | | |
| Reference URL | | | | | | | | |
| Office hours | | | | | | | | |
| Relations to attainment objective | es of learning and e | ducation | | | | | | |

(M41630310)Vibration Engineering[Vibration Engineering]

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|-----------------------------------|---------------------|-----------------------|---------------------|-----------------------|-------------------|
| | VIDration Engine | ering_vibration Engin | eering_ | De metro d | Election . |
| Schedule number | 1/141030310 | Subject area | Advanced | Required or | Elective |
| | | | Mechanical | elective | |
| | 0.1.1. | | Engineering | 0 11/1 | |
| Time of starting a course | Spring1 term | Day of the | Tue.2~2 | Credit(s) | 1 |
| Faculta | Que durate Duranue | week,period | | Cubic et ano de | 1 0 |
| Pacuity Department Offered | Machanical Engi | in for Master's Degr | e | Subject grade | 1~2 |
| Department Offered | wechanical Engi | leering | | Beggining | |
| Charge teacher name[Roman | □□村 庄浩 κ Δ ₩ | AMURA Shozo | | Biado | |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| | | | | | |
| | | | | | |
| The class aims to give basic kn | owledge on vibrat | ion engineering, in p | articular, on the | modeling of multi-de | egree-of-freedom |
| system and modal analysis. | | | | | |
| The class aims to give basic kn | owledge on vibrat | ion engineering, in p | articular, on the | modeling of multi-de | egree-of-freedom |
| system and modal analysis. | | | | | |
| | | | | | |
| Vibration Engineering(Kawamura) | | | | | |
| 1&2. Modeling of multi-degree-of | -freedom system(I | MDOF system) | | | |
| 3&4. Modal analysis of MDOF sys | tem (eigenvalue ar | nalysis, etc.) | | | |
| 5–7. Modal analysis of MDOF sys | tem (Component n | node synthesis meth | od) | | |
| | | | | | |
| Vibration Engineering(Kawamura) | | | | | |
| 1&2. Modeling of multi-degree-of | -freedom system(I | MDOF system) | | | |
| 3&4. Modal analysis of MDOF sys | tem (eigenvalue ar | nalysis, etc.) | | | |
| 5–7. Modal analysis of MDOF sys | tem (Component n | node synthesis meth | od) | | |
| | | | | | |
| Self Preparation and Review | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| Fundamental knowledge on vibra | ation engineering a | and mathematics or | linear algebra a | nd ordinary different | ial equation, and |
| engineering mechanics. | | | | | |
| Fundamental knowledge on vibra | ation engineering a | and mathematics or | linear algebra a | nd ordinary different | ial equation, and |
| engineering mechanics. | | | | | |
| Notes for textbook | | | | | |
| Handouts will be prepared | | | | | |
| Handouts will be prepared | | | | | |
| Notes for reference | | | | | |
| | | | | | |
| Goals to be achieved | | | | | |
| get the basic knowledge on vibrat | tion engineering an | d some of their anal | /tical methods. | | |
| get the basic knowledge on vibrat | tion engineering an | d some of their anal | /tical methods. | | |
| Evaluation of achievement | | | | | |
| Some short reports during the cla | ass (30%) and a cor | mprehensive report a | fter final class (7 | 0%) | |
| Some short reports during the cla | ass (30%) and a cor | mprehensive report a | fter final class (7 | 0%) | |
| Examination | | | | | |
| レポートで実施 | | | | | |
| By Report | | | | | |
| Details of examination | | | | | |
| | | | | | |
| Other information | | | | | |
| Shozo Kawamura: room (D-404). | E-Mail: kawamura@ | me.tut.ac.jp | | | |
| Shozo Kawamura: room (D-404). | E-Mail: kawamura@ | @me.tut.ac.ip | | | |
| Reference URL | | | | | |
| | | | | | |
| Office hours | | | | | |
| | | | | | |
ask me by E−Mail ask me by E−Mail

Relations to attainment objectives of learning and education

Key words

vibration, modal analysis, Component modes Synthesis vibration, modal analysis, Component modes Synthesis

(M42610020)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

| Subject name[English] | Thesis Research on Electrical and Electronic Information Engineering[Thesis | | | | | |
|------------------------------------|---|---------------------------|---------------------|----------------------|--------------------|--|
| | Electrical and Electronic Information Engineering] | | | | | |
| Schedule number | M42610020 | Subject area | Advanced | Required or | Required | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | 2Years | Day of the week.period | Intensive | Credit(s) | 6 | |
| Faculty | Graduate Prograr | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | | Ū. | | Beggining | | |
| • | | | | grade | | |
| Charge teacher name[Roman | S2系教務委員, 希 | 各教員 2kei kyomu I | in-S, KAKUKYOUIN | Kakukyouin | I | |
| | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| The thesis research aims to pro | vide a practical exp | perience of research | n work, and to acqu | uire his∕her researe | ch skill with deep | |
| understanding of the electrical ar | nd electronic engine | ering. | | | | |
| | | | | | | |
| The thesis research aims to pro | vide a practical ex | perience of research | n work, and to acqu | uire his/her researd | ch skill with deep | |
| understanding of the electrical ar | nd electronic engine | ering. | | | | |
| | | | | | | |
| Contonto of class | | | | | | |
| | | | | | | |
| The research subject depends | on the supervisor | and the research | group you join. Ind | ividual students w | ull have different | |
| research subjects. Contact with | your supervisor. | | | | | |
| The research subject depends | on the supervisor | and the research | group you join. Ind | lividual students w | ill have different | |
| research subjects. Contact with | your supervisor. | | | | | |
| Self Preparation and Review | | | | | | |
| | | | | | | |
| Related subjects | | | | | | |
| Notes for textbook | | | | | | |
| Reference and material will be av | ailable from the su | pervisor. | | | | |
| Reference and material will be av | ailable from the sur | pervisor. | | | | |
| Notes for reference | ·· | | | | | |
| Goals to be achieved | | | | | | |
| To get something new on individu | al research fields | | | | | |
| To develop his/her research skill | including the plann | ing and the present | ation | | | |
| To get something new on individu | al research fields | | | | | |
| To develop his/her research skill | including the plann | ing and the present | ation | | | |
| Evaluation of achievement | including the pidlin | ing and the presente | | | | |
| Presentation Thesis Courses | and Outcomos | avaluated gaparally | , | | | |
| Presentation, Thesis, Coursework | , and Outcomes are | e evaluated generally | ·. | | | |
| | , and Outcomes are | e evaluated generally | ·. | | | |
| Examination | | | | | | |
| | | | | | | |
| Details of examination | | | | | | |
| | | | | | | |
| Other information | | | | | | |
| | | | | | | |
| Reference URL | | | | | | |
| | | | | | | |
| Office hours | | | | | | |
| | | | | | | |
| Relations to attainment objective | s of learning and e | ducation | | | | |

(M42610020)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

| Subject name[English] | Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on | | | | | |
|---------------------------|---|----------------------|----------------|---------------|----------|--|
| | Electrical and Electronic Information Engineering] | | | | | |
| Schedule number | M42610020 | Subject area | Advanced | Required or | Required | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | Electrical and Ele | ctronic Information | Engineering | Beggining | M1, M2 | |
| | | | | grade | | |
| Charge teacher name[Roman | S2系教務委員 2 | kei kyomu Iin−S | | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |

Objectives of class

The thesis research aims to provide a practical experience of research work, and to acquire his/her research skill with deep understanding of the electrical and electronic information engineering.

The thesis research aims to provide a practical experience of research work, and to acquire his/her research skill with deep understanding of the electrical and electronic information engineering.

Contents of class

The research subject depends on the supervisor and the research group you belong to. Every student will have an individual research subject. For more details, please contact with your supervisor.

The research subject depends on the supervisor and the research group you belong to. Every student will have an individual research subject. For more details, please contact with your supervisor.

Self Preparation and Review

Related subjects

Notes for textbook

Reference and material will be available from the supervisor. Reference and material will be available from the supervisor.

Notes for reference

Goals to be achieved

To get something new on individual research fields.

To develop his/her research skill including the planning and the presentation.

To get something new on individual research fields.

To develop his/her research skill including the planning and the presentation.

Evaluation of achievement

Presentation, Thesis,Coursework, and Outcomes are evaluated generally. Presentation, Thesis,Coursework, and Outcomes are evaluated generally. **Examination**

Details of examination

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M4261002T)Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on Electrical and Electronic Information Engineering]

| Subject name[English] | Thesis Research on Electrical and Electronic Information Engineering[Thesis Research on | | | | | |
|---------------------------|---|----------------------|----------------|---------------|----------|--|
| | Electrical and Electronic Information Engineering] | | | | | |
| Schedule number | M4261002T | Subject area | Advanced | Required or | Required | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | Year | Day of the | Intensive | Credit(s) | 6 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 2~2 | |
| Department Offered | Electrical and Elec | ctronic Information | Engineering | Beggining | | |
| | | | | grade | | |
| Charge teacher name[Roman | S2系教務委員 2I | kei kyomu Iin−S | | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |

Objectives of class

The thesis research aims to provide a practical experience of research work, and to acquire his/her research skill with deep understanding of the electrical and electronic information engineering.

The thesis research aims to provide a practical experience of research work, and to acquire his/her research skill with deep understanding of the electrical and electronic information engineering.

Contents of class

The research subject depends on the supervisor and the research group you belong to. Every student will have an individual research subject. For more details, please contact with your supervisor.

The research subject depends on the supervisor and the research group you belong to. Every student will have an individual research subject. For more details, please contact with your supervisor.

Self Preparation and Review

Related subjects

Notes for textbook

Reference and material will be available from the supervisor. Reference and material will be available from the supervisor.

Notes for reference

Goals to be achieved

To get something new on individual research fields.

To develop his/her research skill including the planning and the presentation.

To get something new on individual research fields.

To develop his/her research skill including the planning and the presentation.

Evaluation of achievement

Presentation, Thesis,Coursework, and Outcomes are evaluated generally. Presentation, Thesis,Coursework, and Outcomes are evaluated generally. **Examination**

Examination

Details of examination

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M42610040)Seminar on Electrical and Electronic Information Engineering[Seminar on Electrical and Electronic Information Engineering]

| Subject name[English] | Seminar on Electrical and Electronic Information Engineering[Seminar on Electrical and | | | | | | |
|------------------------------------|--|-------------------------------------|--------------------|--------------------|-------------------|--|--|
| | Electronic Inform | Electronic Information Engineering] | | | | | |
| Schedule number | M42610040 | Subject area | Advanced | Required or | Required | | |
| | | | Electrical and | elective | | | |
| | | | Electronic | | | | |
| | | | Information | | | | |
| | | | Engineering | | | | |
| Time of starting a course | Year | Day of the | Intensive | Credit(s) | 6 | | |
| | 1 Gui | week period | | | ° | | |
| Facultar | Cueduete Duerres | week,periou | Public at anada | 1 2 | | | |
| Faculty | Graduate Program for Master's Degree | | | Subject grade | 1~2 | | |
| Department Offered | Electrical and Electronic Information Engineering | | | Beggining | | | |
| | | | | grade | | | |
| Charge teacher name[Roman | S2系教務委員 2 | kei kyomu Iin−S? | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| The seminar aims to provide a b | road understandin | g of theoretical and | experimental appro | oches related to t | he electrical and | | |
| electronic information engineering | g for the research v | work of his/her mast | ter thesis. | | | | |
| The seminar aims to provide a h | road understandin | a of theoretical and | experimental appro | oches related to t | he electrical and | | |
| | | | | | | | |
| electronic information engineering | g for the research v | work of his/her mast | ter thesis. | | | | |

Contents of class

The class provides both of fundamental knowledge on the research work of master thesis and the most advanced results in the related field by reading research papers and monographs. Contents of the class depend on the supervisor. To be announced by individual supervisors.

The class provides both of fundamental knowledge on the research work of master thesis and the most advanced results in the related field by reading research papers and monographs. Contents of the class depend on the supervisor. To be announced by individual supervisors.

Self Preparation and Review

Related subjects

Notes for textbook

Textbook or material will be made available from the supervisor. To be announced by individual supervisors. Textbook or material will be made available from the supervisor. To be announced by individual supervisors.

Notes for reference

Goals to be achieved

To acquire fundamental knowledge on individual research fields.

To acquire the ability of finding a problem, the ability of solving the problem and the presentation skill.

To acquire fundamental knowledge on individual research fields.

To acquire the ability of finding a problem, the ability of solving the problem and the presentation skill.

Evaluation of achievement

 $\label{eq:coursework} Coursework, \ presentation \ and/or \ report.$

Coursework, presentation and/or report.

Examination

Details of examination

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M42630020)Physics for Electronics[Physics for Electronics]

| Subject name[English] | Physics for Electronics[Physics for Electronics] | | | | | |
|---------------------------|--|-----------------------------------|----------------|---------------|----------|--|
| Schedule number | M42630020 Subject area Advanced | | | Required or | Elective | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | Spring term | Day of the | Wed.2~2 | Credit(s) | 2 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | Electrical and Elec | ctronic Information | Engineering | Beggining | | |
| | | | | grade | | |
| Charge teacher name[Roman | 松田 厚範,服部 敏明,高木 宏幸,石山 武 MATSUDA Atsunori, HATTORI Toshiaki, | | | | | |
| alphabet mark] | TAKAGI Hiroyuki, | TAKAGI Hiroyuki, ISHIYAMA Takeshi | | | | |
| Numbering | | | | | | |

Objectives of class

Objectives of this subject are to understand the fundamental aspects on functional materials, photonics, caloritronics, spin electronics, and also to have overall knowledge on the latest technologies on these physical phenomena.

Objectives of this subject are to understand the fundamental aspects on functional materials, photonics, caloritronics, spin electronics, and also to have overall knowledge on the latest technologies on these physical phenomena.

Contents of class

"Physics for Electronics" is composed of four topics of functional materials, photonics, caloritronics, and spin electronics, which will be delivered for three times for each by four professors whose expertise lie on the individual categories.

The category of "Functional materials" is made to learn preparation, characterization and applications of functional materials for electronics and ionics based on physics and chemistry. The contents are 1) Fundamentals of amorphous and crystal, 2) Structure and property of glasses, 3) New preparation techniques of advanced materials, 4) Functional materials for ionis including Li-ion battery and fuel cell, and 5) Functional materials for optics including coatings, micro-optical components, and photonic devices.

The course of "photonics" is devoted to the understanding of interactions

between photon (light wave) and materials based on the quantum theory and also to industrial applications of photonic devices. 1) Physics and photonic devices, 2) dielectric function, plasmon, and polariton, 3) optical processes in semiconductors and exciton, 4) absorption and stimulated emission, 5) light wave modulation, 6) photonic devices update.

The category of "caloritronics" is made to learn mainly the interaction between heat and electron (carrier). The contents are 1) fundamentals of thermodynamics, 2) microstructure control and physical properties, 3) thermoelectronics, 4) thermoelectric materials, and 5) spin caloritronics.

The category of "spin electronics" covers a wide area from fundamentals to applications of magnetic materials and magnetics. 1) Origin of magnetics, 2) Soft and hard magnetic materials, 3) Major applications of magnetics and magnetic materials, 4) Interaction phenomena among spins and various physical quantities, 5) Micro-magnetic devices and systems, 6) Spintronics and spin photonics

"Physics for Electronics" is composed of four topics of functional materials, photonics, caloritronics, and spin electronics, which will be delivered for three times for each by four professors whose expertise lie on the individual categories.

The category of "Functional materials" is made to learn preparation, characterization and applications of functional materials for electronics and ionics based on physics and chemistry. The contents are 1) Fundamentals of amorphous and crystal, 2) Structure and property of glasses, 3) New preparation techniques of advanced materials, 4) Functional materials for ionis including Li-ion battery and fuel cell, and 5) Functional materials for optics including coatings, micro-optical components, and photonic devices.

The course of "photonics" is devoted to the understanding of interactions

between photon (light wave) and materials based on the quantum theory and also to industrial applications of photonic devices. 1) Physics and photonic devices, 2) dielectric function, plasmon, and polariton, 3) optical processes in semiconductors and exciton, 4) absorption and stimulated emission, 5) light wave modulation, 6) photonic devices update. The category of "caloritronics" is made to learn mainly the interaction between heat and electron (carrier). The contents are 1) fundamentals of thermodynamics, 2) microstructure control and physical properties, 3) thermoelectronics, 4) thermoelectric materials, and 5) spin caloritronics.

The category of "spin electronics" covers a wide area from fundamentals to applications of magnetic materials and magnetics. 1) Origin of magnetics, 2) Soft and hard magnetic materials, 3) Major applications of magnetics and magnetic materials, 4) Interaction phenomena among spins and various physical quantities, 5) Micro-magnetic devices and systems, 6) Spintronics and spin photonics

Self Preparation and Review

Related subjects

Notes for textbook

None None

Notes for reference

Goals to be achieved

(1) To understand fundamental aspects on functional materials, photonics and spin electronics.

- (2) To get the knowledge on the latest technologies on these physical phenomena.
- (1) To understand fundamental aspects on functional materials, photonics and spin electronics.

(2) To get the knowledge on the latest technologies on these physical phenomena.

Evaluation of achievement

Examination results 30% for each categories (functional materials, photonics, spin electronics) and 10% report, then the final evaluation will be the sum of these marks.

Examination results 30% for each categories (functional materials, photonics, spin electronics) and 10% report, then the final evaluation will be the sum of these marks.

Examination

試験期間中には何も行わない

None during exam period

Details of examination

Other information

Photonics; Mitsuo Fukuda : fukuda@ee.tut.ac.jp

Functional materials; Atsunori Matuda : matsuda@ee.tut.ac.jp

Caroritronics; Yuichi Nakamura : nakamura@ee.tut.ac.jp

Spin electronics: Hiroyuki Takagi : takagi@ee.tut.ac.jp

Photonics; Mitsuo Fukuda : fukuda@ee.tut.ac.jp

Functional materials; Atsunori Matuda : matsuda@ee.tut.ac.jp

Caroritronics; Yuichi Nakamura : nakamura@ee.tut.ac.jp Spin electronics: Hiroyuki Takagi : takagi@ee.tut.ac.jp

Reference URL

http://www.ee.tut.ac.jp/material

http://www.ee.tut.ac.jp/material

Office hours

one hour after every classes one hour after every classes

Relations to attainment objectives of learning and education

Key words

functional materials, photonics, spin electronics, ionics, micro-optics, caloritronics functional materials, photonics, spin electronics, ionics, micro-optics, caloritronics

(M42630040)Electrical Technology and Materials[Electrical Technology and Materials]

| Subject name[English] | Electrical Techno | logy and Materials[[| Electrical Technolog | y and Materials] | |
|---|--------------------------|-----------------------|----------------------|--------------------|-------------------|
| Schedule number | M42630040 | Subject area | Advanced | Required or | Elective |
| | | | Electrical and | elective | |
| | | | Electronic | | |
| | | | Information | | |
| | | | Engineering | | |
| Time of starting a course | Spring term | Day of the | Wed.1~1 | Credit(s) | 2 |
| En autor | Queducto D | week,period | | 0 | 1-1-12 |
| Faculty Department Offered | Electrical and Ele | n for Master's Degre | ee Engineering | Subject grade | 1~2 |
| Department Offered | Electrical and Ele | ctronic information | Erigineering | grade | |
| Charge teacher name[Roman alphabet mark] | 須田 善行,稲田 | 亮史,村上 義信 (| SUDA Yoshiyuki, INA | ADA Ryoji, MURAK | AMI Yoshinobu |
| Numbering | | | | | |
| Objectives of class | | | | | |
| This lecture is implemented as a | n introduction to e | electrical energy sys | stems and intended | for students and | other engineering |
| disciplines. It is being useful as re | eference and self-s | study guide for the | professional dealing | with this importan | t area. There are |
| following three sub courses to ch | oose from. | | | | |
| This lecture is implemented as a | n introduction to e | electrical energy sys | stems and intended | for students and | other engineering |
| disciplines. It is being useful as re | eference and self- | study guide for the | professional dealing | with this importan | t area. There are |
| following three sub courses to ch | oose from. | | | | |
| Contents of class | | | | | |
| Sub Course 1 | | | | | |
| 1. Fundamental concept of electric | ical energy enginee | ring | | | |
| 2. Three-phase systems | | | | | |
| 3. Power electronics | | | | | |
| Sub Course 2 | | | | | |
| 1. Introduction of Electrochemica | l Energy Conversio | n Devices | | | |
| 2. Lithium-Ion Secondary Batterie | es | | | | |
| 3. Recent Trend in Electrochemic | al Energy Conversi | on Devices | | | |
| Sub Course 3 | | | | | |
| 1. Introduction of Electric Energy | Systems | | | | |
| 2. High Voltage Engineering and E | lectrical Insulation | | | | |
| 3. Fundamental Properties of Diel | lectrics and Electri | cal Insulating Materi | als. | | |
| Sub Course 1 | | | | | |
| 1. Fundamental concept of electr | ical energy enginee | ring | | | |
| 2. Ihree-phase systems | | | | | |
| 3. Power electronics | | | | | |
| Sub Gourse 2 | | n Davie | | | |
| 1. Introduction of Electrochemica | i ⊑nergy Conversio | n Devices | | | |
| 2. Litnium-Ion Secondary Batterie | es al Epormy Conversi | on Devices | | | |
| Sub Course 3 | a Lifergy Conversi | UL DEVICES | | | |
| 1 Introduction of Electric Energy | Systems | | | | |
| 2. High Voltage Engineering and F | lectrical Insulation | | | | |
| 3. Fundamental Properties of Diel | lectrics and Electric | cal Insulating Materi | als. | | |
| Self Preparation and Review | | | | | |
| | | | | | |
| Related subjects | | | | | |
| Basic electrical power engineering | g course is prereau | isite. | | | |
| Basic electrical power engineerin | g course is prerequ | isite. | | | |
| Notes for textbook | | | | | |
| Materials will be prepared by the | lecturer. | | | | |
| Materials will be prepared by the | lecturer. | | | | |
| Notes for reference | | | | | |
| Goals to be achieved | | | | | |
| | | | | | |
| | | | | | |

| Evaluation of | ⁻ achievement |
|---------------|--------------------------|
| Marks are ba | sed on reports(100%). |

Marks are based on reports(100%).

Examination

Details of examination

Other information

Reference URL

J. Larminie and A. Dicks: Fuel Cell Systems Explained (Wiley)
 M. Yoshio, R.J. Brodd and A. Kozawa: Lithium Ion Batteries: Science and Technologies (Springer-Verlag)
 E. Kuffel, W. Zaengel and J. Kuffel: High Voltage Engineering (Newnes)

J. Larminie and A. Dicks: Fuel Cell Systems Explained (Wiley)
 M. Yoshio, R.J. Brodd and A. Kozawa: Lithium Ion Batteries: Science and Technologies (Springer-Verlag)
 E. Kuffel, W. Zaengel and J. Kuffel: High Voltage Engineering (Newnes)

Office hours

Relations to attainment objectives of learning and education

(M42630050)Semiconductor Physics[Semiconductor Physics]

| Subject name[English] | Semiconductor Physics[Semiconductor Physics] | | | | | |
|---------------------------|--|-------------------------------|----------------|---------------|-----|--|
| Schedule number | M42630050 Subject area Advanced | | Required or | Elective | | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | Spring term | Day of the | Tue.1~1 | Credit(s) | 2 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | Electrical and Elec | ctronic Information | Engineering | Beggining | | |
| | grade | | | | | |
| Charge teacher name[Roman | 若原 昭浩, SANDHU ADARSH, 岡田 浩, 河野 剛士 WAKAHARA Akihiro, Sandhu Adarsh, | | | | | |
| alphabet mark] | OKADA Hiroshi, K | OKADA Hiroshi, KAWANO Takeshi | | | | |
| Numbering | | | | | | |

Objectives of class

To understand semiconductor physics, structure, design, and processing of advanced semiconductor devices.

To understand semiconductor physics, structure, design, and processing of advanced semiconductor devices.

Contents of class

This subject consists of two parts. The first half begins by introducing majority- and minority-carrier behavior in fundamental pn-junction and MOS structures. Injected minority carrier dynamics in semiconductors is also included. On the latter half, student choose one from following two topics.

1. Fabrication and characterization technology for Nanosturecture devices (Prof. Sandhu, Okada)

2. Band engineering and quantum effect devices (Prof. Wakahara)

3. Advanced MEMS/NEMS technologies(Prof. Kawano)

Adding to lectures by professors, in this subject, a case study is also conducted. Namely, students are required to give a presentation on researches on the given topics, and on design of devices that satisfies required specifications.

This subject consists of two parts. The first half begins by introducing majority- and minority-carrier behavior in fundamental pn-junction and MOS structures. Injected minority carrier dynamics in semiconductors is also included. On the latter half, student choose one from following two topics.

1. Fabrication and characterization technology for Nanosturecture devices (Prof. Sandhu, Okada)

- 2. Band engineering and quantum effect devices (Prof. Wakahara)
- 3. Advanced MEMS/NEMS technologies(Prof. Kawano)

Adding to lectures by professors, in this subject, a case study is also conducted. Namely, students are required to give a presentation on researches on the given topics, and on design of devices that satisfies required specifications.

Self Preparation and Review

Related subjects

Master's course: Semiconductor physics,

Master's course: Semiconductor physics,

Notes for textbook

S.M.Sze, Physics of Semiconductor Devices (Wiley)

Related references, data, printed matters will be given in the class. S.M.Sze, Physics of Semiconductor Devices (Wiley)

Related references, data, printed matters will be given in the class.

Notes for reference

Goals to be achieved

You will be able to:

- 1. Deeply understand fundamental phenomena in semiconductors, and explain operation principle of basic semiconductor devices to master course students.
- 2. Design a essential part of semiconductor devcie that satisfies the given specification.
- 3. Investigate on given topics, and give a lecture on this.

You will be able to:

- 1. Deeply understand fundamental phenomena in semiconductors, and explain operation principle of basic semiconductor devices to master course students.
- 2. Design a essential part of semiconductor devcie that satisfies the given specification.
- 3. Investigate on given topics, and give a lecture on this.

Evaluation of achievement

Achievenemt of lectures of the case study, and writing research reports.

Achievenemt of lectures of the case study, and writing research reports.

Examination

Details of examination

Other information

Before choosing a sub-course, contact to following professors

Akihiro Wakahara:C-608 wakahara[at]ee.tut.ac.jp Adarsh Sandhu :EIIRIS sandhu[at]eiiris.tut.ac.jp Hiroshi Okada:C-303B okada[at]ee.tut.ac.jp Takeshi Kawano:C-603 kawano[at]ee.tut.ac.jp

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Reference URL

http://www.int.ee.tut.ac.jp http://www.eiiris.tut.ac.jp http://www.int.ee.tut.ac.jp http://www.eiiris.tut.ac.jp

Office hours

Relations to attainment objectives of learning and education

Key words

Solid-state electronics, semiconductor physics, laser diode, low-dimensional quantum devices Solid-state electronics, semiconductor physics, laser diode, low-dimensional quantum devices

(M42630070)Information and Communication Technology[Information and Communication Technology]

| Subject name[English] | Information and Communication Technology[Information and Communication Technology] | | | | | |
|---------------------------|--|----------------------|-----------------|---------------|----------|--|
| Schedule number | M42630070 | Subject area | Advanced | Required or | Elective | |
| | | | Electrical and | elective | | |
| | | | Electronic | | | |
| | | | Information | | | |
| | | | Engineering | | | |
| Time of starting a course | Spring term | Day of the | Mon.3~3 | Credit(s) | 2 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | Electrical and Elec | ctronic Information | Engineering | Beggining | | |
| | | | | | | |
| Charge teacher name[Roman | 大平 孝,上原 秀 | 幸 OHIRA Takashi | UEHARA Hideyuki | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |

Objectives of class

Students select between the following two courses:

The first course is intended for learning how to design microwave circuits needed for advanced wireless communication systems and wireless power transmission systems. The distributed constant element theory is addressed to characterize linear circuits at high frequencies. Based on this technique, students challenge synthesis of a variety of microwave signal and power processing functions.

The second course is intended for learning the mechanism of medium access control and multi-hop communications for ad hoc and sensor networks. Students try to give solutions of the problems which cause performance degradation. Students select between the following two courses:

The first course is intended for learning how to design microwave circuits needed for advanced wireless communication systems and wireless power transmission systems. The distributed constant element theory is addressed to characterize linear circuits at high frequencies. Based on this technique, students challenge synthesis of a variety of microwave signal and power processing functions.

The second course is intended for learning the mechanism of medium access control and multi-hop communications for ad hoc and sensor networks. Students try to give solutions of the problems which cause performance degradation.

Contents of class

Course 1 provided by Prof. Ohira:

- 1. Transmission lines
- 2. Scattering matrix
- 3. Mizuhashi Smith chart

Course 2 provided by Prof. Uehara:

- 1. Medium access control protocols
- 2. Multi-hop communications
- 3. Ad hoc and sensor networks
- Course 1 provided by Prof. Ohira:
- 1. Transmission lines
- 2. Scattering matrix
- 3. Mizuhashi Smith chart

Course 2 provided by Prof. Uehara:

1. Medium access control protocols

2. Multi-hop communications

3. Ad hoc and sensor networks Self Preparation and Review

Related subjects

Course 1:

Deep understanding on electromagnetic field theory, linear passive and reciprocal circuit theory, and sophisticated experience on complex and matrix mathematics are prerequisite.

Course 2:

The students who will take this course are supposed to have sufficient knowledge about the following; wireless digital modulation and demodulation, radio propagation characteristic, signal processing, probability, random variables and stochastic

process.

Course 1:

Deep understanding on electromagnetic field theory, linear passive and reciprocal circuit theory, and sophisticated experience on complex and matrix mathematics are prerequisite.

Course 2:

The students who will take this course are supposed to have sufficient knowledge about the following; wireless digital modulation and demodulation, radio propagation characteristic, signal processing, probability, random variables and stochastic process.

Notes for textbook

Course 1: Lecture on the blackboard without resorting to textbooks.

Course 2: Instruct in 1st class.

Course 1: Lecture on the blackboard without resorting to textbooks.

Course 2: Instruct in 1st class.

Notes for reference

Goals to be achieved

Course 1:

- Understand the distributed constant elements and concept of scattering matrix.
- Derive frequency responses on linear RF circuits exploiting Mizuhashi Smith chart.
- Characterize various kinds of high frequency functional circuits and compose them based upon given specifications.

Course 2:

- Understand the mechanism of medium access control and multi-hop communications
- Understand the characteristics of ad hoc and sensor networks
- Present a solution or a new application for the above

Course 1:

- Understand the distributed constant elements and concept of scattering matrix.
- Derive frequency responses on linear RF circuits exploiting Mizuhashi Smith chart.
- Characterize various kinds of high frequency functional circuits and compose them based upon given specifications.

Course 2:

- Understand the mechanism of medium access control and multi-hop communications
- Understand the characteristics of ad hoc and sensor networks
- Present a solution or a new application for the above

Evaluation of achievement

Course 1: Marks are based on the final test.

Course 2: Marks are based on reports and presentations. Course 1: Marks are based on the final test.

Course 2: Marks are based on reports and presentations.

Examination

定期試験を実施(対面) Examination(Face to Face)

Details of examination

Other information

For e-mail address information, visit http://www.comm.ee.tut.ac.jp//

For e-mail address information, visit http://www.comm.ee.tut.ac.jp//

Reference URL

http://www.comm.ee.tut.ac.jp/ http://www.comm.ee.tut.ac.jp/

Office hours

Appoint a time slot via email

Appoint a time slot via email

Relations to attainment objectives of learning and education

microwave, circuit, electromagnetic field, Smith chart, scattering matrix, distributed constant element, wireless networks, medium access control, multi-hop

microwave, circuit, electromagnetic field, Smith chart, scattering matrix, distributed constant element, wireless networks, medium access control, multi-hop

(M42630110)Methodology of R & D 2[Methodology of R & D 2]

| | | | | | 1 |
|-----------------------------------|---------------------------------|----------------------|----------------------|---------------------|--------------------|
| Subject name[English] | wethodology of F | K & D ZLMethodology | | | |
| Schedule number | M42630110 | Subject area | Advanced | Required or | Elective |
| | | | Electrical and | elective | |
| | | | Electronic | | |
| | | | Information | | |
| | | | Engineering | | |
| Time of starting a course | Spring term | Day of the | Tue.3~3 | Credit(s) | 2 |
| | | week,period | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 |
| Department Offered | Electrical and Ele | ectronic Information | Engineering | Beggining | |
| | | | | grade | |
| Charge teacher name[Roman | S2系教務委員 2 | kei kyomu Iin−S | | | |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| Objectives of class | | | | | |
| The class aims to provide a ba | sic understanding | of R&D methodolog | ry related to the e | lectrical and elect | ronic information |
| engineering for the research work | of his/her master | thesis | | | |
| The class aims to provide a ba | sic understanding | of R&D methodolog | w related to the e | lectrical and elect | ronic information |
| angineering for the recearch work | of his/her master | thesis | sy related to the e | | |
| Contents of class | to mor master | 0.0010. | | | |
| The close provides same fundament | ontol tipo to com d | at DOD were affer a | ivoly Contanta -fr | | n the ouncertacy |
| The class provides some fundam | ental ups to condu | ICL ROD WORK ETTECT | ively. Contents of 1 | me class depend o | n the supervisor. |
| The place provides same fund | pervisors | | waly Cantanta - C | | n the owners it |
| To be appounced by individual are | ental ups to condu pervisors | וטנ הפט work effect | ively. Contents of 1 | me class depend o | in the supervisor. |
| Self Preparation and Paview | pervisors | | | | |
| Sell Preparation and Review | | | | | |
| | | | | | |
| Related subjects | | | | | |
| | | | | | |
| Notes for textbook | | | | | |
| Reference and material will be av | ailable from the su | pervisor. | | | |
| Reference and material will be av | ailable from the su | pervisor. | | | |
| Notes for reference | | | | | |
| | | | | | |
| Goals to be achieved | | | | | |
| To acquire the ability of identif | ving and formulati | ng research probler | n nlanning and imr | lementing specific | research tasks |
| troubleshooting and communication | | | | | |
| To acquire the ability of identif | ving and formulati | ng racaarah probler | n planning and im | lementing checific | recearch tacks |
| troubleshooting and communication | | ng research probler | n, planning and imp | blementing specific | research tasks, |
| Evaluation of achievement | ig outcomes. | | | | |
| Coursework and presentation are | evaluated general | v | | | |
| Soursework and presentation are | Svaluated generali | у. | | | |
| | | | | | |
| Coursework and presentation are | evaluated generall | у. | | | |
| | | | | | |
| Examination | | | | | |
| | | | | | |
| Details of examination | | | | | |
| | | | | | |
| Other information | | | | | |
| | | | | | |
| | | | | | |
| Reference URL | | | | | |
| | | | | | |
| Office hours | | | | | |
| | | | | | |
| Relations to attainment objective | s of learning and e | ducation | | | |
| | | | | | |
| | | | | | |
| | | | | | |

(M43610010)Seminar on Computer Science and Engineering I[Seminar on Computer Science and Engineering I]

| Subject name[English] | Seminar on Computer Science and Engineering I[Seminar on Computer Science and | | | | | |
|---------------------------|---|------------------------|-------------|---------------|----------|--|
| | Engineering I] | | | | | |
| Schedule number | M43610010 | Subject area | Advanced | Required or | Required | |
| | | | Computer | elective | | |
| | | | Science and | | | |
| | | | Engineering | | | |
| Time of starting a course | Year | Day of the | Intensive | Credit(s) | 4 | |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | |
| Department Offered | Electrical and Elec | ectronic Information I | Engineering | Beggining | | |
| | | | | grade | | |
| Charge teacher name[Roman | S3系教務委員 3 | kei kyomu Iin−S | | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |

Objectives of class

The course is intended for students to study basic materials in depth, related to his/her research subjects in computer science and engineering.

It is also aimed for students to acquire various skills, required in general research work, such as those for oral presentation, and technical discussion and writing.

The course is intended for students to study basic materials in depth, related to his/her research subjects in computer science and engineering.

It is also aimed for students to acquire various skills, required in general research work, such as those for oral presentation, and technical discussion and writing.

Contents of class

While specific contents depend on the research areas students are involved in, it is usually the case for students to read relevant textbooks/research papers and report on them, as well as to present and discuss on the research work of their own. While specific contents depend on the research areas students are involved in, it is usually the case for students to read relevant textbooks/research papers and report on them, as well as to present and discuss on the research work of their own. **Self Preparation and Review**

Related subjects

Consult with your advisor.

Consult with your advisor.

Notes for textbook

Consult with your advisor. Consult with your advisor.

Notes for reference

Goals to be achieved

To acquire abilities for technical readings in English, logical thinking/explanation, and clear presentation.

To acquire abilities for technical readings in English, logical thinking/explanation, and clear presentation.

Evaluation of achievement

Will be evaluated by taking into accout various factors overall, such as technical explanation, question answering, discussion involvements and so on.

Will be evaluated by taking into accout various factors overall, such as technical explanation, question answering, discussion involvements and so on.

Examination

Details of examination

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M43610020)Seminar on Computer Science and Engineering II[Seminar on Computer Science and Engineering II]

| Subject name[English] | Seminar on Con | nputer Science and | d Engineering II[Se | eminar on Compu | ter Science and |
|---|--------------------|--------------------------------------|--|-------------------------|-----------------|
| | Engineering II] | | | | |
| Schedule number | M43610020 | Subject area | Advanced Computer Science and Engineering | Required or elective | Required |
| Time of starting a course | Year | Day of the week,period | Intensive | Credit(s) | 2 |
| Faculty | Graduate Progran | Graduate Program for Master's Degree | | | 2~2 |
| Department Offered | Electrical and Ele | ctronic Information I | Beggining grade | | |
| Charge teacher name[Roman alphabet mark] | S3系教務委員 3I | kei kyomu Iin−S | | | |
| Numbering | | | | | |
| Objectives of class | | | | | |

The seminar aims to provide a broad understanding of the computer science and engineering available for the research work of his/her master thesis.

The seminar aims to provide a broad understanding of the computer science and engineering available for the research work of his/her master thesis.

Contents of class

The class provides both of fundamental knowledge on the research work of master thesis and the most advanced results in the related field by reading research papers and monographs. Contents of the class depend on the supervisor. To be announced by individual supervisors.

The class provides both of fundamental knowledge on the research work of master thesis and the most advanced results in the related field by reading research papers and monographs. Contents of the class depend on the supervisor. To be announced by individual supervisors.

Self Preparation and Review

Related subjects

Notes for textbook

Textbook or material will be made available from the supervisor. To be announced by individual supervisors.

Textbook or material will be made available from the supervisor. To be announced by individual supervisors.

Notes for reference

Goals to be achieved

To acquire fundamental knowledge on individual research fields, to acquire the ability of finding a problem, the ability of solving the problem and the presentation skill.

To acquire fundamental knowledge on individual research fields, to acquire the ability of finding a problem, the ability of solving the problem and the presentation skill.

Evaluation of achievement

Coursework, presentation and/or report.

Coursework, presentation and/or report.

Examination

Details of examination

Other information

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M43610030)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

| Subject name[English] | Thesis Research on Computer Science and Engineering[Thesis Research on Computer | | | | |
|---------------------------|---|----------------------|------------------|---------------|----------|
| | Science and Engir | neering] | | | |
| Schedule number | M43610030 | Subject area | Advanced | Required or | Required |
| | | | Computer | elective | |
| | | | Science and | | |
| | | | Engineering | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 |
| | | week,period | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 |
| Department Offered | | | | Beggining | |
| | | | | grade | |
| Charge teacher name[Roman | S3系教務委員, 谷 | 各教員 3kei kyomu Ii | in-S, KAKUKYOUIN | Kakukyouin | |
| alphabet mark] | | | | | |
| Numbering | | | | | |

Objectives of class

The course is intended for students to foster their interests in research problems on computer science and engineering and to acquire ability for independent studies.

It is also aimed for students to acquire, through thesis research, cooperativeness, a sense of responsibility, abilities for problem solving, research planning, decision making, outcome presentation and subject investigation, and to enhance their creativity and persistency, among others.

The course is intended for students to foster their interests in research problems on computer science and engineering and to acquire ability for independent studies.

It is also aimed for students to acquire, through thesis research, cooperativeness, a sense of responsibility, abilities for problem solving, research planning, decision making, outcome presentation and subject investigation, and to enhance their creativity and persistency, among others.

Contents of class

It is usually the case that thesis research is carried out on individual bases with specific contents differing from one student to another.

Consult with your advisor for any further details.

It is usually the case that thesis research is carried out on individual bases with specific contents differing from one student to another.

Consult with your advisor for any further details.

Self Preparation and Review

Related subjects

Consult with your advisor for them. Consult with your advisor for them.

Notes for textbook

Consult with your advisor for them.

Consult with your advisor for them.

Notes for reference

Goals to be achieved

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

Evaluation of achievement

| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
|--|
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Examination |
| |
| Details of examination |
| Other information |
| Reference URL |
| Office hours |
| Relations to attainment objectives of learning and education |
| |
| |
| |
| Key words |

(M43610030)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

| Subject name[English] | Thesis Research on Computer Science and Engineering[Thesis Research on Compute | | | | | |
|---------------------------|--|--------------------------------------|-------------|-------------|----------|--|
| | Science and Engir | neering] | | | | |
| Schedule number | M43610030 | Subject area | Advanced | Required or | Required | |
| | | | Computer | elective | | |
| | | | Science and | | | |
| | | | Engineering | | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 | |
| | | week,period | | | | |
| Faculty | Graduate Program | Graduate Program for Master's Degree | | | 1~2 | |
| Department Offered | Computer Science | e and Engineering | | Beggining | M1, M2 | |
| | | | | grade | | |
| Charge teacher name[Roman | S3系教務委員 3 | kei kyomu Iin−S | | | | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |

Objectives of class

The course is intended for students to foster their interests in research problems on computer science and engineering and to acquire ability for independent studies.

It is also aimed for students to acquire, through thesis research, cooperativeness, a sense of responsibility, abilities for problem solving, research planning, decision making, outcome presentation and subject investigation, and to enhance their creativity and persistency, among others.

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Contents of class

It is usually the case that thesis research is carried out on individual bases with specific contents differing from one student to another.

Consult with your advisor for any further details.

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Consult with your advisor for any further details.

Self Preparation and Review

Related subjects

Consult with your advisor for them. Consult with your advisor for them.

Notes for textbook

Consult with your advisor for them.

Consult with your advisor for them.

Notes for reference

Goals to be achieved

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

Evaluation of achievement

| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
|--|
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Examination |
| |
| Details of examination |
| Other information |
| Reference URL |
| Office hours |
| Relations to attainment objectives of learning and education |
| |
| |
| |
| Key words |

(M4361003T)Thesis Research on Computer Science and Engineering[Thesis Research on Computer Science and Engineering]

| Subject name[English] | Thesis Research | Thesis Research on Computer Science and Engineering[Thesis Research on Computer | | | | |
|---|-------------------|---|--|-------------------------|----------|--|
| | Science and Engir | neering] | | | | |
| Schedule number | M4361003T | Subject area | Advanced Computer Science and Engineering | Required or elective | Required | |
| Time of starting a course | Year | Day of the week,period | Intensive | Credit(s) | 6 | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 2~2 | |
| Department Offered | Computer Science | e and Engineering | | Beggining grade | | |
| Charge teacher name[Roman alphabet mark] | S3系教務委員 3I | kei kyomu Iin−S | | | · | |
| Numbering | | | | | | |

Objectives of class

The course is intended for students to foster their interests in research problems on computer science and engineering and to acquire ability for independent studies.

It is also aimed for students to acquire, through thesis research, cooperativeness, a sense of responsibility, abilities for problem solving, research planning, decision making, outcome presentation and subject investigation, and to enhance their creativity and persistency, among others.

The course is intended for students to foster their interests in research problems on computer science and engineering and to acquire ability for independent studies.

It is also aimed for students to acquire, through thesis research, cooperativeness, a sense of responsibility, abilities for problem solving, research planning, decision making, outcome presentation and subject investigation, and to enhance their creativity and persistency, among others.

Contents of class

It is usually the case that thesis research is carried out on individual bases with specific contents differing from one student to another.

Consult with your advisor for any further details.

It is usually the case that thesis research is carried out on individual bases with specific contents differing from one student to another.

Consult with your advisor for any further details.

Self Preparation and Review

Related subjects

Consult with your advisor for them. Consult with your advisor for them.

Notes for textbook

Consult with your advisor for them.

Consult with your advisor for them.

Notes for reference

Goals to be achieved

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

To acquire abilities for doing research and development at technically high level, sophisticated decision making, and leading large scale research projects.

Evaluation of achievement

| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
|--|
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Three faculty members will be assigned to prepare the evaluation for your thesis research, based on publication records, |
| master thesis, and oral presentation. It will be then finalized by the faculty meeting. |
| Examination |
| |
| Details of examination |
| Other information |
| Reference URL |
| Office hours |
| Relations to attainment objectives of learning and education |
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| Key words |

(M43630020)System Design Project[System Design Project]

| Schedule number M43630020 Subject area Advanced Computer Science and Engineering Required or elective Elective Time of starting a course Spring term Day of the week,period Tue.4 ~ 4,Fri.4 Credit(s) 2 Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Computer Science and Engineering grade Beggining grade 1~2 Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Beggining grade Beggining grade Objectives of class The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. | ring and |
|---|-----------|
| Time of starting a course Spring term Day of the week,period Computer Science and Engineering elective Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Computer Science and Engineering Beggining grade 1~2 Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu Iin-S Beggining grade 1~2 Objectives of class The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. | ring and |
| Time of starting a course Spring term Day of the week,period Tue.4 ~ 4,Fri.4 Credit(s) 2 Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Computer Science and Engineering Beggining grade 1~2 Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu Iin-S Beggining grade 1 Objectives of class The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. | ring and |
| Time of starting a courseSpring termDay of the week,periodEngineeringCredit(s)2FacultyGraduate Program for Master's DegreeSubject grade1~2Department OfferedComputer Science and EngineeringBeggining grade1~2Charge teacher name[Roman alphabet mark]S3系教務委員 3kei kyomu lin-SSubject grade1~2Objectives of classS3系教務委員 skei kyomu lin-SSite intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies.It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress.The project is intended for students to foster their interests in research problems on computer science and engineer to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress.The project is intended for students to foster their interests in research problems on computer science and engineer to project is intended for students to foster their interests in research problems on computer science and engineer the research topic, the plan/schedule and to present the progress. | ring and |
| Time of starting a course Spring term Day of the week,period Tue.4 ~ 4,Fri.4 Credit(s) 2 Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Computer Science and Engineering Beggining grade 1~2 Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Beggining grade 1~2 Objectives of class The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee to acquire ability for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. | ring and |
| week,period ~5 Image: space | ring and |
| Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Computer Science and Engineering Beggining grade 1~2 Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Beggining grade 1 Numbering Objectives of class Frequence Frequence Frequence Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| Department Offered Computer Science and Engineering Beggining grade Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Numbering Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| grade Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Numbering S3系教務委員 3kei kyomu lin-S Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| Charge teacher name[Roman alphabet mark] S3系教務委員 3kei kyomu lin-S Numbering Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| alphabet mark] Numbering Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| Numbering Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ering and |
| Objectives of class The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background krithe research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| The project is intended for students to foster their interests in research problems on computer science and engineer to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background krithe research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and engineer | ring and |
| to acquire ability for independent studies. It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee | |
| It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee | |
| the research topic, the plan/schedule and to present the progress. The project is intended for students to foster their interests in research problems on computer science and enginee | nowledge, |
| The project is intended for students to foster their interests in research problems on computer science and enginee | 5, |
| The project is intended for students to foster their interests in research problems on computer science and enginee | |
| | ring and |
| to acquire ability for independent studies. | und und |
| It is also aimed for students to acquire design ability for their thesis research such as the purpose, the background kr | nowledge. |
| the research topic, the plan/schedule and to present the progress. | |
| , , F | |
| Contents of class | |
| Unicence of class | udent to |
| another | auent to |
| Consult with your advisor for any further details | |
| סטוזטוג שונו צטעו מעצוטו זטו מוצ זערטובו עבנמוז. | |
| The for second has a local advantation of the second se | |
| IT IS USUALLY THE CASE THAT THE PROJECT IS CARRIED OUT ON INDIVIDUAL BASES with specific contents differing from on st | udent to |
| Consult with your advisor for any further details | |
| Consult with your auvisor for any further uctalls. | |
| Out Descention and Destant | |
| Seit Preparation and Review | |
| | |
| Related subjects | |
| Consult with your advisor for them. | |
| Consult with your advisor for them. | |
| Notes for textbook | |
| Consult with your advisor. | |
| Consult with your advisor. | |
| Notes for reference | |
| | |
| Goals to be achieved | |
| To acquire design abilities for doing research and development at technically high level and leading large scale | |
| research projects | |
| | |
| | |
| To acquire design abilities for doing research and development at technically high level and leading large scale | |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects | |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects | |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects | |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects Evaluation of achievement Will be evaluated by the poster presentation and report including the research purpose background knowledge | research |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects Evaluation of achievement Will be evaluated by the poster presentation and report including the research purpose, background knowledge, tonic plan/scheduling and progress | research |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects Evaluation of achievement Will be evaluated by the poster presentation and report including the research purpose, background knowledge, topic,plan/scheduling and progress. | ,research |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects Evaluation of achievement Will be evaluated by the poster presentation and report including the research purpose, background knowledge, topic,plan/scheduling and progress. | ,research |
| To acquire design abilities for doing research and development at technically high level and leading large scale research projects Evaluation of achievement Will be evaluated by the poster presentation and report including the research purpose, background knowledge, topic, plan/scheduling and progress. Will be evaluated by the poster presentation and report including the research purpose, background knowledge, topic, plan/scheduling and progress. | research, |

| Examination | | | | | |
|-------------------------|-------------------|-----------------|-------|------|--|
| Details of examination | | | | | |
| Other information | | | | | |
| Reference URL | | | | | |
| Office hours | | | | | |
| Relations to attainment | objectives of lea | rning and educa | ition | | |
| | | | | | |
| | | | | | |
| Key words | | | | | |

(M43630080)Computers and Education[Computers and Education]

| Cubic et a emo[Fardich] | | | | | | |
|------------------------------------|----------------------------------|-----------------------|-------------------------|----------------------|---------------------|--------------------|
| | Computers and E | ducation[Com | puters | and Education | _ | F 1 |
| Schedule number | M43630080 | Subject are | a | Advanced | Required or | Elective |
| | | | | Computer | elective | |
| | | | | Science and | | |
| | | | | Engineering | | |
| Time of starting a course | Spring term | Day of week.period | the I | Mon.5~5 | Credit(s) | 2 |
| Faculty | Graduate Program | m for Master's | Degre | e | Subject grade | 1~2 |
| Department Offered | Computer Science and Engineering | | | | Beggining | |
| • | | 0 | | | grade | |
| Charge teacher name[Roman | 河合 和久 KAW/ | AI Kazuhisa | | | - | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| The purpose of the class is to c | leepen and broade | en students' kr | nowled | ge of their own ex | pertise in relation | to the society in |
| learning about computers and tec | hnology in educati | on. | | | | |
| The purpose of the class is to c | leepen and broade | en students' kr | nowled | ge of their own ex | nertise in relation | to the society in |
| learning about computers and too | hnology in educati | nn | | | | to the society in |
| Contents of class | mology in euucation | 011. | | | | |
| Studente will be afferred arm | ionious of | | tier | Studente will min | omo presertatia | on the following |
| Students will be offered some ov | erviews of comput | Lers and educa | ation. | Students Will give s | bine presentations | to (2) to us t |
| problems: (1) to make the teaching | ig plan of their ow | n research sul | ojects ' | Tor pupils or junior | nign school studen | its, (2) to make a |
| simulated class based on the pla | n, (3) to discuss th | ne simulated c | lass. | At the end of term, | students are requi | ired to submit an |
| essay on computers and education | n. | | | | | |
| | | | | | | |
| 1.Guidance, Lecture#1(Introduction | on to subject "Info | rmation".) | | | | |
| 2.Lecture#2(Computer system for | r education. and So | oftware as cou | rse m | aterial.) | | |
| 3.Lecture#3(Cooperation with the | period of integrate | ed study.) | | | | |
| 4.Lecture#4(Simulated class: plan | and evaluation.) | | | | | |
| 5.Lecture#5(Keep an "Information | " teacher. and Te | aching plan.) | | | | |
| 6.Lecture#6(Information sending a | and presentation.) | 01 | | | | |
| 7 Lecture#7(Group work by collab | oration and preser | ntation) | | | | |
| 8 Lecture#8(Media literacy_ Infor | nation ethics educ | ation and Net | work.) | | | |
| 9 Presentations of Teaching Plan | s #1 | | | | | |
| 10 Presentations of Teaching Plan | ne #2 | | | | | |
| 11 Lecture#9(Expression of inform | notion and multime | dia and Tonio | e in in | formation coolety) | | |
| 12 Lecture#10(Algorithm and proc | ramming and Info | rmation retriev | s III III al and | database) | | |
| 12 Simulated Classes #1 | ranning, and mor | mation retriev | ai anu | ualabase./ | | |
| 14 Simulated Classes #1 | | | | | | |
| 14.Simulated Classes #2 | | | | | | |
| 16 December 20 Classes #3 | | | | | | |
| 16.Presentations of Final Reports | | | | | | |
| | | | | _ | | |
| Students will be offered some ov | erviews of comput | ters and educa | ation. | Students will give s | some presentations | on the following |
| problems: (1) to make the teaching | ng plan of their ow | n research sul | bjects | tor pupils or junior | high school studen | ts, (2) to make a |
| simulated class based on the pla | n, (3) to discuss th | ne simulated c | lass. | At the end of term, | students are requi | ired to submit an |
| essay on computers and education | n. | | | | | |
| | | | | | | |
| 1.Guidance, Lecture#1(Introduction | on to subject "Info | rmation".) | | | | |
| 2.Lecture#2(Computer system for | r education. and So | oftware as cou | rse m | aterial.) | | |
| 3.Lecture#3(Cooperation with the | period of integrate | ed study.) | | | | |
| 4.Lecture#4(Simulated class: plan | and evaluation.) | - | | | | |
| 5.Lecture#5(Keep an "Information | " teacher. and Te | aching plan.) | | | | |
| 6.Lecture#6(Information sending a | and presentation.) | - • • | | | | |
| 7.Lecture#7(Group work by collab | oration and preser | ntation.) | | | | |
| 8.Lecture#8(Media literacy_Inform | nation ethics educ | ation, and Net | work) | | | |
| 9.Presentations of Teaching Plan | s #1 | | / | | | |
| 10 Presentations of Teaching Plan | ns #2 | | | | | |
| 11 ecture#9(Evpression of inform | nation and multime | dia and Tonio | e in in | formation society) | | |
| 12 Lecture#10(Algorithm and area | reamming and Infe | mation rotion | ا ۱۱ ۱۱۱ د. اسمی اور | database) | | |
| 12 Simulated OL #1 | gramming, and infor | mation retriev | ai and | ualabase./ | | |
| 13.5imulated Glasses #1 | | | | | | |

| 14.Simulated Classes #2 |
|-----------------------------------|
| 15.Simulated Classes #3 |
| 16.Presentations of Final Reports |

Self Preparation and Review

Related subjects

Basic skills on information and communication technology are required. Basic skills on information and communication technology are required.

Notes for textbook

(Reference) H. Ohiwa, et.al.: "JOUHOUKA KYOUIKUHOU", Ohm Sha, in Japanese.

(Reference) H. Ohiwa, et.al.: "JOUHOUKA KYOUIKUHOU", Ohm Sha, in Japanese.

Notes for reference

Goals to be achieved

At the end of the course, students will be able to deepen and broaden students' knowledge of their own expertise in relation to the society, and to represent them using computers and technology in education.

At the end of the course, students will be able to deepen and broaden students' knowledge of their own expertise in relation to the society, and to represent them using computers and technology in education.

Evaluation of achievement

Written reports 50%, In class work 50%.

Written reports 50%, In class work 50%.

Examination

Details of examination

Other information

Room: F1-206. E-Mail: kawai@tut.jp

Room: F1-206.

E-Mail: kawai@tut.jp

Reference URL

http://www.ita.cs.tut.ac.jp/~kawai/kpe/ (Some pages are written in Japanese.) http://www.ita.cs.tut.ac.jp/~kawai/kpe/ (Some pages are written in Japanese.)

Office hours

Office hours; Wednesday 2nd period and Friday 2nd period in Room F1-206. Office hours; Wednesday 2nd period and Friday 2nd period in Room F1-206.

Relations to attainment objectives of learning and education

Key words

Informatics, Computer Literacy, Scientific Communication. Informatics, Computer Literacy, Scientific Communication.

(M43630110)High Performance Computing[High Performance Computing]

| Subject name[English] | High Performance | High Performance Computing[High Performance Computing] | | | | | |
|---------------------------|------------------|--|---------------|-------------|----------|--|--|
| Schedule number | M43630110 | Subject area | Advanced | Required or | Elective | | |
| | | | Computer | elective | | | |
| | | | Science and | | | | |
| | | | Engineering | | | | |
| Time of starting a course | Spring term | Day of the | Thu.3~3 | Credit(s) | 2 | | |
| | | week,period | | | | | |
| Faculty | Graduate Program | n for Master's Degre | Subject grade | 2~2 | | | |
| Department Offered | Computer Science | Computer Science and Engineering | | | | | |
| | | | | grade | | | |
| Charge teacher name[Roman | 後藤 仁志 GOTC |) Hitoshi | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |

Objectives of class

This lecture aims to lean the basic concepts and recent developments related to high-performance and cloud computing, simulation science and technology, and especially, to master parallel programming techniques for multi-core processor system and high-performance computing. Recent topics on computational chemistry will be also introduced for well-understanding the current technology of supercomputer and supercomputing. In order to conduct a practical training course on parallel programming techniques of OpenMP and OpenMPI, knowledge and ability to mathematical scientific programming techniques by using Fortran 90/95/2000 and/or C/C++ must be required for students taking this lecture.

This lecture aims to lean the basic concepts and recent developments related to high-performance and cloud computing, simulation science and technology, and especially, to master parallel programming techniques for multi-core processor system and high-performance computing. Recent topics on computational chemistry will be also introduced for well-understanding the current technology of supercomputer and supercomputing. In order to conduct a practical training course on parallel programming techniques of OpenMP and OpenMPI, knowledge and ability to mathematical scientific programming techniques by using Fortran 90/95/2000 and/or C/C++ must be required for students taking this lecture.

Contents of class

1. Guidance and placement examination

2. Introduction to simulation science: What's simulation?

- 3- 5. Partial differential equation of motion, pendulum, mechanical vibration and thier coupled (combined) behaviors
- 6. Introduction to molecular simulations

7-9. Practical training of molecular simulations

- 10. Introduction to parallel programming (OpenMP and OpenMPI) and programming language (Fortran90/95/2000)
- 11-13. Practical training of parallel programming (practical beginner's guide)
- 14-16. Practical training of parallel programming (Intel(R) Compilers)

1. Guidance and placement examination

- 2. Introduction to simulation science: What's simulation?
- 3-5. Partial differential equation of motion, pendulum, mechanical vibration and thier coupled (combined) behaviors
- 6. Introduction to molecular simulations

7-9. Practical training of molecular simulations

- 10. Introduction to parallel programming (OpenMP and OpenMPI) and programming language (Fortran90/95/2000)
- 11-13. Practical training of parallel programming (practical beginner's guide)

14-16. Practical training of parallel programming (Intel(R) Compilers)

Self Preparation and Review

Related subjects

Fundamental knowledge of computation and chemistry, and also basic ability to scientific programming techniques by using Fortran 90/95/2000 and/or C/C++

Fundamental knowledge of computation and chemistry, and also basic ability to scientific programming techniques by using Fortran 90/95/2000 and/or C/C++

Notes for textbook

None

None

Notes for reference

Goals to be achieved

| mathematics and science | | cc, copectally if | | | , | |
|---|--------------------------------|------------------------------|--------------------------------|--|--------------------------|--------------------------------|
| Advanced knowledge of | simulation scien | ce especially m | olecular simulati | ons and high-level ability | of program | ming technique i |
| mathematics and science | sindlation scien | ce, especially fi | | | | |
| Evaluation of achievem | ent | | | | | |
| Reports on various topi | cs and assignmer | nts | | | | |
| Reports on various topi | cs and assignmer | nts | | | | |
| Examination | | | | | | |
| 試験期間中には何も行 | わない | | | | | |
| None during exam perio | d | | | | | |
| Details of examination | | | | | | |
| | | | | | | |
| Other information | | | | | | |
| via E-mail (gotoh@tut.jp |) | | | | | |
| via E-mail (gotoh@tut.jp |) | | | | | |
| Reference URL | | | | | | |
| | | | | | | |
| Office hours | | | | | | |
| via E-mail(gotoh@tut.jp) | 1 | | | | | |
| via E-mail(gotoh@tut.jp) | 1 | | | | | |
| Relations to attainment | objectives of lea | arning and educ | ation | | | |
| None | | | | | | |
| | | | | | | |
| None | | | | | | |
| | | | | | | |
| | | | | | | |
| Key words | | | | | | |
| Key words Computer Simulation, | Computational | Mathematics, | Computational | Physics,Computational | Chemistry, | Supercomputer |
| Key words Computer Simulation, Mathematical Science | Computational | Mathematics, | Computational | Physics,Computational | Chemistry, | Supercomputer |
| Key words Computer Simulation, Mathematical Science Computer Simulation, | Computational Computational | Mathematics, Mathematics, | Computational Computational | Physics,Computational Physics,Computational | Chemistry, Chemistry, | Supercomputer Supercomputer |
(M43630160)Quantum Biology and Materials Science[Quantum Biology and Materials Science]

| Subject name[English] | Quantum Biology | and Materials | Scier | nce[Quantum Biolog | y and Materials Sci | ence] |
|---|----------------------|-----------------------|-----------|----------------------|---------------------|-----------|
| Schedule number | M43630160 | Subject are | a | Advanced | Required or | Elective |
| | | | | Computer | elective | |
| | | | | Science and | | |
| | | | | Engineering | | |
| Time of starting a course | Spring term | Day of week period | the I | Wed.1~1 | Credit(s) | 2 |
| Faculty | Graduate Program | n for Master's | - Degr | ee | Subject grade | 1~2 |
| Department Offered | Computer Scienc | e and Enginee | ering | | Beggining | |
| | | 0 | | | grade | |
| Charge teacher name[Roman | 関野 秀男,栗田 | 典之,後藤 | 仁志: | SEKINO Hideo, KUR | ITA Noriyuki, GOT |) Hitoshi |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| Understanding of theories for mo | lecular science and | simulation te | chnold | www.based.upon.it | | |
| Understanding of theories for mo | lecular science and | simulation te | chnolo | ogy based upon it | | |
| Contents of class | | | | 87 | | |
| 1. Fundamental notion of quantum | n mechanics | | | | | |
| i) Philosophical aspect | | | | | | |
| ii) Pragmatical aspect | | | | | | |
| 2. Differential equations for quant | um mechanical pro | blems | | | | |
| i) Free particle | F | | | | | |
| ii) Confined particle | | | | | | |
| iii) Multidimensional problems | | | | | | |
| 3. Molecular orbital theory | | | | | | |
| i) Representation of physical space | ce | | | | | |
| ii) Spectral representation of spa | ce/ Basis functions | ; | | | | |
| 4. Approximate theory for many e | lectron systems | | | | | |
| i) Many particle problem in confin | ed systems | | | | | |
| ii) Rigor and precision | - | | | | | |
| iii) Computational aspect | | | | | | |
| | | | | | | |
| 1. Fundamental notion of quantum | n mechanics | | | | | |
| i) Philosophical aspect | | | | | | |
| ii) Pragmatical aspect | | | | | | |
| 2. Differential equations for quant | um mechanical pro | blems | | | | |
| i) Free particle | | | | | | |
| ii) Confined particle | | | | | | |
| iii) Multidimensional problems | | | | | | |
| 3. Molecular orbital theory | | | | | | |
| i) Representation of physical space | | | | | | |
| ii) Spectral representation of space/ Basis functions | | | | | | |
| 4. Approximate theory for many electron systems | | | | | | |
| i) Many particle problem in confined systems | | | | | | |
| ii) Rigor and precision | | | | | | |
| iii) Computational aspect | | | | | | |
| | | | | | | |
| Self Preparation and Review | | | | | | |
| Preparation is must. Student can | not stay in the clas | s if not prepa | red fo | r the class in advan | ce. | |
| Preparation is must. Student can | not stay in the clas | s if not prepa | red fo | r the class in advan | ce. | |
| Related subjects | | | | | | |
| | | | | | | |
| Notes for textbook | | | | | | |
| 1)Quantum chemistry | | | | | | |
| Eyring/Walter/Kimball | | | | | | |
| | | | | | | |
| 2)Modern Quantum Chemistry | | | | | | |
| Introduction to Advanced Flectro | n Structure Theory | , | | | | |
| | | | | | | |

| A.Szabo and N.S.Ostlund |
|---|
| 1)Quantum chemistry |
| Eyring/Walter/Kimball |
| |
| 2)Modern Quantum Chemistry |
| Introduction to Advanced Electron Structure Theory |
| A.Szabo and N.S.Ostlund |
| Notes for reference |
| |
| Goals to be achieved |
| To understand quantum mechanics, Molecuar quantum mechanics and its numerical representation on computer. |
| To understand quantum mechanics, Molecuar quantum mechanics and its numerical representation on computer. |
| Evaluation of achievement |
| Presentation in the class and reports, small tests(several times) as well as creation of simulation programs. |
| Presentation in the class and reports, small tests(several times) as well as creation of simulation programs. |
| Examination |
| その他 |
| Other |
| Details of examination |
| Each class, student must show the results of the research project assigned for each. |
| Each class, student must show the results of the research project assigned for each. |
| Other information |
| F-305 |
| 0532-44-6880 |
| F-305 |
| 0532-44-6880 |
| Reference URL |
| |
| Office hours |
| Wed. 13:00 to 14:30 |
| Wed. 13:00 to 14:30 |
| Relations to attainment objectives of learning and education |
| |
| |
| |
| |
| |
| Key words |
| Molecular Orbital Theory Differential Equation |
| Molecular Orbital Theory Differential Equation |

(M43630220)Speech and Language Processing, Advanced[Speech and Language Processing, Advanced]

| Schedule number M43630220 Subject area Advanced Omputer Required elective or Elective Time of starting a course Spring term Day of the True=-2 Credit(s) 2 Peaulty Graduate Program for Master's Degree Subject grade 1~-2 Department Offered Computer Science and Engineering Beggining grade 1~-2 Department Offered Computer Science and Engineering Beggining grade 1~-2 Dipicotives of class (Yamanoto) Natural language processing will be discussed. 1 Important topics on spoken / natural language processing will be discussed. 1 1 1 Varananco Basic of spoken language processing / Basic of speech recognition / Algorithm for continuous speech recognition / Hidden Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ 1 1 (Vamanoto) Basic of information retrieval / Basic of speech recognition / Algorithm for continuous speech recognition / Hidden Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ 1 (Akiba) Basic of information retrieval / Basic of speech recognition / Algorithms for string matching and text indexing / Modeling methods for sentences and documents / Automatic machine translation | Schedule number M43630220 Subject area Advanc Compu Science Time of starting a course Spring term Day of the week,period Thu 2~ Faculty Graduate Program for Master's Degree Department Offered Computer Science and Engineering Charge teacher name[Roman alphabet mark] 秋葉 友良,山本 一公 AKIBA Tomoyoshi, YA alphabet mark] Numbering Objectives of class Important topics on spoken / natural language processing will be discussed. Important topics on spoken / natural language processing will be discussed. Algorithm Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ (Akiba) Basic of information retrieval / Basic of natural language processing / Algorithm Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ (Akiba) Basic of spoken language processing / Basic of speech recognition / Algorithm Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ (Akiba) Basic of information retrieval / Basic of natural language processing / Algorithm Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ (Akiba) Basic of information retrieval / Basic of natural language processing / Algorithm Markov Model / Language model, parsing and decoder/ Spoken dialog systems/ (Akiba) Basic of information retrieval / Basic of natural language processing / Algorithm Markov Model / Language theory <td< th=""><th>ed Required or elective elective and ring 2 Credit(s) Subject grade Beggining grade MAMOTO Kazumasa</th><th>Elective 2 1~2</th></td<> | ed Required or elective elective and ring 2 Credit(s) Subject grade Beggining grade MAMOTO Kazumasa | Elective 2 1~2 | | | | | |
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| The application of hidden markov models in speech recognition, World Scientific • L.R. Rabiner, R.W. Schafer Introduction to Digital Speech Processing World Scientific • Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley • M.Gales & S.Young The application of hidden markov models in speech recognition, | The application of hidden markov models in speech recognition, World Scientific L.R. Rabiner, R.W. Schafer | | | | | | | |
| World Scientific • L.R. Rabiner, R.W. Schafer Introduction to Digital Speech Processing World Scientific • Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley • M.Gales & S.Young The application of hidden markov models in speech recognition, | World Scientific | | | | | | | |
| L.R. Rabiner, R.W. Schafer Introduction to Digital Speech Processing World Scientific Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley M.Gales & S.Young The application of hidden markov models in speech recognition, | •L.R. Rabiner, R.W. Schafer | | | | | | | |
| L.R. Rabiner, R.W. Schafer Introduction to Digital Speech Processing World Scientific Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley M.Gales & S.Young The application of hidden markov models in speech recognition, | • L.R. Rabiner, R.W. Schafer | | | | | | | |
| Introduction to Digital Speech Processing World Scientific • Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley • M.Gales & S.Young The application of hidden markov models in speech recognition, | | | | | | | | |
| World Scientific • Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley • M.Gales & S.Young The application of hidden markov models in speech recognition, | Introduction to Digital Speech Processing | | | | | | | |
| Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley M.Gales & S.Young The application of hidden markov models in speech recognition, | World Scientific | | | | | | | |
| Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley M.Gales & S.Young The application of hidden markov models in speech recognition, | | | | | | | | |
| Modern Information Retrieval Addison Wesley •M.Gales & S.Young The application of hidden markov models in speech recognition, | •Richado Baeza-Yates, Berthier Bibeiro-Neto | | | | | | | |
| Addison Wesley •M.Gales & S.Young The application of hidden markov models in speech recognition, | Modern Information Retrieval | | | | | | | |
| •M.Gales & S.Young The application of hidden markov models in speech recognition, | Addison Wesley | | | | | | | |
| The application of hidden markov models in speech recognition, | •M.Gales & S.Young | | | | | | | |
| | The application of hidden markov models in speech recognition, | | | | | | | |
| World Scientific | World Scientific | | | | | | | |
| | | | | | | | | |
| •L.R. Rabiner, R.W. Schafer | •L.R. Rabiner, R.W. Schafer | | | | | | | |
| Introduction to Digital Speech Processing | Introduction to Digital Speech Processing | | | | | | | |
| | World Scientific | | | | | | | |

 Richado Baeza-Yates, Berthier Bibeiro-Neto Modern Information Retrieval Addison Wesley

Notes for reference

Goals to be achieved

Basics: Understand the role of spoken language as an human interface / Understand hierarchical structure of spoken language / Understand the basic speech analysing methods. / Understand the basic concepts of information retrieval and natural language processing

Speech Recognition: Understand the relation between speech recognition and information theory / Understand the algorithm for speech recognition using DP matching / Understand the Hidden Markov Model.

Natural Language Processing: Understand the role of language model / Understand the parser for context free language. / Understand the character encoding scheme for the world wide letters. / Understand the string matching methods and text indexing methods. / Understand the computational models for sentences, documents, and cross-language relations.

Applications: Understand the dictation system and the speedh dialog system / Understand the applications of speech technology including computer aided language learning system. / Understand the machine translation system.

Basics: Understand the role of spoken language as an human interface / Understand hierarchical structure of spoken language / Understand the basic speech analysing methods. / Understand the basic concepts of information retrieval and natural language processing

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Natural Language Processing: Understand the role of language model / Understand the parser for context free language. / Understand the character encoding scheme for the world wide letters. / Understand the string matching methods and text indexing methods. / Understand the computational models for sentences, documents, and cross-language relations.

Applications: Understand the dictation system and the speedh dialog system / Understand the applications of speech technology including computer aided language learning system. / Understand the machine translation system.

Evaluation of achievement

Marks are based on final examination (50%) and reports (50%).

Marks are based on final examination (50%) and reports (50%).

Examination

Details of examination

Other information

Tomoyosi Akiba: C-505, 44-6758, akiba@cs.tut.ac.jp Kazumasa Yamamoto: yamamoto@cs.tut.ac.jp

Tomoyosi Akiba: C-505, 44-6758, akiba@cs.tut.ac.jp Kazumasa Yamamoto: yamamoto@cs.tut.ac.jp

Reference URL

http://www.cl.ics.tut.ac.jp/~akiba/ http://www.cl.ics.tut.ac.jp/~akiba/

Office hours

16:25-17:40, Tuesday and Wednesday

16:25-17:40, Tuesday and Wednesday

Relations to attainment objectives of learning and education

Key words

spoken language processing, natural language processing, human language technology spoken language processing, natural language processing, human language technology

(M43630280)Web Data Engineering 1[Web Data Engineering 1]

| Subject name[English] | Web Data Engineering 1[Web Data Engineering 1] | | | | | | |
|---|--|---------------------------|------------------------|---------------------|------------------|--|--|
| Schedule number | M43630280 | Subject area | Advanced | Required or | Elective | | |
| | | | Computer | elective | | | |
| | | | Science and | | | | |
| | | | Engineering | | | | |
| Time of starting a course | Spring1 term | Day of the week.period | Thu.1~1 | Credit(s) | 1 | | |
| Faculty | Graduate Program for Master's | Degree | | Subject | 1~2 | | |
| ·• | 5 | 0 | | grade | | | |
| Department Offered | Computer Science and Enginee | ring | | Beggining | | | |
| | | | | grade | | | |
| Charge teacher | 青野 雅樹 AONO Masaki | | | Biddo | | | |
| name[Roman_alnhabet | | | | | | | |
| manie[Noman alphabet | | | | | | | |
| Numbering | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| Massive data analysis on | the Web will be discussed. | | | | | | |
| This lecture is composed | d of two parts. Part I deals with | information retrie | val and multimedia re | etrieval. Part II | deals with data | | |
| mining techniques, includ | ing principal component analysis, | classification, clus | stering, machine lear | ning. Web mining | , and collective | | |
| intelligence. | | | | | | | |
| Massive data analysis on | the Web will be discussed. | | | | | | |
| This lecture is composed | d of two parts. Part I deals with | information retrie | val and multimedia r | etrieval. Part II | deals with data | | |
| mining techniques, includ | ing principal component analysis, | classification, clus | stering, machine learı | ning. Web mining | , and collective | | |
| intelligence. | | | | | | | |
| Contents of class | | | | | | | |
| 1. Information Retrieval | | | | | | | |
| Fundamantal techniques | to construct a search system is | disccues, includi | ng how to build indic | es, how to toke | nize texts, and | | |
| hot wo extract features f | rom texts, images, and other mult | timedia. | | | | | |
| 2. Data and Web Mining | | | | | | | |
| Fundamental methods for | r data mining as well as Web minir | ng are discussed. | | | | | |
| | | | | | | | |
| We plan to do one or two assigments for constructing simple Web applications including data mining techniques inside. | | | | | | | |
| | | | | | | | |
| Please note that if this lecture is held at the same time with Japanese course, the lecture might be in Japanese. | | | | | | | |
| 1. Information Retrieval | | | | | | | |
| Fundamental techniques to construct a search system is disccues, including how to build indices, how to tokenize texts, and | | | | | | | |
| hot wo extract features from texts, images, and other multimedia. | | | | | | | |
| 2. Data and Web Mining | | | | | | | |
| Fundamental methods for data mining as well as Web mining are discussed. | | | | | | | |
| | | | | | | | |
| We plan to do one or two | assigments for constructing sim | ple Web applicatio | ns including data min | iing techniques i | nside. | | |
| | | | | | | | |
| Please note that if this le | ecture is held at the same time wi | ith Japanese cour | se, the lecture might | be in Japanese | | | |
| Self Preparation and Rev | liew | | | | | | |
| It is desirable to self-stu | udy as well as review fundament | al data mining teo | chniques such as clu | istering, classific | ation, principal | | |

component analysis, and regression. It is recommended installing R language into your computer, because some of lecture materials are written in R language.

It is desirable to self-study as well as review fundamental data mining techniques such as clustering, classification, principal component analysis, and regression. It is recommended installing R language into your computer, because some of lecture materials are written in R language.

Related subjects

Notes for textbook

Materials will be prepared by lecturers

References:

(1) C.D. Manning et al, Intoroduction to Information Retrieval, Cambridge Univ. Press

(2) J.Han and M. Kamber, Data Mining: Concepts and Techniques, 2nd ed, Morgan Kaufmann

Materials will be prepared by lecturers

References:

C.D. Manning et al, Intoroduction to Information Retrieval, Cambridge Univ. Press
 J.Han and M. Kamber, Data Mining: Concepts and Techniques, 2nd ed, Morgan Kaufmann

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|---|---------------------|----------------------|-----------------|------------------|--------------|---|--|
| keterence 1 | BOOK title | Intoroduction to | o information R | etrieval | ISBN | | |
| | Author | | Publisher | | Publish year | | |
| Reference2 | Book title | Data Mining: Co | ncepts and Te | chniques, 2nd ed | ISBN | | |
| | Author | | Publisher | | Publish year | | |
| Notes for reference | 1 | l | | 1 | 1 | 1 | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| Obtain the following ca | pabilities that car | n | | | | | |
| 1. Implement Web-serv | ice systems for h | nandling a large dat | a set. | | | | |
| 2. Understand advance | d aspects of data | a minig and informa | tion retrieval. | | | | |
| 3. Design, analyze, and | evaluate the Web | o-based system for | r mining huge d | ata. | | | |
| Obtain the following ca | pabilities that car | n | | | | | |
| 1. Implement Web-serv | ice systems for h | nandling a large dat | a set. | | | | |
| 2. Understand advance | d aspects of data | a minig and informa | tion retrieval. | | | | |
| 3. Design, analyze, and | evaluate the Web | o-based system for | r mining huge d | ata. | | | |
| Evaluation of achievem | ent | | | | | | |
| Exercise (20%) and final | exam (80%) | | | | | | |
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| | | | | | | | |
| Eversian (20%) and final | aver (90%) | | | | | | |
| Exercise (20%) and final | | | | | | | |
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| | | | | | | | |
| Examination | | | | | | | |
| 定期試験を実施(対面) | | | | | | | |
| Examination(Face to Fa | ice) | | | | | | |
| Details of examination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |
| Aono,Masaki(C-511) ao | no@tut.jp | | | | | | |
| | | | | | | | |
| Aono Masaki(C-511) aono@tut.jp | | | | | | | |
| | | | | | | | |
| Reference URL | | | | | | | |
| http://www.kde.cs.tut.a | c.jp/~aono/mvLe | ecture.html | | | | | |
| http://www.kde.cs.tut.ac.ip/~aono/mvLecture.html | | | | | | | |
| Office hours | | | | | | | |
| Anvtime, but a priori email appointment is definitely preferable. | | | | | | | |
| Anytime, but a priori email appointment is definitely preferable. | | | | | | | |
| Relations to attainment objectives of learning and education | | | | | | | |
| Capability of designing | Web application | systems. | | | | | |
| Programming skills with | Java, C++, R, ar | nd Python might be | preferable | | | | |
| | , - , - , u | | | | | | |
| Conchility of designs' | Mah | | | | | | |
| Due gue manifest a little | vveb application s | systems. | nunfourbl- | | | | |
| Frogramming skills with | Java, U++, R, ar | iu rytriori might be | preierable. | | | | |
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| Key words | | | | | | | |
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(M43630320)Bio-physical Information Systems 1[Bio-physical Information Systems 1]

| Subject name[English] | Bio-physical Info | ormation | Syster | ns 1[F | Rio-physical Inform | ation System | : 1] | | | | | |
|---|---|--|-------------------------------------|-------------------------|----------------------------|---|-------|------------------|--|--|--|--|
| Schedule number | M43630320 | Subject area Advanced | | Advanced | Required | Elective | | | | | | |
| | | Cabjo | | | Computer | elective | 01 | Liootivo | | | | |
| | | | | | Science and | ciocare | | | | | | |
| | | | | | Engineering | | | | | | | |
| Time of starting a course | Spring1 term | Dav | of | the | Fri.2~2 | Credit(s) | | 1 | | | | |
| | | week, | period | | | | | | | | | |
| Faculty | Graduate Progra | m for Ma | ister's | Degre | e | Subject gra | de | 1~2 | | | | |
| Department Offered | Computer Scien | ce and Er | nginee | ring | | Beggining | | | | | | |
| - | | | | | | grade | | | | | | |
| Charge teacher name[Roman | 福村 直博 FUK | UMURA N | Naohire | 0 | | | | | | | | |
| alphabet mark] | | | | | | | | | | | | |
| Numbering | | | | | | | | | | | | |
| Objectives of class | | | | | | | | | | | | |
| This course lectures on advance | ed studies on info | rmation p | proces | sing i | n the nervous svst | ems and com | putat | ional models for | | | | |
| motor controls of the human volu | intary movements | · | | 0 | | | | | | | | |
| This course lectures on advance | ed studies on info | rmation p | proces | sing iı | n the nervous syst | ems and com | putat | ional models for | | | | |
| motor controls of the human volu | intary movements | s. | | | | | | | | | | |
| Contents of class | | | | | | | | | | | | |
| 1. Introduction to the computatio | nal neuroscience i | n the mo | tor co | ntrol s | system | | | | | | | |
| 2. Information processing in the n | notor system of th | ie brain | | | | | | | | | | |
| 3-4. Motor control models of the | human arm mover | ments | | | | | | | | | | |
| 5-6. Models for motor planning in | the human arm m | ovement | S | | | | | | | | | |
| 7. Models for motor planning in th | ne human hand mo | vements | | | | | | | | | | |
| 8. Examination | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| 1. Introduction to the computatio | nal neuroscience i | n the mo | tor co | ntrol s | svstem | | | | | | | |
| 2. Information processing in the n | notor svstem of th | ie brain | | | | | | | | | | |
| 3-4. Motor control models of the | human arm mover | ments | | | | | | | | | | |
| 5-6. Models for motor planning in | the human arm m | ovement | S | | | | | | | | | |
| 7. Models for motor planning in th | ne human hand mo | vements | | | | | | | | | | |
| 8. Examination | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Self Preparation and Review | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Related subjects | | | | | | | | | | | | |
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| Notes for to the d | | | | | | | | | | | | |
| Notes for textbook | | | | | | | | | | | | |
| References: | | | 0010 | 2) | | | | | | | | |
| Human Motor Control (David A. F | Rosenbaum, Acade | mic Press | s, 2010 | J) | | 0005 | | | | | | |
| The Coputational Neurobiology of | The Coputational Neurobiology of Reaching and Pointing (Reza Shadmehr and Steven P.Wise 2005) | | | | | | | | | | | |
| Hand and Brain (Alan M.Wing, Patrick Haggard, and J. Flanagan, Academic Press, 1996) | | | | | | | | | | | | |
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| The Constantional Neurophialary | Cosenbaum, Acade | mic Press | s, 2010 | J) a alwa a k | wand Staven DWie | a 2005) | | | | | | |
| Hand and Brain (Alan M Wing Dat | Reaching and Po | | | aumer | ir and Sleven P.Wis | ie 2005) | | | | | | |
| Hand and Brain (Alan M.Wing, Patrick Haggard, and J. Flanagan, Academic Press, 1996) | | | | | | | | | | | | |
| Notes for reference | | | | | | | | | | | | |
| Goole to be achieved | | | | | | | | | | | | |
| 1 Understand the semicitations | | motor | ntral | | | | | | | | | |
| 2 Understand the meter control | models of the home | motor co | | 0.40~ | anto | 1. Understand the computational processing in the motor control | | | | | | |
| 2. Understand the motor control models of the human voluntary movements | | | | | | | | | | | | |
| 3 Understand the models for mod | tor planning of the | 3. Understand the models for motor planning of the human voluntary movements | | | | | | | | | | |
| 3. Understand the models for mot | tor planning of the | human v | olunta | ry mo | vements | | | | | | | |
| 3. Understand the models for models 1. Understand the computational | tor planning of the processing in the | human v motor co | olunta ntrol | ry mo | vements | | | | | | | |
| 3. Understand the models for models 1. Understand the computational 2. Understand the motor control 3. Understand the models for model | tor planning of the processing in the models of the hum tor planning of the | human v motor co ian volunt | olunta ntrol tary m | ry mo | vements ents | | | | | | | |
| 3. Understand the models for models 1. Understand the computational 2. Understand the motor control 3. Understand the models for models Evaluation of achievement | tor planning of the processing in the models of the hum tor planning of the | human v motor co nan volunt human v | olunta ntrol tary m olunta | ry mo oveme ry mo | vements ents vements | | | | | | | |
| 3. Understand the models for models 1. Understand the computational 2. Understand the motor control 3. Understand the models for models Evaluation of achievement Final exemination (100%) A: 100 | tor planning of the processing in the models of the hum tor planning of the | human v motor co nan volunt human v | olunta ntrol tary m olunta | ry mo oveme ry mo | vements ents vements | | | | | | | |

Examination

Details of examination

Other information

N. Fukumura (C611, Tel: 0532-44-6772, fukumura@cs.tut.ac.jp)

N. Fukumura (C611, Tel: 0532-44-6772, fukumura@cs.tut.ac.jp)

| Reference | URL |
|------------|--------------|
| http://www | v.bmcs.cs.tu |

http://www.bmcs.cs.tut.ac.jp http://www.bmcs.cs.tut.ac.jp

Office hours Friday 16:20-17:50

Friday 16:20-17:50

Relations to attainment objectives of learning and education

D1

D1

(142820220)0:--physical Information Systems 2[Bio-physical Information Systems 2]

| Subject name[English] | Bio-physical Info | rmation Systems 2[I | Bio−physical Inform | nation Systems 2] | |
|-------------------------------------|---------------------|----------------------|---------------------|---------------------|-------------------|
| Schedule number | M43630330 | Subject area | Advanced | Required or | Elective |
| | | - | Computer | elective | |
| | | | Science and | | |
| | | | Engineering | | |
| Time of starting a course | Spring2 term | Day of the | Fri.2~2 | Credit(s) | 1 |
| | | week,period | | | |
| Faculty | Graduate Program | n for Master's Degr | e | Subject grade | 1~2 |
| Department Offered | Computer Science | e and Engineering | | Beggining | |
| | | | | grade | |
| Charge teacher name[Roman | 堀川 順生 HORI | KAWA Junsei | | | |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| Objectives of class | | | | | |
| This course lectures on informat | on processing in th | ne nervous systems | of animals and hur | nans. The structure | es of the nervous |
| systems, mechanisms of neural | and synaptic tran | nsmissions of elect | rical signals, and | mechanisms of ser | sory information |
| processing in the peripheral and o | central nervous sys | tems are studied. | | | |
| This course lectures on informat | on processing in th | ne nervous systems | of animals and hur | nans. The structure | es of the nervous |
| systems, mechanisms of neural | and synaptic tran | nsmissions of elect | rical signals, and | mechanisms of ser | sory information |
| processing in the peripheral and o | central nervous sys | tems are studied. | | | |
| Contents of class | | | | | |
| 1. Introduction to the information | processing in the I | nervous system | | | |
| 2. Structures of neurons and the | peripheral and cen | tral nervous system | s | | |
| 3. Action potentials and synaptic | transmission | | | | |
| 4-5. Information processing in the | e visual system | | | | |
| 6. Information processing in the a | uditory system | | | | |
| 7. Information processing in the s | omatosensory syst | ems | | | |
| 8. Final examination | | | | | |
| | | | | | |
| 1. Introduction to the information | processing in the I | nervous system | | | |
| 2. Structures of neurons and the | peripheral and cen | tral nervous svstem | s | | |
| 3. Action potentials and synaptic | transmission | | | | |
| 4-5. Information processing in the | e visual svstem | | | | |
| 6. Information processing in the a | uditory system | | | | |
| 7. Information processing in the s | omatosensory syst | ems | | | |
| 8. Final examination | | | | | |
| | | | | | |
| Self Preparation and Review | | | | | |
| Related subjects | | | | | |
| Bio-physical Information System | s 1 | | | | |
| Bio-physical Information Systems | s 1 | | | | |
| Notes for textbook | | | | | |
| References: | | | | | |
| Neuroscience – Exploring the bra | in (Bear, Connors | Paradiso, Lippincott | Williams & Wilkins | 2007). Cognitive Ne | uroscience – The |
| biology of the brain (Gazzaniga, Iv | rv. Mangun. WW No | orton & Co Incm 200 | 08) | | |
| | | | | | |
| References: | | | | | |
| Neuroscience - Evoloring the bra | in (Bear, Connors | Paradiso Linnincott | Williams & Wilking | 2007) Compitive No. | uroscience - The |
| biology of the brain (Gazzaniga, Iv | rry, Mangun, WW No | orton & Co Incm 200 |)8) | LUGIT, OUGHLIVE NO | |
| Notes for reference | | | | | |
| Goals to be achieved | | | | | |
| 1. Understand the structures of r | eurons and the pe | ripheral and central | nervous systems | | |
| 2. Understand neural and synapti | c mechanisms for i | nformation processi | ng and Hodgekin−H | uxley equation | |
| 3 Understand the neural informa- | ion processing in t | he visual auditorv a | nd somatosensorv | systems | |

3. Understand the neural information processing in the visual, auditory and somatosensory systems

- 1. Understand the structures of neurons and the peripheral and central nervous systems
- 2. Understand neural and synaptic mechanisms for information processing and Hodgekin-Huxley equation
- $\ensuremath{\mathbf{3}}.$ Understand the neural information processing in the visual, auditory and somatosensory systems

Evaluation of achievement

Final examination (100%), A: 100-80, B: 79-65, C: 64-55, D (fail): 54-0 Final examination (100%), A: 100-80, B: 79-65, C: 64-55, D (fail): 54-0 **Examination**

Details of examination

Other information

Junsei Horikawa (F407, Tel: 0532-44-6891, horikawa@cs.tut.ac.jp)

Junsei Horikawa (F407, Tel: 0532-44-6891, horikawa@cs.tut.ac.jp)

Reference URL

Office hours

Friday 16:20–17:50 Friday 16:20–17:50

Relations to attainment objectives of learning and education

D1

D1

(M44610010)Seminar on Environmental and Life Science I[Seminar on Environmental and Life Science I]

| Subject name[English] | Seminar on Environmental and Life Science I[Seminar on Environmental and Life Science | | | | | Life Science I] | |
|--|---|-------------------|---------|-----------------------|----------------|-----------------|---------------------|
| Schedule number | M44610010 | Subject area Adva | | Advanced | Required | or | Required |
| | | | | Environmental | elective | | |
| | | | | and Life | | | |
| | | <u> </u> | | Sciences | | | |
| lime of starting a course | Year | Day of | the | Intensive | Credit(s) | | 3 |
| Feaulty | Graduata Promo | week,period | Dear | | Subject and | da | 1~2 |
| Faculty Department Offered | Environmental on | n for Waster's | Degre | 50 | Subject gra | 46 | 12 |
| Doparunone Onorou | | | .5 | | grade | | |
| Charge teacher name[Roman | S4系教務委員 4 | kei kyomu Iin- | ·S | | U. | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| This course will provide the stu | udents with opport | tunities to stu | udy or | his/her research | subjects on (| enviro | onmental and life |
| sciences by reading textbooks a | nd scientific paper | rs under the g | uidano | e of his/her superv | isor. The aim | of t | ne lessen for the |
| students is to learn knowledge ar | nd presentation ski | lls required for | ∙ his/ł | er research in the s | eminar as we | ll as t | o deepen his/her |
| understanding of environmental a | nd life sciences. | | | | | | |
| This course will provide the stu | udents with opport | tunities to stu | ıdy or | his/her research | subjects on (| enviro | onmental and life |
| sciences by reading textbooks a | nd scientific paper | rs under the g | uidano | e of his/her superv | isor. The aim | of t | ne lessen for the |
| students is to learn knowledge ar | nd presentation ski | lls required for | ∙ his/ł | er research in the s | eminar as we | ll as t | o deepen his/her |
| understanding of environmental a | nd life sciences. | | | | | | |
| | | | , | | | | |
| The students will be required to | read textbooks and | d papers writte | en by | other language than | Japanese, es | pecia | illy English, which |
| are suggested by his/her supervi | sor, and to report a | and discuss de | eply o | on nis/her research s | subject in the | semi | nar. Ili English |
| The students will be required to | read textbooks and | a papers writte | en by | other language than | Japanese, es | specia | ny English, which |
| are suggested by his/her supervi | sor, and to report a | aria discuss de | epty o | on mis/ner research s | subject in the | semi | nar. |
| Son Freparauon and Review | | | | | | | |
| Related subjects | | | | | | | |
| Seminar on Environmental and Li | fe Science II | | | | | | |
| Thesis Research on Environment | al and Life Science | e | | | | | |
| All other relevant subjects in Adv | vanced Environmen | ital and Life So | cience | s | | | |
| Seminar on Environmental and Li | fe Science II | | | | | | |
| Thesis Research on Environment | al and Life Science | e | | | | | |
| All other relevant subjects in Adv | vanced Environmen | ital and Life So | cience | s | | | |
| Notes for textbook | | | | | | | |
| Supervisor will recommend textb | Supervisor will recommend textbooks, papers, and research materials to students. | | | | | | |
| Supervisor will recommend textb | ooks, papers, and r | esearch mater | ials to | students. | | | |
| Notes for reference | | | | | | | |
| Goals to be achieved | | | | | | | |
| To acquire basic knowledge on e | nvironmental and lit | fe sciences | | | | | |
| To understand the contents of so | cientific papers in a | a given field of | envir | onmental and life sci | ences | | |
| To be able to make oral and post | er presentations re | elevant to pape | ers he | /she has read. | | | |
| To acquire basic knowledge on ei | nvironmental and li | fe sciences | | | | | |
| To understand the contents of so | To understand the contents of scientific papers in a given field of environmental and life sciences | | | | | | |
| To be able to make oral and poster presentations relevant to papers he/she has read. | | | | | | | |
| Evaluation of achievement | | | | | | | |
| The evaluation is based on the | scores of reading | textbooks and | l scie | ntific papers, discus | sions, reports | and | presentations of |
| his/her research in the seminar. | His/her supervisor | evaluates the | score | s. | | | |
| The evaluation is based on the | scores of reading | textbooks and | l scie | ntific papers, discus | sions, reports | and | presentations of |
| his/her research in the seminar. | His/her supervisor | evaluates the | score | s. | | | |
| Examination | | | | | | | |
| Details of exemination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |

| Supervisor(s) | |
|--|--|
| Supervisor(s) | |
| Reference URL | |
| http://ens.tut.ac.jp/en/ | |
| http://ens.tut.ac.jp/en/ | |
| Office hours | |
| Students are encouraged visiting by appointment. | |
| Students are encouraged visiting by appointment. | |
| Relations to attainment objectives of learning and education | |
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Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry Environmental science and technology, life science, materials science and engineering, applied chemistry

(M44610020)Seminar on Environmental and Life Science II[Seminar on Environmental and Life Science II]

| Subject name[English] | Seminar on Environmental and Life Science II[Seminar on Environmental and Life Sc | | | | | d Life Science II] | |
|---|---|-----------------------------|--------------|---------------|-----------------------|--------------------|---------------------------------|
| Schedule number | M44610020 | 10020 Subject area Advanced | | Required or | Required | | |
| | | | | Environmental | elective | | |
| | | | | | and Life | | |
| | | | | | Sciences | | |
| Time of starting a course | Year | Day week,p | of period | the | Intensive | Credit(s) | 3 |
| Faculty | Graduate Progra | am for Ma | ster's | Degre | e | Subject grade | 2~2 |
| Department Offered | Environmental a | nd Life Sc | cience | es | | Beggining | |
| | | | | | | grade | |
| Charge teacher name[Roman | S4系教務委員 | 4kei kyom | nu Iin- | -S | | | |
| alphabet mark | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| Based on the Seminar on Enviro | nmental and Life | Science I, | , this | cours | e will further provid | e the students wit | h the opportunity |
| to study on his/her research sub | ject in environme | ntal and lif | fe sci | ences | by reading textbook | ks and papers unde | er the guidance of |
| his/her supervisor. The student | s will learn the l | knowledge | and | the p | resentation skills re | equired for his/he | r research in the |
| seminar. | | | | | | | |
| Based on the Seminar on Enviro | nmental and Life | Science I, | , this | cours | e will further provid | e the students wit | h the opportunity |
| to study on his/her research sub | ject in environme | ntal and lif | fe sci | ences | by reading textbook | ks and papers unde | er the guidance of |
| his/her supervisor. The student | s will learn the l | knowledge | and | the p | resentation skills re | equired for his/he | r research in the |
| seminar. | | | | | | | |
| | | | | | | 1 | - U F |
| The students will be required to | read textbooks a | nd papers | writte | en by | other language than | Japanese, especia | ally English, which |
| are suggested by his/her supervi | sor, and to report | and discu | iss de | eply c | on his/her research | subject in the sem | inar. - III Frankiska subisk |
| The students will be required to | read textbooks a | na papers | writte | en by | other language than | Japanese, especia | ally English, which |
| Self Preparation and Review | sor, and to report | . anu uiscu | | epiy (| on mis/ner research | subject in the sem | indr. |
| | | | | | | | |
| Deleted subjects | | | | | | | |
| Sominar on Environmental and Li | fa Sajanaa I | | | | | | |
| Thesis Research on Environmental and Li | al and Life Science | | | | | | |
| All other relevant subjects in Adv | anced Environme | ntal and l | ife Sc | rience | c | | |
| Seminar on Environmental and Li | fe Science I | | | 5101100 | 5 | | |
| Thesis Research on Environment | al and Life Scienc | ce | | | | | |
| All other relevant subjects in Adv | /anced Environme | ental and L | ife So | cience | S | | |
| Notes for textbook | Notes for textbook | | | | | | |
| Supervisor will recommend textb | ooks, papers, and | research i | mater | rials to | students. | | |
| Supervisor will recommend textb | ooks, papers, and | research i | mater | rials to | students. | | |
| Notes for reference | | | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| To acquire basic knowledge on er | nvironmental and | life scienc | es | | | | |
| To understand the contents of scientific papers in a given field of environmental and life sciences | | | | | | | |
| To be able to make oral and post | er presentations | relevant to | o pape | ers he | /she has read. | | |
| To acquire basic knowledge on environmental and life sciences | | | | | | | |
| To understand the contents of so | To understand the contents of scientific papers in a given field of environmental and life sciences | | | | | | |
| To be able to make oral and post | er presentations | relevant to | o pape | ers he | /she has read. | | |
| Evaluation of achievement | | | | | | | |
| The evaluation is based on the | scores of reading | g textbook | ks and | d scie | ntific papers, discus | sions, reports and | presentations of |
| his/her research in the seminar. | His/her supervise | or evaluate | es the | score | es. | | · - |
| ine evaluation is based on the | scores of reading | g textbook | s and | sciei | ntific papers, discus | sions, reports and | presentations of |
| nis/ner research in the seminar. | nis/ner superviso | or evaluate | es the | score | 15. | | |
| | | | | | | | |
| Details of committeeting | | | | | | | |
| Details of examination | | | | | | | |
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Other information

| Supervisor(s) | |
|--|--|
| Supervisor(s) | |
| Reference URL | |
| http://ens.tut.ac.jp/en/ | |
| http://ens.tut.ac.jp/en/ | |
| Office hours | |
| Students are encouraged visiting by appointment. | |
| Students are encouraged visiting by appointment. | |
| Relations to attainment objectives of learning and education | |
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Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry Environmental science and technology, life science, materials science and engineering, applied chemistry

(M44610030)Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science]

| Subject name[English] | Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science] | | | | | | |
|---|--|---------------------------|---|-------------------------|----------|--|--|
| Schedule number | M44610030 | Subject area | Advanced Environmental and Life Sciences | Required or elective | Required | | |
| Time of starting a course | 2Years | Day of the week,period | Intensive | Credit(s) | 6 | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | | |
| Department Offered | | | Beggining grade | | | | |
| Charge teacher name[Roman alphabet mark] | S4系教務委員, 名 | 各教員 4kei kyomu Ii | n-s, kakukyouin | Kakukyouin | | | |
| Numbering | | | | | | | |

Objectives of class

In the course, the students will perform advanced researches on the environmental and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a Master's Thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

In the course, the students will perform advanced researches on the environmental and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a Master's Thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

Contents of class

The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research subject stills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. **Self Preparation and Review**

Related subjects

Seminar on Environmental and Life Science I

Seminar on Environmental and Life Science II

All other relevant subjects in Advanced Environmental and Life Sciences

Seminar on Environmental and Life Science I

Seminar on Environmental and Life Science II

All other relevant subjects in Advanced Environmental and Life Sciences

Notes for textbook

Supervisor will recommend textbooks, papers, and research materials to students.

Supervisor will recommend textbooks, papers, and research materials to students.

Notes for reference

Goals to be achieved

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research To be able to make safety control in experimental work

Evaluation of achievement

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation

etc). Examination

Details of examination

Other information

Supervisor(s)

Supervisor(s) Reference URL

http://ens.tut.ac.jp/en/

http://ens.tut.ac.jp/en/

Office hours

Students are encouraged visiting by appointment.

Students are encouraged visiting by appointment.

Relations to attainment objectives of learning and education

Key words

Environmental science and technology, life science, materials science, applied chemistry Environmental science and technology, life science, materials science, applied chemistry

(M44610030)Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science]

| Subject name[English] | Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science] | | | | | | |
|---|--|---------------------------|---|-------------------------|----------|--|--|
| Schedule number | M44610030 | Subject area | Advanced Environmental and Life Sciences | Required or elective | Required | | |
| Time of starting a course | 2Years | Day of the week,period | Intensive | Credit(s) | 6 | | |
| Faculty | Graduate Program | for Master's Degre | ee | Subject grade | 1~2 | | |
| Department Offered | Environmental and | Life Sciences | Beggining grade | M1, M2 | | | |
| Charge teacher name[Roman alphabet mark] | S4系教務委員 4 | S4系教務委員 4kei kyomu Iin−S | | | | | |
| Numbering | | | | | | | |

Objectives of class

In the course, the students will perform advanced researches on the environmental and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a Master's Thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

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Contents of class

The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research subject stills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. **Self Preparation and Review**

Related subjects

Seminar on Environmental and Life Science I Seminar on Environmental and Life Science II Seminar on Environmental and Life Science I Seminar on Environmental and Life Science II

Notes for textbook

Supervisor will recommend textbooks, papers, and research materials to students. Supervisor will recommend textbooks, papers, and research materials to students.

Notes for reference

Goals to be achieved

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

Evaluation of achievement

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

Examination

Details of examination

Other information

Supervisor

Supervisor

Reference URL

http://ens.tut.ac.jp/en/ http://ens.tut.ac.jp/en/

Office hours

Students are encouraged visiting by appointment.

Students are encouraged visiting by appointment.

Relations to attainment objectives of learning and education

Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry Environmental science and technology, life science, materials science and engineering, applied chemistry

(M4461003T)Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science]

| Subject name[English] | Thesis Research on Environmental and Life Science[Thesis Research on Environmental and Life Science] | | | | | | |
|---|--|---------------------------|---|-------------------------|----------|--|--|
| Schedule number | M4461003T | Subject area | Advanced Environmental and Life Sciences | Required or elective | Required | | |
| Time of starting a course | Year | Day of the week,period | Intensive | Credit(s) | 6 | | |
| Faculty | Graduate Program | n for Master's Degre | Subject grade | 2~2 | | | |
| Department Offered | Environmental and | d Life Sciences | Beggining grade | | | | |
| Charge teacher name[Roman alphabet mark] | S4系教務委員 4 | S4系教務委員 4kei kyomu Iin−S | | | | | |
| Numbering | | | | | | | |

Objectives of class

In the course, the students will perform advanced researches on the environmental and life science under the direction of his/her supervisor in the laboratory. The aims of this lessen are to acquire the knowledge and experimental and analytical skills required for his/her research subject, to learn the scientific and social importance of his/her subject by researching for related studies by others, and to write a Master's Thesis. The students will acquire the skills and capacities of presentation by discussing in the final review of his/her Master's Thesis.

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Contents of class

The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. The students are required to have his/her research subject under the direction of his/her supervisor and perform his/her research by acquiring the experimental and analytical skills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research subject stills in the laboratory. The students will be expected to learn the scientific and social background of his/her research subject by collecting and reading the references relating to his/her research. The results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research must be described as a Master's Thesis. The students must also present the results from his/her research, discuss, and answer the questions with the reviewers in the final master's dissertation defense. **Self Preparation and Review**

Related subjects

Seminar on Environmental and Life Science I Seminar on Environmental and Life Science II Seminar on Environmental and Life Science I Seminar on Environmental and Life Science II

Notes for textbook

Supervisor will recommend textbooks, papers, and research materials to students. Supervisor will recommend textbooks, papers, and research materials to students.

Notes for reference

Goals to be achieved

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

To acquire basic knowledge on environmental and life sciences

To master experimental techniques and analytical skills required for research on a given field of environmental and life sciences To be able to present and discuss on the results of his/her research

To be able to make safety control in experimental work

Evaluation of achievement

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

The score of the course is based on his/her Master's Thesis and the presentation in the final review of his/her Master's Thesis (the quality of his/her research, presentation skills, discussions and answering the questions on his/her presentation etc).

Examination

Details of examination

Other information

Supervisor(s)

Supervisor(s) Reference URL

http://ens.tut.ac.jp/en/ http://ens.tut.ac.jp/en/

Office hours

Students are encouraged visiting by appointment.

Students are encouraged visiting by appointment.

Relations to attainment objectives of learning and education

Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry Environmental science and technology, life science, materials science and engineering, applied chemistry

(M44610040)Seminar on Environmental and Life Science[Seminar on Environmental and Life Science]

| Subject name[English] | Seminar on Environmental and Life Science[Seminar on Environmental and Life Science] | | | | | | | |
|-----------------------------------|---|-------------------|-------------|-----------------------|---------------------|---------------------|--|--|
| Schedule number | M44610040 | Subject an | ea | Advanced | Required or | Required | | |
| | | | | Environmental | elective | | | |
| | | | | and Life | | | | |
| | | | | Sciences | | | | |
| Time of starting a course | Year | Day of | the d | Intensive | Credit(s) | 6 | | |
| Faculty | Graduate Progr | am for Master' | - s Degr | e | Subject grade | 2~2 | | |
| Department Offered | Environmental a | and Life Scienc | es | | Beggining | | | |
| | | | | | grade | | | |
| Charge teacher name[Roman | S4系教務委員 | 4kei kyomu Iin | -S | | | | | |
| alphabet mark] | | 2 | | | | | | |
| Numbering | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| This course will provide the stu | idents with oppo | ortunities to st | udy or | his/her research | subjects on enviro | onmental and life | | |
| sciences by reading textbooks a | nd scientific pape | ers under the | guidano | ce of his/her superv | isor. The aim of t | ne lessen for the | | |
| students is to learn knowledge an | nd presentation si | kills required to | or his/r | her research in the s | eminar as well as t | to deepen his/her | | |
| | ind life sciences. | | | 1. / | | | | |
| This course will provide the stu | idents with oppo | ortunities to si | udy or | n his/her research | subjects on enviro | onmental and life | | |
| sciences by reading textbooks a | nd scientific pape | ers under the | guidan | ce of his/her superv | isor. The aim of t | he lessen for the | | |
| students is to learn knowledge an | nd presentation si | kills required to | or his/r | her research in the s | eminar as well as t | to deepen his/her | | |
| | ind life sciences. | | | | | | | |
| | | | | | | | | |
| The students will be required to | read textbooks a | nd papers writ | ten by | other language than | Japanese, especia | ally English, which | | |
| are suggested by his/her supervi | sor, and to report | and discuss d | leeply o | on his/her research | subject in the semi | inar. | | |
| The students will be required to | read textbooks a | nd papers writ | ten by | other language than | Japanese, especia | ally English, which | | |
| are suggested by his/her supervi | sor, and to report | and discuss d | leeply o | on his/her research | subject in the semi | inar. | | |
| Self Preparation and Review | | | | | | | | |
| | | | | | | | | |
| Related subjects | | | | | | | | |
| Notes for textbook | | | | | | | | |
| Supervisor will recommend textb | ooks, papers, and | research mate | erials to | o students. | | | | |
| Supervisor will recommend textb | ooks, papers, and | research mate | erials to | o students. | | | | |
| Notes for reference | | | | | | | | |
| | | | | | | | | |
| Goals to be achieved | | | | | | | | |
| To acquire basic knowledge on e | nvironmental and | life sciences | | | | | | |
| To understand the contents of se | cientific papers in | a given field o | f envir | onmental and life sci | ences | | | |
| To be able to make oral and post | er presentations | relevant to pap | pers he | ∕she has read. | | | | |
| To acquire basic knowledge on e | nvironmental and | life sciences | | | | | | |
| To understand the contents of se | cientific papers in | a given field o | f envir | onmental and life sci | ences | | | |
| To be able to make oral and post | er presentations | relevant to pap | pers he | /she has read. | | | | |
| Evaluation of achievement | | | | | | | | |
| The evaluation is based on the | scores of reading | g textbooks ar | nd scie | ntific papers, discus | sions, reports and | presentations of | | |
| his/her research in the seminar. | His/her supervise | or evaluates th | e score | es. | | | | |
| The evaluation is based on the | The evaluation is based on the scores of reading textbooks and scientific papers, discussions, reports and presentations of | | | | | | | |
| his/her research in the seminar. | His/her supervise | or evaluates th | e score | es. | | | | |
| Examination | | | | | | | | |
| | | | | | | | | |
| Details of examination | | | | | | | | |
| | | | | | | | | |
| Other information | | | | | | | | |
| | | | | | | | | |
| Supervisor(s) | | | | | | | | |
| Supervisor(s) | | | | | | | | |
| | | | | | | | | |
| nttp://ens.tut.ac.jp/en/ | | | | | | | | |

http://ens.tut.ac.jp/en/

Office hours Students are encouraged visiting by appointment.

Students are encouraged visiting by appointment.

Relations to attainment objectives of learning and education

Key words

Environmental science and technology, life science, materials science and engineering, applied chemistry Environmental science and technology, life science, materials science and engineering, applied chemistry

(M44630050)Applied Physical Chemistry I[Applied Physical Chemistry I]

| Subject name[English] | Applied Physica | Chemistry I[Applie | d Physical Chemistry | 1] | |
|--------------------------------------|---------------------|-----------------------|--------------------------|----------------------|--------------------|
| Schedule number | | Subject area | Advanced | Bequired or | Flective |
| Schedule number | 10144030030 | Subject area | Environmental | nequired Or | LIEGUVE |
| | | | Environmental | elective | |
| | | | Solonoco | | |
| Time of starting a pourse | Spring1 torm | Day of the | | Gradit(a) | 1 |
| This of starting a course | opringi term | week period | 100.4174 | | |
| Faculty | Graduate Progra | moon,poriou | ree | Subject grade | 1~2 |
| Department Offered | Environmental a | nd Life Sciences | ,, | Beggining | . 2 |
| | | | | grade | |
| Charge teacher name[Roman | 松本 明彦 MAT | SUMOTO Akihiko | | 0 | |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| Objectives of class | | | | | |
| Intermolecular interaction plays | a key role in inte | rfacial characteristi | cs such as a mechan | ical property of con | nosite materials |
| adsorption and separation feature | es of molecules by | / porous solids Th | s course deals with f | undamental aspect | of the composite |
| materials and basic principle of the | ne intermolecular | interaction. The ad | sorption and separati | on phenomena are | also implemented |
| based on the molecular interactio | on. | | | | |
| Intermolecular interaction plays | a key role in inte | rfacial characteristi | cs such as a mechan | ical property of con | nposite materials. |
| adsorption and separation feature | es of molecules by | porous solids. Th | s course deals with f | undamental aspect | of the composite |
| materials and basic principle of t | ne intermolecular | interaction. The ad | sorption and separati | on phenomena are | also implemented |
| based on the molecular interaction | on. | | • | - | - |
| Contents of class | | | | | |
| 1.Composite materials overview | | | | | |
| 2.Formation of interface and inte | rfacial free energy | , | | | |
| 3.Molecular interaction | | | | | |
| 3-1 Electrostatic interaction, 3-2 | 2 Orientation inter | action, 3–3 Induced | interaction 3-4 Disp | ersion interaction | |
| 4.Adsorption and related phenom | ena | | | | |
| 5.Control of interface interaction | by regulation of t | he chemical structu | ire of the interface | | |
| | | | | | |
| | | | | | |
| 1.Composite materials overview | | | | | |
| 2.Formation of interface and inter | rtacial free energy | 1 | | | |
| 3.Molecular interaction | 0 | | internetion 2 4 Dise | | |
| 3-1 Electrostatic interaction, 3-2 | 2 Orientation inter | action, 3-3 Induced | interaction 3-4 Disp | ersion interaction | |
| 4.Adsorption and related phenom | ena | | C 11 C | | |
| 5.Control of interface interaction | by regulation of t | he chemical structi | ire of the interface | | |
| | | | | | |
| Self Preparation and Review | | | | | |
| | | | | | |
| Related subjects | | | | | |
| Basic understanding on physical | chemistry is desir | able. | | | |
| Basic understanding on physical | chemistry is desir | able. | | | |
| Notes for textbook | | | | | |
| Reference handouts will be provi | ded in the class. | | | | |
| | | | | | |
| (Reference books) | | | | | |
| [For molecular interaction] | | | | | |
| 1. J. N. Israelachivili Intermolecul | ar and Surface Fo | rces, 3rd Ed., Acad | emic Press (2011). | | |
| 2. Interface chemistry: D. H. Ever | ett, Basic Princip | les of Colloid Scien | ce, Royal Society of (| Chemistry(1988). | |
| | | | | | |
| [For adsorption] | | | | | |
| 1. F. Rouquerol, J. Rouquerol and | K.S.W. Sing, Adso | orption by Powders | and Porous solids, Ac | ademic Press (199 | 9) |
| Reference handouts will be provi | ded in the class. | - | | | |
| | | | | | |
| (Reference books) | | | | | |
| | | | | | |

[For molecular interaction]

1. J. N. Israelachivili Intermolecular and Surface Forces, 3rd Ed., Academic Press (2011).

2. Interface chemistry: D. H. Everett, Basic Principles of Colloid Science, Royal Society of Chemistry(1988).

[For adsorption]

1. F. Rouquerol, J. Rouquerol and K.S.W. Sing, Adsorption by Powders and Porous solids, Academic Press (1999) Notes for reference

Goals to be achieved

Evaluation of achievement

30 % Homework report and/or Quiz, 70 % Final examination or report 30 % Homework report and/or Quiz, 70 % Final examination or report

Examination

レポートで実施

By Report

Details of examination

Other information

A. Matsumoto: room # B-505, E-mail: aki*at*ens.tut.ac.jp (Please replace "*at*" to "@" when e-mailing) A. Matsumoto: room # B-505, E-mail: aki*at*ens.tut.ac.jp (Please replace "*at*" to "@" when e-mailing) **Reference URL**

Office hours

Relations to attainment objectives of learning and education

(M44630060)Applied Physical Chemistry II[Applied Physical Chemistry II]

| Subject name[English] | Applied Physical | Chamistry | II[App | لممال | - Physical Chemistry | Π | | |
|--|------------------------|--------------|----------|----------|-------------------------|----------------------|--------|--------------------|
| | | Chemistry | пгчр | med | Advanced | Pequired or Elective | | |
| Schedule number | 10144030000 | Subject | arða | | Environmental | | or | LIEGUVE |
| | | | | | Environmental | elective | | |
| | | | | and Life | | | | |
| | 0 . 0 . | D | | | Sciences | 0 | | |
| l ime of starting a course | Spring2 term | Day o | ot ti | he | Iue.4~4 | Credit(s) | | 1 |
| | | week,pe | bond | | | | | 1.0 |
| | Graduate Program | m for Mast | ter s De | egre | e | Subject gra | ade | 1~2 |
| Department Offered | Environmental an | Id Life Scie | ences | | | Beggining | | |
| Charma tasahar nama[Baman | 松木 明夜 ΜΑΤ | | Akihika | | | grade | | |
| Charge teacher name_Roman | 位本 明彦 MATS | | AKINIKO |) | | | | |
| | | | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class | | | | | | | | |
| Intermolecular interaction plays | a key role in inter | facial char | acteris | stics | such as a mechani | cal property | of con | nposite materials, |
| adsorption and separation featu | ires of molecules | by porou | s solid | ds. | This course deals | with fundar | nental | aspects of the |
| composite materials and feature | es of the intermo | lecular int | eractio | on. | The adsorption ar | nd separation | n phei | nomena are also |
| implemented based on the molec | ular interaction. | | | | | | | |
| Intermolecular interaction plays | a key role in inter | facial char | acteris | stics | s such as a mechani | cal property | of con | nposite materials, |
| adsorption and separation featu | ires of molecules | by porou | s solid | ds. | This course deals | with fundar | nental | aspects of the |
| composite materials and feature | es of the intermo | lecular int | eractio | on. | The adsorption ar | nd separation | n phei | nomena are also |
| implemented based on the molec | ular interaction. | | | | | | | |
| Contents of class | | | | | | | | |
| 1.Composite materials overview | | | | | | | | |
| 2.Formation of interface and inte | rfacial free energy | | | | | | | |
| 3.Molecular interaction | | | | | | | | |
| 3-1 Electrostatic interaction, 3-2 | ? Orientation intera | ction, 3–3 | Induce | ed ir | nteraction 3-4 Dispe | ersion interac | tion | |
| 4.Adsorption and related phenom | ena | | | | | | | |
| 5.Control of interface interaction | by regulation of th | ie chemica | l struc | ture | e of the interface | | | |
| 1.Composite materials overview 2.Formation of interface and interfacial free energy 3.Molecular interaction 3-1 Electrostatic interaction, 3-2 Orientation interaction, 3-3 Induced interaction 3-4 Dispersion interaction 4.Adsorption and related phenomena 5.Control of interface interaction by regulation of the chemical structure of the interface | | | | | | | | |
| Self Preparation and Review | | | | | | | | |
| Related subjects | | | | | | | | |
| Basic understanding on physical | chemistry is desira | ble. | | | | | | |
| Basic understanding on physical | chemistry is desira | ble. | | | | | | |
| Notes for textbook | | | | | | | | |
| Reference handouts will be provi | ded in the class. | | | | | | | |
| | | | | | | | | |
| (Reference books) | | | | | | | | |
| [For molecular interaction] | | | | | | | | |
| 1. I. N. Israelachivili Intermolecular and Surface Forces 3rd Ed. Academic Press (2011) | | | | | | | | |
| 2. Interface chemistry: D H Ever | rett. Basic Principle | es of Colloi | id Scie | ence | Roval Society of C | hemistry(198 | 38) | |
| L. Mitoriado Groniadiy, D. H. LV6 | ett, Busie i filioipie | | | | , noyal coolecy of C | | | |
| [Found to mation] | | | | | | | | |
| [For adsorption] | | | | | d Dama in the | a da mili D | (100 | 0) |
| I. F. Rouquerol, J. Rouquerol and | K.S.W. Sing, Adsor | rption by P | owder | rs ar | ia Porous solids, Ac | ademic Press | s (199 | 9) |
| Reference handouts will be provi | ded in the class. | | | | | | | |
| | | | | | | | | |
| (Reference books) | | | | | | | | |

[For molecular interaction]

- 1. J. N. Israelachivili Intermolecular and Surface Forces, 3rd Ed., Academic Press (2011).
- 2. Interface chemistry: D. H. Everett, Basic Principles of Colloid Science, Royal Society of Chemistry(1988).

[For adsorption]

1. F. Rouquerol, J. Rouquerol and K.S.W. Sing, Adsorption by Powders and Porous solids, Academic Press (1999) Notes for reference

Goals to be achieved

- 1. Understanding of fundamental aspects of composite materials
- 2. Understanding of features of the intermolecular interaction
- 3. Understanding of general aspects of adsorption and separation phenomena
- 1. Understanding of fundamental aspects of composite materials
- 2. Understanding of features of the intermolecular interaction
- $\ensuremath{\mathbf{3}}.$ Understanding of general aspects of adsorption and separation phenomena

Evaluation of achievement

Grade point will be evaluated by homework report (30%) and final examination or report (70%).

Grade point will be evaluated by homework report (30%) and final examination or report (70%).

Examination

その他

Other

Details of examination

Grade point will be evaluated by homework report (30%) and final examination or report (70%).

Grade point will be evaluated by homework report (30%) and final examination or report (70%).

Other information

A. Matsumoto: room # B-505, E-mail: aki*at*ens.tut.ac.jp (Please replace "*at*" to "@" when e-mailing) A. Matsumoto: room # B-505, E-mail: aki*at*ens.tut.ac.jp (Please replace "*at*" to "@" when e-mailing)

Reference URL

Office hours

Relations to attainment objectives of learning and education

(M44630100)Special Topics in Applied Organic Chemistry[Special Topics in Applied Organic Chemistry]

| Subject nemo[English] | Spacial Taniaa is | Applied Organia Ch | amietry[Spacial Ten | ice in Applied Orga | nia Chamiatra/ |
|-------------------------------------|----------------------|------------------------|-----------------------|----------------------|-------------------|
| Subject name[English] | | Subject error | | Beguired Orga | |
| | 10144030100 | Subject area | Environmental | elective | LIECTIVE |
| | | | and Life | 01000140 | |
| | | | Sciences | | |
| Time of starting a course | Spring1 term | Day of the | Tue 5~5 | Credit(s) | 1 |
| | oping tom | week.period | 140.0 0 | | • |
| Faculty | Graduate Progra | m for Master's Degr | e | Subject grade | 1~2 |
| Department Offered | Environmental a | nd Life Sciences | | Beggining | |
| • | | | | grade | |
| Charge teacher name[Roman | 岩佐 精二 IWAS | SA Seiji | | | 1 |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| Objectives of class | | | | | |
| To provide you with a working kn | owledge of advanc | ed synthesis of mole | oular materials | | |
| To provide you with a working kn | lowledge of advanc | ed synthesis of mole | cular materials. | | |
| Contents of class | owiedge of advance | | | | |
| This course includes the detail of | of the most recent | progress in modern | synthetic applicatio | on of catalysis org | anometallics and |
| the total synthesis of natural pro | ducts on the basis | of retrosynthetic ar | alveis | on of catalysis, org | anometanics, and |
| the total synthesis of natural pro | ducts on the basis | s of recrosynchede a | arysis. | | |
| | | | | | |
| I. I otal synthesis of bioactive or | ganic compounds. | | | | |
| 2. Advanced modern synthetic or | ganic reactions us | sing transition metals | | | |
| 3. Basic concept of oxidative add | lition and reductive | e elimination in catal | tic cycles. | | |
| 4. Synthetic applications of asym | interno synthesis a | and asymmetric catal | ysts. | | |
| 5. Advanced nomogeneous cataly | sts in industries. | | | | |
| 6. Advanced reactions using typic | cal elements. | | | | |
| | | | | | |
| | | | | | |
| This course includes the detail o | of the most recent | t progress in modern | synthetic application | on of catalysis, org | anometallics, and |
| the total synthesis of natural pro | ducts on the basis | s of retrosynthetic ar | nalysis. | | |
| | | | | | |
| 1. Total synthesis of bioactive or | ganic compounds. | | | | |
| 2. Advanced modern synthetic or | rganic reactions us | ing transition metals | | | |
| 3. Basic concept of oxidative add | lition and reductive | e elimination in catal | /tic cycles. | | |
| 4. Synthetic applications of asym | metric synthesis a | and asymmetric catal | ysts. | | |
| 5. Advanced homogeneous cataly | /sts in industries. | | | | |
| 6. Advanced reactions using typic | cal elements. | | | | |
| | | | | | |
| | | | | | |
| Self Preparation and Review | | | | | |
| - | | | | | |
| Related subjects | | | | | |
| Subjects related to Organic Cher | mistry | | | | |
| Subjects related to Organic Cher | mistry | | | | |
| Notes for textbook | inser y | | | | |
| No textbook is required | | | | | |
| Some of information in WebCT w | ill be help for your | understanding on th | is course. | | |
| | in be help for your | | | | |
| No toythook in required | | | | | |
| Some of information in WabOT | ill be bein for vorm | understanding on th | is course | | |
| Some of information in webC1 w | in be neip for your | understanding on th | is course. | | |
| N. C. C | | | | | |
| Notes for reference | | | | | |
| | | | | | |
| Goals to be achieved | | | | | |

A firm understanding on catalyst, stereochemistry, reaction mechanism, and their application for the synthesis of molecular materials is achieved.

| A firm understanding on catalyst, stereochemistry, reaction mechanism, and their application for the synthesis of molecular materials is achieved. |
|--|
| Evaluation of achievement |
| The report on papers from scientific journals such as J.A.C.S and Angew. Chem. will be imposed. |
| A design of novel organic molecular material. |
| The report on papers from scientific journals such as J.A.C.S and Angew. Chem. will be imposed. |
| A design of novel organic molecular material. |
| Examination |
| |
| Details of examination |
| |
| Other information |
| For more information: |
| Seiji Iwasa: room (B-506), e-mail (iwasa@ens.tut.ac.jp) |
| For more information: |
| Seiji Iwasa: room (B-506), e-mail (iwasa@ens.tut.ac.jp) |
| Reference URL |
| http://material.tutms.tut.ac.jp/STAFF/IWASA/index.html.ja |
| http://ens.tut.ac.jp/orgchem/ |
| http://material.tutms.tut.ac.jp/STAFF/IWASA/index.html.ja |
| http://ens.tut.ac.jp/orgchem/ |
| Office hours |
| Relations to attainment objectives of learning and education |
| |
| |
| |
| |
| |
| Key words |

molecular catalyst, total synthesis, natural product, asymmetric synthesis, transition metal molecular catalyst, total synthesis, natural product, asymmetric synthesis, transition metal

(M44630110)Developmental Neuroscience[Developmental Neuroscience]

| Subject name[English] | Developmental N | euroscience∫De | evelo | omental Neuroscienc | el | |
|--|-----------------------|-----------------|----------|-----------------------|-------------------|-------------------|
| Schedule number | M44630110 | Subject area |) | Advanced | Required or | Elective |
| | | | - | Environmental | elective | |
| | | | | and Life | | |
| | | | | Sciences | | |
| Time of starting a course | Spring2 term | Day of | the | Thu.2~2 | Credit(s) | 1 |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's | Degre | e | Subject grade | 1~2 |
| Department Offered | Environmental an | d Life Science | s | | Beggining | |
| | | | | | grade | |
| Charge teacher name[Roman | 吉田 祥子 YOS⊦ | IDA Sachiko | | | | |
| alphabet mark | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| Objective of class is to develop | a new technology | , for detection | n of r | neuronal function in | your brain. We de | eal with neuronal |
| property and development of neu | ronal circuit, and di | iscuss applicab | ility a | and problem of your i | ideas. | |
| Objective of class is to develop | a new technology | / for detection | n of r | neuronal function in | your brain. We de | eal with neuronal |
| property and development of neu | ronal circuit, and di | iscuss applicab | oility a | and problem of your i | ideas. | |
| Contents of class | | | | | | |
| (1)Properties of neuronal cells | | | | | | |
| (2)Electrical function and ion tran | isport | | | | | |
| (3)Chemical information transport | t | | | | | |
| (4)Development of neuronal circu | lit | | | | | |
| (5)Detection of chemical information | tion | | | | | |
| (6)Detection of electrical informa | tion | | | | | |
| (7)Detection of cortical developm | ient | | | | | |
| (1)Properties of neuronal cells | . | | | | | |
| (2) Electrical function and ion tran | isport L | | | | | |
| (4) Development of neuronal circu | L iit | | | | | |
| (5)Detection of chemical informat | tion | | | | | |
| (6)Detection of electrical information | tion | | | | | |
| (7)Detection of cortical developm | nent | | | | | |
| Self Preparation and Review | | | | | | |
| | | | | | | |
| Related subjects | | | | | | |
| A firm understanding on fundame | ntal biochemistry a | nd thermodyna | mics | will be necessary. | | |
| A firm understanding on fundame | ntal biochemistry a | nd thermodyna | mics | will be necessary. | | |
| Notes for textbook | | | | | | |
| Web-based text will be distribute | d. | | | | | |
| | | | | | | |
| (Reference) | | | | | | |
| From Neuron To Brain 4th Ed, Ni | cholls et. al. (Sinau | er, 2001) | | | | |
| Web-based text will be distribute | d. | | | | | |
| | | | | | | |
| (Reference) | | | | | | |
| From Neuron To Brain 4th Ed, Ni | cholls et. al. (Sinau | er, 2001) | | | | |
| Notes for reference | | | | | | |
| | | | | | | |
| Goals to be achieved | | | | | | |
| | | | | | | |
| Evaluation of achievement | | | | | | |
| Short reports on Web. 40% Term | report: 60% | | | | | |
| Short reports on Web, 40%, Term | report: 60% | | | | | |
| Examination | | | | | | |
| | | | | | | |
| Details of examination | | | | | | |
| Doudilo VI Oramiliauvii | | | | | | |

Other information

Room: B-406, E-mail:syoshida@ens.tut.ac.jp Room: B-406, E-mail:syoshida@ens.tut.ac.jp

Reference URL

https://moodle.imc.tut.ac.jp/ https://moodle.imc.tut.ac.jp/ Office hours

Relations to attainment objectives of learning and education

(M44630140)Advanced Electrical and Electronic Technology for Ecological Engineering[Advanced Electrical and Electronic Technology for Ecological Engineering]

| Subject name[English] | Advanced Electrical and Electronic Technology for Ecological Engineering[Advanced | | | | | | |
|------------------------------------|---|-------------------------------------|----------------------|-------------------|--------------------|--|--|
| | Electrical and Ele | ctronic Technology | eering] | | | | |
| Schedule number | M44630140 | Subject area | Advanced | Required or | Elective | | |
| | | | Environmental | elective | | | |
| | | | and Life | | | | |
| Time of starting a course | Spring1 term | Day of the | Fri 4~4 | Gredit(s) | 1 | | |
| | opingr com | week.period | | | • | | |
| Faculty | Graduate Program | n for Master's Degr | ee | Subject grade | 1~2 | | |
| Department Offered | Environmental an | d Life Sciences | | Beggining | | | |
| | | | | grade | | | |
| Charge teacher name[Roman | 田中 二郎,水野 | 彰, 咼島 和則 IA | NAKA Saburo, MIZU | NO Akira, TAKASH | IMA Kazunori | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| Electrostatics and high voltage e | ngineering have bee | en applied in various | s environmental tech | nologies. Purpose | of this lecture is | | |
| to understand the theoretical bac | ckground and their a | applications in envir | onmental and in bio- | technologies | | | |
| Electrostatics and high voltage e | ngineering have bee | en applied in various | environmental tech | nologies. Purpose | of this lecture is | | |
| to understand the theoretical bac | ckground and their a | applications in envir | onmental and in bio- | technologies | | | |
| Contents of class | | | | | | | |
| 1. Fundamental of Electrostatics | (4 hours) | | | | | | |
| 1.1 Charge and electric field | | | | | | | |
| 1.2 Electrostatic force | | | | | | | |
| 1.3 Gaseous discharge | | | | | | | |
| 2 Industrial Applications of Atmo | onharia Non-Tharm | al Placma in Enviro | nmental Remediation | (1 hours) | | | |
| 2.1 ESP to NTP. Pulsed corona | for abatement of ba | ar Flasifia in Enviro ack corona | | i (4 nours) | | | |
| 2.2 Examples of NTP processes | | | | | | | |
| DeNOx, Odor removal system | | | | | | | |
| 2.3 Combination of NTP with cata | alyst | | | | | | |
| Indoor air cleaning, Decompositio | n of VOCs, DeNOx | for Diesel Exhaust | | | | | |
| 2.4 NTP with liquid | | | | | | | |
| Wet-type plasma reactor, Electro | olysis with NTP | | | | | | |
| 2.5 NTP for fuel reforming | | | | | | | |
| | | | | | | | |
| 3. Generation of Non-thermal Pla | isma (2 hours) | | | | | | |
| 3.1 Puised streamer corona | nd Packed bed | | | | | | |
| 3.3 Surface dischargef and Honey | vcomb discharge | | | | | | |
| 4. Various applications of NTP (2 | hours) | | | | | | |
| 4.1 DeNOx | | | | | | | |
| 4.2 Indoor air cleaning | | | | | | | |
| 4.3 Plasma assisted combustion of | of VOC | | | | | | |
| 4.4 Ammonia production from sol | id urea using non-t | hermal plasma | | | | | |
| 4.5 Oxidation Process of Xylene | in Air using 1102 | and Ag/1iO2 und | ler Electron Beam Ir | radiation | | | |
| 5 Performance Evaluation and E | yaro-carbon Justian and Economy of NTP Process (1 hour) | | | | | | |
| 6. NTP and Spark discharge in Li | auid (1 hour) | | | | | | |
| -Spark discharge in water as a n | new UV-H2O2 technology | | | | | | |
| -Liquid phase fuel reforming at ro | oom temperature using non-thermal plasma | | | | | | |
| 7. NTP for bio-contamination cor | ntrol (1hour) | | | | | | |
| -Sterilization using a wide-gap di | scharge under atmo | ospheric pressure | | | | | |
| -Culturing of Cells as Influenced | by Exposure to AC | and DC Fields | | | | | |
| -Lethal effect on microbes and v | iruses | | | | | | |
| -Satety evaluation using single D | NA molecules | | | | | | |
| 1. Fundamental of Flectrostatics | (4 hours) | | | | | | |
| 1.1 Charge and electric field | (1110013) | | | | | | |

1.2 Electrostatic force 1.3 Gaseous discharge 1.4 Electrostatic precipitation 2. Industrial Applications of Atmospheric Non-Thermal Plasma in Environmental Remediation (4 hours) 2.1 ESP to NTP; Pulsed corona for abatement of back corona 2.2 Examples of NTP processes DeNOx, Odor removal system 2.3 Combination of NTP with catalyst Indoor air cleaning, Decomposition of VOCs, DeNOx for Diesel Exhaust 2.4 NTP with liquid Wet-type plasma reactor, Electrolysis with NTP 2.5 NTP for fuel reforming 3. Generation of Non-thermal Plasma (2 hours) 3.1 Pulsed streamer corona 3.2 Dielectric barrier discharge and Packed bed 3.3 Surface dischargef and Honeycomb discharge 4. Various applications of NTP (2hours) 4.1 DeNOx 4.2 Indoor air cleaning 4.3 Plasma assisted combustion of VOC 4.4 Ammonia production from solid urea using non-thermal plasma 4.5 Oxidation Process of Xylene in Air using TiO2 and Ag/TiO2 under Electron Beam Irradiation 4.6 Conversion of hydro-carbon 5. Performance Evaluation and Economy of NTP Process (1 hour) 6. NTP and Spark discharge in Liquid (1 hour) -Spark discharge in water as a new UV-H2O2 technology -Liquid phase fuel reforming at room temperature using non-thermal plasma 7. NTP for bio-contamination control (1hour) -Sterilization using a wide-gap discharge under atmospheric pressure -Culturing of Cells as Influenced by Exposure to AC and DC Fields -Lethal effect on microbes and viruses -Safety evaluation using single DNA molecules Self Preparation and Review Related subjects Notes for textbook Texts will be provided Texts will be provided Notes for reference Goals to be achieved **Evaluation of achievement** Evaluation will be made by reports in each chapter Evaluation will be made by reports in each chapter Examination Details of examination Other information mizuno@ens.tut.ac.jp mizuno@ens.tut.ac.jp **Reference URL** http://ens.tut.ac.jp/electrostatics/ http://ens.tut.ac.jp/electrostatics/

Office hours

Office hour is not regular, and appointment is required. Office hour is not regular, and appointment is required.

Relations to attainment objectives of learning and education

(M44630160)Advanced Eco-Materials Engineering[Advanced Eco-Materials Engineering]

| Subject name[English] | Advanced Eco-Materials Engineering[Advanced Eco-Materials Engineering] | | | | | | | |
|--|--|---------------|---------------|--------------------|-----------------------|------------------------|--------------------|--|
| Schedule number | M44630160 Subject area | | Advanced | Required or | Elective | | | |
| | | | Environmental | elective | | | | |
| | | | | | and Life | | | |
| | | | | | Sciences | | | |
| Time of starting a course | Spring2 term | Day week.p | of Deriod | the I | Fri.5~5 | Credit(s) | 1 | |
| Faculty | Graduate Progra | m for Ma | ster's | Degre | e | Subject grade | 1~2 | |
| Department Offered | Environmental an | nd Life Sc | cience | es | | Beggining | | |
| | | | | | | grade | | |
| Charge teacher name[Roman | 迁 秀人 TSUJI H | Hideto | | | | | | |
| alphabet mark | | | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class | | | | | | | | |
| The Eco-Materials Engineering is | s developed and st | tudied fo | r redu | ucing | the environmental ir | npact. The aim of | this course is to | |
| allow the student to achieve under | erstanding basic co | oncept of | the t | piobas | ed and biodegradable | e polymers. | | |
| The Eco-Materials Engineering is | s developed and s | tudied for | r redu | ucing | the environmental in | npact. The aim of | this course is to | |
| allow the student to achieve unde | erstanding basic co | oncept of | tne k | biobas | ea ana biodegradable | e polymers. | | |
| This course deals with all the | accepts of the | hiphone | d and | ا مام | arradable naturnarra | for reducing the | impact on the | |
| environmental The detailed course | e schedule is show | | u and | n nod | egradable polymers | for reducing the | mpace on the | |
| (1) Introduction (2) Synthesis (3) |) Molding (4) Crys | tallization | n (5) | Struc | ture (6) Physical pr | operties (7) Hydro | lytic degradation | |
| (8) Biodegradation, and (9) Applic | ations. | | n, (0) | ouuo | | | iytio degradation, | |
| | | | | | | | | |
| This course deals with all the | aspects of the | hiobased | d and | 1 biod | egradable polymers | for reducing the | impact on the | |
| environmental The detailed course | se schedule is show | wn helow: | . and | i biou | egradable polymers | Tor reducing the | impact on the | |
| (1) Introduction (2) Synthesis (3) |) Molding (4) Crys | tallization | n. (5) | Struc | ture (6) Physical pr | operties (7) Hydro | lytic degradation | |
| (8) Biodegradation, and (9) Applic | ations. | | ., (0) | 0 11 11 0 | | opone.co, (// 1.) al o | iyoo acgiaaaaaa, | |
| (-, | | | | | | | | |
| Self Preparation and Review | | | | | | | | |
| Related subjects | | | | | | | | |
| | | | | | | | | |
| Nata a fan tauth a da | | | | | | | | |
| Notes for textbook | wa val 4 (Dalvaata | | | A Ctai | nhuahal Eda Wilay | | | |
| Printed materials from Biopolyme | rs vol. 4 (Polyeste | rs III), T. | Doi, A | A. Stei A. Stai | nbuchel Eds., Wiley- | VCH, 2002 | | |
| Notes for reference | is vol. 4 (Polyeste | 15 111/, 1. | D01, 7 | Stei | Inductier Lus., whiey | VOI1, 2002 | | |
| | | | | | | | | |
| Goals to be achieved | | | | | | | | |
| Evaluation of aphiovement | | | | | | | | |
| Reports and presentation | | | | | | | | |
| Reports and presentation | | | | | | | | |
| Examination | | | | | | | | |
| | | | | | | | | |
| Details of examination | | | | | | | | |
| Other information | | | | | | | | |
| Dhene: 6022 ameil: touii@ene tut | aa in (Hidata Tauii) | \ \ | | | | | | |
| Phone: 6922, email: tsuji@ens.tut. | acijp (nideto Tsuji) acijn (Hideto Tsuji) | ,) | | | | | | |
| Reference URL | | , | | | | | | |
| | | | | | | | | |
| Office hours | | | | | | | | |
| Relations to attainment objectives of learning and education | | | | | | | | |
(M44630180)Advanced Reaction Engineering[Advanced Reaction Engineering]

| Subject name[English] | Advanced Reacti | on Engineerir | lg[Adva | anced Reaction Engir | neering] | | |
|---|--------------------------|----------------------|--------------------|------------------------|-------------------|------------------|--|
| Schedule number | M44630180 | Subject an | ea | Advanced | Required or | Elective | |
| | | | | Environmental | elective | | |
| | | | | and Life | | | |
| | | | | Sciences | | | |
| Time of starting a course | Spring1 term | Day of week,perio | the d | Tue.2~2 | Credit(s) | 1 | |
| Faculty | Graduate Program | n for Master' | s Degr | ee | Subject grade | 1~2 | |
| Department Offered | Environmental an | d Life Scienc | es | | Beggining | | |
| | | | | | grade | | |
| Charge teacher name[Roman alphabet mark] | 小口 達夫 OGUO | CHI Tatsuo | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| This source will provide student | to with the opport | unity to und | oroton | l the heale reaction | kination and dyna | mian Ennosielly | |
| experimental and theoretical tree | atment of reaction | rate constar | erstand to will | he given Some reaction | tion mechanisms | in combustion or | |
| atmosphere will be also discusse | d annenic of reaction | | ICS WIII | be given. Come rea | | | |
| This course will provide student | u. ts with the opport | unity to und | orcton | I the basic reaction | kinetics and dyna | mice Especially | |
| experimental and theoretical treat | atment of reaction | rate constar | nts will | he given Some read | ction mechanisms | in combustion or | |
| atmosphere will be also discusse | d. | | ico wili | be given. come rea | | | |
| Contents of class | | | | | | | |
| 1. Introduction. | | | | | | | |
| 2. Chemical reaction and rate the | eorv. | | | | | | |
| 3. Reaction mechanism. | | | | | | | |
| 4. Thermodynamics of reaction. | | | | | | | |
| 5. Reaction rate theory. (1) | | | | | | | |
| 6. Reaction rate theory. (2) | | | | | | | |
| 7. Summary | | | | | | | |
| | | | | | | | |
| 1. Introduction. | | | | | | | |
| 2. Chemical reaction and rate the | eorv. | | | | | | |
| 3. Reaction mechanism. | | | | | | | |
| 4. Thermodynamics of reaction. | | | | | | | |
| 5. Reaction rate theory. (1) | | | | | | | |
| 6. Reaction rate theory. (2) | | | | | | | |
| 7. Summary | | | | | | | |
| | | | | | | | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| ····· | | | | | | | |
| Notes for textbook | | | | | | | |
| (Reference book) | | | _ | | | | |
| Paul L. Houston, "Chemical Kinet | tics and Reaction D |)ynamics", M | cGrawl | Hill. | | | |
| | | | | | | | |
| (A study-aid book) | | | | | | | |
| Steingfeld, Francisco, and Hase, | "Chemical Kinetics | and Dynamic | s″, Pre | entice-hall, 1989. | | | |
| (Reference book) | | | | | | | |
| Paul L. Houston, "Chemical Kinet | tics and Reaction D |)ynamics", M | cGrawl | Hill. | | | |
| | | | | | | | |
| (A study-aid book) | | | | | | | |
| Steingfeld, Francisco, and Hase, | "Chemical Kinetics | and Dynamic | s″, Pre | entice-hall, 1989. | | | |
| Notes for reference | | | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| Understanding reaction rate theo | ry, reaction mecha | nisms. | | | | | |
| Understanding reaction rate theo | ry, reaction mecha | nisms. | | | | | |
| | | | | | | | |

Evaluation of achievement

Grades for the course will be based on the reports. Grades for the course will be based on the reports. **Examination**

Details of examination

Other information

Tatsuo Oguchi, Phone:6930 Tatsuo Oguchi, Phone:6930 **Reference URL**

Office hours

Any time, but e-mail is required in advance. Any time, but e-mail is required in advance.

Relations to attainment objectives of learning and education

Physical chemistry and thermodynamics.

Physical chemistry and thermodynamics.

Key words

Reaction, Rate Theory, Transition State Theory, Lindemann Mechanism. Reaction, Rate Theory, Transition State Theory, Lindemann Mechanism.

(M44630190)Advanced Sustainable Coordinator[Advanced Sustainable Coordinator]

| Subject name[English] | Advanced Sustair | able Coordin | ator[A | dvanced Sustainable | Coordinator] | |
|------------------------------------|---|-----------------|---------|-----------------------|-----------------------|------------------|
| Sobedule number | M44630190 | Subject an | | | Bequired or | Flective |
| | 10144000100 | Subject and | 30 | Environmental | elective | LICCLIVE |
| | | | | and Life | 01001140 | |
| | | | | Solences | | |
| Time of starting a source | Spring? term | Dev of | the | Sciences | Cradit(a) | 1 |
| | opringz term | week perio | d | 111.7 7 | Of Buil(s) | 1 |
| Faculty | Graduate Program | n for Master' | s Degr | 26 | Subject grade | 1~2 |
| Department Offered | Environmental and | d Life Scienc | es | | Beggining | |
| | | | | | grade | |
| Charge teacher name[Roman | 後藤 尚弘 GOTC | OH Naohiro | | | 9 | |
| alphabet mark] | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| | | | | | | |
| To establish a "Sustainable Soc | vietu" is one of ma | vior fields for | . cucta | inable development | Countermeasures | for it chould be |
| comprehensive and they comprise | a not only angineer | ing but also g | Susia | dissiplines. The obje | otives of this class | |
| 1 to comprehend notion of "Sust | ainable Society" | ing but dist s | over al | alsoiphines. The obje | | |
| 2 to learn human dimensional dis | cinlines for "Sustain | nable Society | ," | | | |
| 3 to know planning method to act | tahlish "Sustainable | Society" th | ough e | xamples | | |
| | | , obsidity th | ougii e | ampies | | |
| - | | | | | | |
| | | | | | | |
| The objectives of this class are | | | | | | |
| 1 to know air pollution situation | | | | | | |
| 2 to understand the evaluation m | ethod of pollutant o | concentration | 1 | | | |
| 3 to understand the characteristic | cs of planetary bou | indary layer | | | | |
| Goto | | | | | a . | |
| To establish a Sustainable Soc | ciety is one of ma | ajor fields for | ' susta | inable development. | Countermeasures | for it should be |
| comprehensive and they compris | e not only engineer | ing but also s | several | disciplines. The obje | ectives of this class | s are |
| 1 to comprehend notion of Sust | ainable Society | | " | | | |
| 2 to learn human dimensional dis | ciplines for Sustain | nable Society | ′ . | | | |
| 3 to know planning method to est | tablish Sustainable | e Society th | ougn e | xamples | | |
| | | | | | | |
| Tokairin | | | | | | |
| The objectives of this class are | | | | | | |
| 1 to know air pollution situation | | | | | | |
| 2 to understand the evaluation m | ethod of pollutant o | concentratior | ı | | | |
| 3 to understand the characterist | cs of planetary bou | ındary layer | | | | |
| Contents of class | | | | | | |
| Goto | | | | | | |
| 1 Concept of Sustainable develop | oment | | | | | |
| 2 Material (Substance) flow analy | vsis and Life Cycle / | Assessment | | | | |
| 3 Japanese environmental law an | d institution | | | | | |
| | | | | | | |
| Tokairin | | | | | | |
| 1 Atmospheric environment and a | air pollution | | | | | |
| 2 Atmospheric diffusion modeling | | | | | | |
| 3 Meteorology of planetary bound | dary layer | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| Concept of Sustainable develop | oment | A | | | | |
| Z Material (Substance) flow analy | vsis and Life Cycle / | Assessment | | | | |
| з Japanese environmental law an | a institution | | | | | |
| | | | | | | |
| Tokairin | | | | | | |
| 1 Atmospheric environment and | 1 Atmospheric environment and air pollution | | | | | |

1 Atmospheric environment and air pollu

2 Atmospheric diffusion modeling

3 Meteorology of planetary boundary layer

Self Preparation and Review

Related subjects

Notes for textbook

Goto

I will distribute copies of textbook in the first day.

- •World resource institute, Weight of Nations
- http://pubs.wri.org/pubs_description.cfm?PubID=3023
- •NIES, Material Flow Data Book [~]World Resource Flows around Japan[~]

http://www-cger.nies.go.jp/publication/D033/cd/index.html

Tokairin

I will distribute copies of document.

Goto

I will distribute copies of textbook in the first day. •World resource institute, Weight of Nations http://pubs.wri.org/pubs_description.cfm?PubID=3023 •NIES, Material Flow Data Book ~World Resource Flows around Japan ~ http://www-cger.nies.go.jp/publication/D033/cd/index.html

Tokairin

I will distribute copies of document.

Notes for reference

Goals to be achieved

Goto

to understant how to establish sustainable society

Tokairin

to understand basics on atmospheric environment and its evaluation method.

Goto

to understant how to establish sustainable society

Tokairin

to understand basics on atmospheric environment and its evaluation method.

Evaluation of achievement

Every week and Term end report (100%)

Every week and Term end report (100%)

Examination

レポートで実施

By Report

Details of examination

Other information

Naohiro Goto (G603) goto@ens.tut.ac.jp Takayuki Tokairin (G405) tokairin@ens.tut.ac.jp Naohiro Goto (G603) goto@ens.tut.ac.jp Takayuki Tokairin (G405) tokairin@ens.tut.ac.jp

Reference URL

Office hours

Any time by E-mail Any time by E-mail

Relations to attainment objectives of learning and education

Key words

Sustainablity, MFA, LCA, Air pollution, planetary boundary layer, Atmospheric diffusion Sustainablity, MFA, LCA, Air pollution, planetary boundary layer, Atmospheric diffusion

(M44630200)Advanced Supercritical Fluid Engineering[Advanced Supercritical Fluid Engineering]

| Subject name[English] | Advanced Superc | ritical Fluid Er | nginee | ring[Advanced Supe | rcritical Fluid Engir | neering] |
|-------------------------------------|---------------------|-----------------------|--------|------------------------|-----------------------|-------------------|
| Schedule number | M44630200 | Subject are | a | Advanced | Required or | Elective |
| | | _ | | Environmental | elective | |
| | | | | and Life | | |
| | | | | Sciences | | |
| Time of starting a course | Spring2 term | Day of week,period | the | Fri.2~2 | Credit(s) | 1 |
| Faculty | Graduate Progran | n for Master's | Degr | e | Subject grade | 1~2 |
| Department Offered | Environmental an | d Life Science | s | | Beggining | |
| | | | | | grade | |
| Charge teacher name[Roman | 大門 裕之 DAIM | ON Hiroyuki | | | | |
| alphabet mark | | | | | | |
| Numbering | | | | | | |
| Objectives of class | | | | | | |
| Based on Supercritical Fluid E | Engineering and Ei | nvironmental | Chem | ical Engineering, pr | ractical philosophy | , creativity and |
| leadership of engineer are impro | ved during this cou | rse. The top | ics ar | e mainly waste man | agement and utiliz | ation of biomass. |
| Environmental issue is widely dise | cussed to obtain th | e knowledge a | nd or | ganizing skill of comp | prehensive process | or society. |
| Based on Supercritical Fluid E | Engineering and E | nvironmental | Cherr | ical Engineering, pr | ractical philosophy | , creativity and |
| leadership of engineer are impro | ved during this cou | irse. The top | ics ar | e mainly waste man | agement and utiliz | ation of biomass. |
| Environmental issue is widely disc | cussed to obtain th | e knowledge a | nd or | ganizing skill of comp | prehensive process | or society. |
| Contents of class | | | | | | |
| 1st Summary | | | | | | |
| 2nd History | | | | | | |
| 3rd Physical property 1 | | | | | | |
| 4th Physical property 2 | | | | | | |
| 5th Instrumentation and process | engineering | | | | | |
| oth Application of Supercritical W | later Technologies | 1 | | | | |
| 9th Application of Supercritical M | later Technologies | 2 | | | | |
| 9th Application of Supercritical W | later Technologies | 3 4 | | | | |
| 10th Application of Supercritical | Water Technologies | - - 5 | | | | |
| 11th Application of Supercritical | Carbon dioxide Tec | hnologies 1 | | | | |
| 12th Application of Supercritical | Carbon dioxide Tec | hnologies 2 | | | | |
| 13th Application of Supercritical | Carbon dioxide Tec | hnologies 3 | | | | |
| 14th Application of Supercritical | Carbon dioxide Tec | hnologies 4 | | | | |
| 15th Examination | | | | | | |
| 1st Summary | | | | | | |
| 2nd History | | | | | | |
| 3rd Physical property 1 | | | | | | |
| 4th Physical property 2 | | | | | | |
| 5th Instrumentation and process | engineering | | | | | |
| 6th Application of Supercritical W | later lechnologies | 1 | | | | |
| 7th Application of Supercritical W | later Technologies | 2 | | | | |
| 9th Application of Supercritical W | later Technologies | 3 | | | | |
| 10th Application of Supercritical | Water Technologies | | | | | |
| 11th Application of Supercritical | Carbon dioxide Tec | hnologies 1 | | | | |
| 12th Application of Supercritical | Carbon dioxide Tec | hnologies 2 | | | | |
| 13th Application of Supercritical | Carbon dioxide Tec | hnologies 3 | | | | |
| 14th Application of Supercritical | Carbon dioxide Tec | hnologies 4 | | | | |
| 15th Examination | | | | | | |
| Self Preparation and Review | | | | | | |
| Related subjects | | | | | | |
| Advanced Analytical Separation (| Chemistry, Advance | ed Industrial E | cology | , | | |
| Advanced Analytical Separation (| Chemistry, Advance | ed Industrial E | cology | , | | |
| Notes for textbook | | | | | | |
| 1. Analytical Supercritical Fluid C | hromatography and | I Extraction | | | | |
| edited by M. L. Lee and K. E. Mar | kides, 1990 | | | | | |

| Observation methods of the second sec |
|--|
| Chromatography Conference, Inc. |
| 2. Hypnenated Techniques in Supercritical Fluid Chromatography and Extraction |
| edited by K. Jinno, 1992 |
| Elsevier |
| 1. Analytical Supercritical Fluid Chromatography and Extraction |
| edited by M. L. Lee and K. E. Markides, 1990 |
| Chromatography Conference, Inc. |
| 2. Hyphenated Techniques in Supercritical Fluid Chromatography and Extraction |
| edited by K. Jinno, 1992 |
| Elsevier |
| Notes for reference |
| |
| Goals to be achieved |
| 1 To understand Supercritical Fluid Technology |
| 2 To improve engineering skill |
| 2. To any or ong moving start Environmental problem especially for waste management |
| 1. To understand Supervisited Elucid Technology |
| |
| 2. To improve engineering skill |
| 3. To obtain the knowledge about Environmental problem especially for waste management |
| |
| Based on Presentation and Interview during class |
| More than |
| 80% ; A |
| 65% ; B |
| 55% ; C |
| Based on Presentation and Interview during class |
| More than |
| 80% ; A |
| 65% ; B |
| 55% ; C |
| Examination |
| レポートで実施 |
| By Report |
| Details of examination |
| |
| Other information |
| Office Builing G Floor 6th Room 602 |
| Tel:0532-44-6905 |
| Email:daimon@ens.tut.ac.ip |
| |
| Office Dulling O. Floor 6th Door 600 |
| |
| |
| Email:daimon@ens.tut.ac.jp |
| |
| Reference URL |
| http://water.eco.tut.ac.jp/class.html (English version under construction) |
| http://water.eco.tut.ac.jp/class.html (English version under construction) |
| Office hours |
| After the class or anytime when you make an appointment through Email |
| After the class or anytime when you make an appointment through Email |
| Relations to attainment objectives of learning and education |
| (D) |
| |
| |
| |
| |
| Key words |
| Supercritical Fluids, Resource Recovery, Material and Energy Balance, Process Engineering |
| |

(M44630220)Advanced Life Science and Biotechnology II[Advanced Life Science and Biotechnology II]

| Solucius number M44830220 Subject area and believe Advanced Environmental and solicores Regarind of solicores Elective Time of starting a course Spring term Day of the intensive Day of the intensive Credit(a) 2 Faculty Graduate Program for Master's Degree Subject grade 1~~2 Deperfment Offered Environmental and Life Sciences Beggining grade 2 Otherge tascher name[Ronan sightabet math] SIA素致慈菜具 4kei kyomu En-S Beggining grade 2 Objectives of class This course will provide the students with the opportunity to study on the selected subject in the realm of further advanced life science and biotechnology that on the knowledge of the course of Advanced Life Science and Biotechnology 1 The classes will be given by his/her supervisor. The type and contents of this course will when the supervisor. Software of class The classes will be given by his/her supervisor. The type and contents of this course will science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Notes for reference Consts of class Solico and Biotechnology 1 Solico and Advaned Life Science and Biotechnology 1 < | Subject name[English] | Advanced Life Science and Biotechnology II[Advanced Life Science and Biotechnology II] | | | | | | |
|--|---|--|-----------|----------|--------|----------------------|---------------------|------------------|
| Interview Day of the sciences Environmental and sciences electron Time of starting a course Spring term Day of the weekparidit Intensive Credit(s) 2 Faculty Gradute Program for Master's Degree Subject grade 1~2 Department Offered Environmental and Life Sciences Beggining grade 1~2 Oharge taacher name[Roman sliphabet mark] S4系教教委員 4kei kyonu lin-S Bubbet grade 1~2 Numbering Objectives of class Biotechnology I. 1 1 This course will provide the students with the opportunity to study on the selected subject in the realm of further advanced life science and biotechnology to the students of this course of Advanced Life Science and Biotechnology I. 0 Onterts of class The classes will be given by his/her supervisor. The type and contents of this course depend on his/her supervisor. Sef Feleration and Review Feleration and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Sef for thexbook <tr< th=""><th>Schedule number</th><th>M44630220</th><th>Subie</th><th>ct are</th><th>a</th><th>Advanced</th><th>Required or</th><th>Elective</th></tr<> | Schedule number | M44630220 | Subie | ct are | a | Advanced | Required or | Elective |
| Image: Time of starting a course Spring term Day of the Sciences Credit(s) 2 Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Environmental and Life Sciences Beggining grade 1~2 Objectives of class S4%就像要員 4kel kyomu lin-S sightabet mark] S4%就像要員 4kel kyomu lin-S sightabet mark] 1~2 Objectives of class This course will provide the students with the opportunity to study on the selected subject in the realm of further advanced life science and biotechnology based on the knowledge of the course of Advanced Life Science and Biotechnology I. Contents of class The classes will be given by hic/her supervisor. The type and contents of this course depend on his/her supervisor. Seff Preparation and Review Related subjects Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Advanced Life Science and Biotechnology 1 Notes for ference Evaluation is based on the scores of reports, presentations, and examination. The evaluation is based on the scores of reports, presentations, and examination. The evaluation is based on the scores of reports, presentations, and examination. Examination Evaluation is based on the scores of reports, present | | | | | - | Environmental | elective | |
| Time of starting a course Spring term Day of the intensive Intensive Credit(s) 2 Faculty Graduate Program for Master's Degree Subject grade 1~2 Department Offered Environmental and Life Sciences Begining grade 1~2 Charge teacher name[Roman skphabet mark] S4系教教教教員 4kel kyomu En-S Begining grade 1 2 Objectives of class This course will provide the students with the opportunity to study on the selected subject in the realm of further advanced life science and biotechnology Lased on the knowledge of the course of Advanced Life Science and Biotechnology I. Ontents of class The classes will provide the students with the opportunity to study on the selected subject in the realm of further advanced life science and biotechnology I. Contents of class The classes will be given by his/her supervisor. The type and contents of this course depend on his/her supervisor. Self Proparation and Roview Related andjects Related andjects Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Advanced Life Science and Biotechnology I Notes for feathered Image: Science and Biotechnology I Detail | | | | and Life | | | | |
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(M44630240)Advanced Environmental Technology II[Advanced Environmental Technology II]

| Subject name[English] | Advanced Environmental Technology II[Advanced Environmental Technology II] | | | | | | |
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| Schedule number | M44630240 | Subject are | a | Advanced | Required or | Elective | |
| | | | - | Environmental | elective | | |
| | | | and Life | 0.000.00 | | | |
| | | | Sciences | | | | |
| Time of starting a course | Spring term | Day of | the | Intensive | Credit(s) | 2 | |
| | | week,period | | | | | |
| Faculty | Graduate Progran | n for Master's | Degr | ee | Subject grade | 1~2 | |
| Department Offered | Environmental an | d Life Science | es | | Beggining grade | | |
| Charge teacher name[Roman | S4系教務委員 4 | kei kyomu Iin- | -S | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
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(M44630260)Advanced Environmental and Ecological Systems II[Advanced Environmental and Ecological Systems II]

| Subject name[English] | Advanced Enviro | nmontal and Ecolor | ical Svotama II[Adva | nood Environmont | al and Ecological | | |
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| | Systems II] | | | | | | |
| Sabadula number | M44630260 | Subject area | Advanced | Pequired or | Flective | | |
| | 10144030200 | Subject area | Environmental | elective | LIECTIVE | | |
| | | | and Life | 81851148 | | | |
| | | | Sciences | | | | |
| Time of starting a course | Spring term | Day of the | Intensive | Credit(s) | 2 | | |
| | | week period | Inconsive | | 2 | | |
| Faculty | Graduate Progra | m for Master's Degre | e | Subject grade | 1~2 | | |
| Department Offered | Environmental ar | d Life Sciences | | Beggining | | | |
| - | | | | grade | | | |
| Charge teacher name[Roman | S4系教務委員4 | lkei kyomu Iin−S | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| This course will provide the stud | lents with the opp | ortunity to study on | the selected subject | ct in the realm of | further advanced | | |
| environmental and ecological sy | stems based on | the knowledge of t | he course of Advar | nced Environmenta | al and Ecological | | |
| Systems I. | | - | | | - | | |
| This course will provide the stud | lents with the opp | ortunity to study on | the selected subject | ct in the realm of | further advanced | | |
| environmental and ecological sy | stems based on | the knowledge of t | he course of Advar | nced Environmenta | al and Ecological | | |
| Systems I. | | | | | | | |
| Contents of class | | | | | | | |
| The classes will be given by his/ł | her supervisor. The | type and contents | of this course depen | d on his/her super | visor. | | |
| The classes will be given by his/ł | her supervisor. The | e type and contents | of this course depen | id on his∕her super | visor. | | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| Advanced Environmental and Eco | ological Systems I | | | | | | |
| Advanced Environmental and Eco | ological Systems I | | | | | | |
| Notes for textbook | | | | | | | |
| | | | | | | | |
| Notes for reference | | | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| | | | | | | | |
| Evolution of achievement | | | | | | | |
| The evoluation of achievement | area of reports p | recontations and av | mination | | | | |
| The evaluation is based on the so | cores of reports, p | resentations, and exa | amination. | | | | |
| Fremination | | | | | | | |
| | | | | | | | |
| Details of exemination | | | | | | | |
| Decails of examination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |
| Supervisor | | | | | | | |
| Supervisor | | | | | | | |
| Reference UKL | | | | | | | |
| | | | | | | | |
| Office hours | | | | | | | |
| Students are encouraged visiting by appointment. | | | | | | | |
| Students are encouraged visiting | by appointment. | | | | | | |
| Relations to attainment objective | es of learning and e | aucation | | | | | |
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 (M44630280)X-ray Spectroscopy for Catalytic Engineering[X-ray Spectroscopy for Catalytic Engineering]

| Subject name[English] | X-ray Spectrosco | ony for Catalyt | ic En | gineering[X-ray Spec | stroscopy for Cata | vtic Engineering] |
|---|------------------------------|------------------|--------|-----------------------|------------------------|-------------------|
| Schedule number | M44630280 | Subject area | | Advanced | Required or | Elective |
| | | | - | Environmental | elective | |
| | and L | | | and Life | | |
| | Sciences | | | | | |
| Time of starting a course | Spring2 term | Day of | the | Mon.3~3 | Credit(s) | 1 |
| | | week,period | | | | |
| Faculty | Graduate Program | n for Master's | Degre | ee | Subject grade | 1~2 |
| Department Offered | Environmental and | d Life Science | S | | Beggining | |
| | | | | | grade | |
| Charge teacher name[Roman | │水鳴 生智 MIZU: | SHIMA Takano | ri | | | |
| alphabet mark | | | | | | |
| Numbering | <u> </u> | | | | | |
| Objectives of class | | | | | | |
| To gain knowledge of X-ray spec | stroscopic techniqu | ies including X | -ray | diffraction, X-ray ab | sorption fine struc | ture (XAFS), and |
| fluorescent X-ray spectroscopy a | as analytical tools f | or solid cataly | sts. | | | (|
| To gain knowledge of X-ray spec | troscopic techniqu | ies including X | -ray | diffraction, X−ray ab | sorption fine struc | ture (XAFS), and |
| fluorescent X-ray spectroscopy | as analytical tools f | or solid cataly | sts. | | | |
| | | | | | | |
| (1) Fundamentals of X-ray and its | s spectroscopy | с. У — I' | · · | | | |
| (2) Principle, measurement techn | iques, and application | on of X-ray di | ffract | ion | | |
| (3) Principle and analysis of XAFS | 5 ovvo obvotvo v vodiotiv | | | | | |
| (4) Measurement of XAFS using s | synchrotron radiatic | וזכ | | | | |
| (6) Application of XAES to cataly | st characterization | | | | | |
| (7) Advanced XAES techniques a | and their application | c | | | | |
| (8) Principle measurement techn | iques and application | on of fluoresce | ent X- | -ray spectroscopy | | |
| (0) 1 1110.010 (000.010.010.010.000.000.000.000.000.000 | idaee, and appread | | | | | |
| (1) Eurodomentals of X-ray and it | c chaotrocoony | | | | | |
| (2) Principle measurement techn | iques and applicati | on of X-ray di | ffract | ion | | |
| (3) Principle and analysis of XAF | S | | muot | | | |
| (4) Measurement of XAFS using s | svnchrotron radiatio | on | | | | |
| (5) Measurement of XAFS by lab | oratory system | | | | | |
| (6) Application of XAFS to cataly | st characterization | | | | | |
| (7) Advanced XAFS techniques a | nd their application | S | | | | |
| (8) Principle, measurement techn | iques, and applicati | on of fluoresce | ent X· | -ray spectroscopy | | |
| Self Preparation and Review | | | | | | |
| Related subjects | | | | | | |
| It is advisable to have basic know | vledge of physical a | nd inorganic of | hemie | trv | | |
| It is advisable to have basic know | vledge of physical a | nd inorganic cl | hemis | trv. | | |
| Notes for textbook | | | | | | |
| No textbook is required. A printer | d synopsis of the cl | lass will be giv | en. | | | |
| | | | | | | |
| (Reference) | | | | | | |
| Y.Iwasawa et al., "X-ray absorption | on fine structure fo | r catalysts and | d surf | aces", World Scienti | fic | |
| No textbook is required. A printed synopsis of the class will be given. | | | | | | |
| | | | | | | |
| (Reference) | | | | | | |
| Y.Iwasawa et al., "X-ray absorpti | on fine structure fo | r catalysts and | d surf | aces", World Scienti | fic | |
| Notes for reference | | | | | | |
| Goale to be enhieved | | | | | | |
| (1) Understanding of basics of V- | -ray spectroscopy | | | | | |
| (2) Understanding of X-ray diffra | ction XAFS and flu | lorescent X-rs | iv sne | ectroscopy as analyti | ical tools for solid (| catalysts |
| | | | | | | |

(1) Understanding of basics of X-ray spectroscopy

(2) Understanding of X-ray diffraction, XAFS, and fluorescent X-ray spectroscopy as analytical tools for solid catalysts.

Evaluation of achievement

Reports 100%

Reports 100%

Examination

Details of examination

Other information

Takanori Mizushima, room : B-303, e-mail: mizushima@ens.tut.ac.jp Takanori Mizushima, room : B-303, e-mail: mizushima@ens.tut.ac.jp **Reference URL**

Office hours

Anytime

Anytime

Relations to attainment objectives of learning and education

Key words

X-ray spectroscopy, X-ray diffraction, XAFS, Fluorescent X-ray spectroscopy, Solid catalysts X-ray spectroscopy, X-ray diffraction, XAFS, Fluorescent X-ray spectroscopy, Solid catalysts

(M45610010)Seminar on Architecture and Civil Engineering I[Seminar on Architecture and Civil Engineering I]

| Subject name[English] | Seminar on Arc | chitecture and Civ | il Engineering I[Se | eminar on Archite | ecture and Civil |
|------------------------------------|----------------------|------------------------|----------------------|----------------------|-------------------|
| Schedule number | M45610010 | Subject area | Advanced | Required or | Required |
| | | | Architecture | elective | |
| | | | and Civil | | |
| Time of starting a summer | | Davis of the | Engineering | 0 | 2 |
| lime of starting a course | Year | Day of the week period | Intensive | Grean(s) | 3 |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 |
| Department Offered | Architecture and | Civil Engineering | | Beggining | |
| | | | | grade | |
| Charge teacher name[Roman | │S5系教務委員 5 | kei kyomu Iin−S | | | |
| alphabet mark] | <u> </u> | | | | |
| | l | | | | |
| Objectives of class | attand all the sam | inara which is arran | and by the laborate | and automations for | the encoded study |
| subjects related to the current re | accend all the sem | the laboratory. The | scheduled program | of the seminars is a | announced by the |
| supervisor at the guidance of the | seminar. | the laboratory. The | | | |
| All the students are required to | attend all the sem | inars, which is arrar | nged by the laborate | ory supervisor for | the special study |
| subjects related to the current re | search activity of | the laboratory. The | scheduled program | of the seminars is a | announced by the |
| supervisor at the guidance of the | seminar. | | | | |
| Contents of class | | | | | |
| In each seminar, students purs | ue several resear | rch topics and/or | undertake projects | collectively and | solely under the |
| In each seminar students purs | s of the departments | rch topics and/or u | undertake projects | collectively and | solely under the |
| instruction of the faculty member | rs of the department | nt and/or those of o | ther departments. | concourvery and | |
| Self Preparation and Review | | | | | |
| | | | | | |
| Related subjects | | | | | |
| Notes for textbook | | | | | |
| Notes for reference | | | | | |
| Goals to be achieved | | | | | |
| Evaluation of achievement | | | | | |
| Examination | | | | | |
| | | | | | |
| Details of examination | | | | | |
| Other information | | | | | |
| Reference URL | | | | | |
| Office hours | | | | | |
| Relations to attainment objective | s of learning and e | oducation | | | |
| | | | | | |
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| | | | | | |
| Key words | | | | | |
| | | | | | |

(M45610020)Seminar on Architecture and Civil Engineering II[Seminar on Architecture and Civil Engineering II]

| Subject name[English] | Seminar on Architecture and Civil Engineering II[Seminar on Architecture and Civil Engineering II] | | | | | | |
|--|--|---------------------------|--------------------------|-------------------------|-------------------|--|--|
| Schedule number | M45610020 | Subject area | Advanced Architecture | Required or elective | Required | | |
| | | | Engineering | | | | |
| Time of starting a course | Year | Day of the week,period | Intensive | Credit(s) | 3 | | |
| Faculty | Graduate Progra | m for Master's Degre | e | Subject grade | 2~2 | | |
| Department Offered | Architecture and | Civil Engineering | | Beggining grade | | | |
| Charge teacher name[Roman alphabet mark] | S5系教務委員5 | ikei kyomu Iin−S | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| All the students are required to | attend all the sem | ninars, which is arrar | nged by the laborate | orv supervisor for | the special study | | |
| subjects related to the current re | esearch activity of | the laboratory. The | scheduled program | of the seminars is a | announced by the | | |
| supervisor at the guidance of the | seminar. | - | | | - | | |
| All the students are required to | attend all the sem | ninars, which is arrar | nged by the laborate | ory supervisor for | the special study | | |
| subjects related to the current re | esearch activity of | the laboratory. The | scheduled program | of the seminars is a | announced by the | | |
| supervisor at the guidance of the | seminar. | | | | | | |
| Contents of class | | | | | | | |
| In each seminar, students purs | sue several resea | rch topics and/or | undertake projects | collectively and | solely under the | | |
| instruction of the faculty member | rs of the departme | nt and/or those of o | ther departments. | | | | |
| In each seminar, students purs | sue several resea | rch topics and/or | undertake projects | collectively and | solely under the | | |
| Instruction of the faculty member | rs of the departme | nt and/or those of o | ther departments. | | | | |
| Seir Preparation and Review | | | | | | | |
| Related subjects | | | | | | | |
| Notes for textbook | | | | | | | |
| Notes for reference | | | | | | | |
| Goals to be achieved | | | | | | | |
| Evaluation of achievement | | | | | | | |
| Examination | | | | | | | |
| Details of examination | | | | | | | |
| Other information | | | | | | | |
| Reference URL | | | | | | | |
| Office hours | | | | | | | |
| Relations to attainment objectives of learning and education | | | | | | | |
| | | | | | | | |
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| Key words | | | | | | | |
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(M45610030)Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and Civil Engineering]

| Subject name[English] | Thesis Research | on Architecture and | d Civil EngineeringLT | hesis Research on | Architecture and | | | |
|-------------------------------------|-----------------------------|-----------------------|-----------------------|---------------------|-------------------|--|--|--|
| | Civil Engineering] | | | | | | | |
| Schedule number | M45610030 | Subject area | Advanced | Required or | Required | | | |
| | | | Architecture | elective | | | | |
| | | | and Civil | | | | | |
| | | | Engineering | | | | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 | | | |
| | | week.period | | | | | | |
| Faculty | Graduate Progra | m for Master's Degr | ee | Subject grade | 1~2 | | | |
| Department Offered | | | | Beggining | | | | |
| | | | | grade | | | | |
| Charge teacher name[Roman | S5系教務委員 | 各教員 5kei kvomu | in-S. KAKUKYOUIN | Kakukvouin | | | | |
| alphabet mark] | | | | ····· | | | | |
| Numbering | | | | | | | | |
| | | | | | | | | |
| Objectives of class | | | | | | | | |
| Research on architecture and civ | /il engineering | | | | | | | |
| Research on architecture and civ | /il engineering | | | | | | | |
| Contents of class | | | | | | | | |
| It depends on the laboratory. All | students must pr | esent their thesis at | the end of the cou | irse and take a fin | al examination on | | | |
| the thesis, as a requirement for t | the graduation of † | the master course. T | he study for the the | esis is planned and | conducted under | | | |
| the guidance of the supervisor. | | | | | | | | |
| It depends on the laboratory. All | students must pr | esent their thesis at | the end of the cou | irse and take a fin | al examination on | | | |
| the thesis, as a requirement for t | the graduation of t | the master course. T | he study for the the | esis is planned and | conducted under | | | |
| the guidance of the supervisor. | | | ··· ···, ··· ··· ··· | | | | | |
| Self Preparation and Review | | | | | | | | |
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| — • • • • | | | | | | | | |
| Related subjects | | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| It depends on the laboratory | depends on the laboratory | | | | | | | |
| Notes for textbook | or textbook | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| Notes for reference | | | | | | | | |
| | | | | | | | | |
| Goals to be achieved | | | | | | | | |
| | | | | | | | | |
| Evaluation of achievement | | | | | | | | |
| This credit is assigned for all the | process for the p | reparation and prese | ntation of the thesis | i. | | | | |
| This credit is assigned for all the | process for the p | reparation and prese | ntation of the thesis | | | | | |
| Examination | | | | | | | | |
| | | | | | | | | |
| Details of examination | | | | | | | | |
| Other information | | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| Reference LIRI | | | | | | | | |
| It depends on the laboratory | telerende en the leberatory | | | | | | | |
| It depends on the laboratory | | | | | | | | |
| Office hours | | | | | | | | |
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| It depends on the laboratory | | | | | | | | |
| It depends on the laboratory | <u> </u> | | | | | | | |
| Relations to attainment objective | s of learning and | education | | | | | | |
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Key words

(M45610030)Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and Civil Engineering]

| Subject name[English] | Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and | | | | | | | | |
|---|---|----------------------|--------------------------|---------------|-----|--|--|--|--|
| | Civil Engineering] | Civil Engineering] | | | | | | | |
| Schedule number | M45610030 Subject area Advanced | | Required or | Required | | | | | |
| | | | and Civil Engineering | elective | | | | | |
| Time of starting a course | 2Years | Day of the | Intensive | Credit(s) | 6 | | | | |
| | | week,period | | | | | | | |
| Faculty | Graduate Program | n for Master's Degre | e | Subject grade | 1~2 | | | | |
| Department Offered | Architecture and Civil Engineering Beggining M1, M2 grade | | | | | | | | |
| Charge teacher name[Roman alphabet mark] | S5系教務委員 5kei kyomu lin-S | | | | | | | | |
| Numbering | | | | | | | | | |

Objectives of class

This thesis research on architecture and civil engineering is designated to deepen the knowledge and enhance the skills of the students in their research fields through the self-oriented endeavour with the instruction of his/her supervisor(s).

This thesis research on architecture and civil engineering is designated to deepen the knowledge and enhance the skills of the students in their research fields through the self-oriented endeavour with the instruction of his/her supervisor(s).

Contents of class

The subjects and the contents of the thesis vary depending on the laboratory. All students must present their thesis at the end of the course and take a final examination on the thesis, as a requirement for the graduation of the master course. The study for the thesis is planned and conducted under the guidance of the supervisor(s).

The subjects and the contents of the thesis vary depending on the laboratory. All students must present their thesis at the end of the course and take a final examination on the thesis, as a requirement for the graduation of the master course. The study for the thesis is planned and conducted under the guidance of the supervisor(s).

Self Preparation and Review

Related subjects

TBD by the laboratory

TBD by the laboratory

Notes for textbook TBD by the laboratory TBD by the laboratory

Notes for reference

Goals to be achieved

Evaluation of achievement

This credit is assigned for all the process for the preparation and presentation of the thesis. This credit is assigned for all the process for the preparation and presentation of the thesis. **Examination**

Details of examination

Other information

Refer to administration office. Refer to administration office.

Reference URL

Refer to the URL of each laboratory Refer to the URL of each laboratory

Office hours

Refer to administration office.

Refer to administration office.

Relations to attainment objectives of learning and education

Key words

(M4561003T)Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and Civil Engineering]

| Subject name[English] | Thesis Research on Architecture and Civil Engineering[Thesis Research on Architecture and | | | | | | | | |
|---|---|---------------------------|--|-------------------------|----------|--|--|--|--|
| | Civil Engineering] | | | | | | | | |
| Schedule number | M4561003T | Subject area | Advanced Architecture and Civil Engineering | Required or elective | Required | | | | |
| Time of starting a course | Year | Day of the week,period | Intensive | Credit(s) | 6 | | | | |
| Faculty | Graduate Program for Master's Degree Subject grade 2~2 | | | | | | | | |
| Department Offered | Architecture and Civil Engineering Beggining grade | | | | | | | | |
| Charge teacher name[Roman alphabet mark] | S5系教務委員 5kei kyomu lin-S | | | | | | | | |
| Numbering | | | | | | | | | |

Objectives of class

This thesis research on architecture and civil engineering is designated to deepen the knowledge and enhance the skills of the students in their research fields through the self-oriented endeavour with the instruction of his/her supervisor(s).

This thesis research on architecture and civil engineering is designated to deepen the knowledge and enhance the skills of the students in their research fields through the self-oriented endeavour with the instruction of his/her supervisor(s).

Contents of class

The subjects and the contents of the thesis vary depending on the laboratory. All students must present their thesis at the end of the course and take a final examination on the thesis, as a requirement for the graduation of the master course. The study for the thesis is planned and conducted under the guidance of the supervisor(s).

The subjects and the contents of the thesis vary depending on the laboratory. All students must present their thesis at the end of the course and take a final examination on the thesis, as a requirement for the graduation of the master course. The study for the thesis is planned and conducted under the guidance of the supervisor(s).

Self Preparation and Review

Related subjects

TBD by the laboratory

TBD by the laboratory

Notes for textbook TBD by the laboratory TBD by the laboratory

Notes for reference

Goals to be achieved

Evaluation of achievement

This credit is assigned for all the process for the preparation and presentation of the thesis. This credit is assigned for all the process for the preparation and presentation of the thesis. **Examination**

Details of examination

Other information

Refer to administration office. Refer to administration office.

Reference URL

Refer to the URL of each laboratory Refer to the URL of each laboratory

Office hours

Refer to administration office.

Refer to administration office.

Relations to attainment objectives of learning and education

Key words

(M45610040)Seminar on Architecture and Civil Engineering[Seminar on Architecture and Civil Engineering]

| Subject name[English] | Seminar on Architecture and Civil Engineering[Seminar on Architecture and Civil Engineering] | | | | | | | |
|---|--|------------------------|--|-------------------------|--------------------|--|--|--|
| Schedule number | M45610040 | Subject area | Advanced Architecture and Civil Engineering | Required or elective | Required | | | |
| Time of starting a course | Year | Day of the week.period | Intensive | Credit(s) | 6 | | | |
| Faculty | Graduate Progra | m for Master's Degre | ee | Subject grade | 2~2 | | | |
| Department Offered | Architecture and | Civil Engineering | | Beggining grade | | | | |
| Charge teacher name[Roman alphabet mark] | S5系教務委員 | 5kei kyomu Iin−S | | 5.000 | | | | |
| Numbering | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| All the students are required to | attend all the sen | ninars, which is arrar | nged by the laborate | bry supervisor for | the special study | | | |
| subjects related to the current re | esearch activity of | the laboratory. The | scheduled program | of the seminars is a | announced by the | | | |
| supervisor at the guidance of the | seminar. | | | | | | | |
| All the students are required to | attend all the ser | ninars, which is arrar | iged by the laborato | bry supervisor for | the special study | | | |
| subjects related to the current re | search activity of | the laboratory. The | scrieduled program | or the seminars is a | announced by the | | | |
| Supervisor at the guidance of the | seminar. | | | | | | | |
| | | whether and/an | | and a structure and | | | | |
| In each seminar, students purs | sue several resea | rch topics and/or | undertake projects | collectively and | solely under the | | | |
| Instruction of the faculty member | s of the departme | and and/or those of o | uner departments. | a all a ativaly and | ممامات سمامير المم | | | |
| In each seminar, students purs | sue several resea | rch topics and/or | undertake projects | collectively and | solely under the | | | |
| Solf Drop protion and Deview | rs of the departme | ent and/or those of o | ther departments. | | | | | |
| Seir Preparation and Review | | | | | | | | |
| Related subjects | | | | | | | | |
| Notes for textbook | | | | | | | | |
| Notes for reference | | | | | | | | |
| Goals to be achieved | | | | | | | | |
| Evaluation of achievement | | | | | | | | |
| Examination | | | | | | | | |
| Details of examination | | | | | | | | |
| Other information | | | | | | | | |
| Reference URL | | | | | | | | |
| Office hours | | | | | | | | |
| Relations to attainment objective | s of learning and | education | | | | | | |
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| Key words | | | | | | | | |
| | | | | | | | | |

(M45630040)Geologic Hazard and Mitigation Planning[Geologic Hazard and Mitigation Planning]

| Subject name[English] | Geologic Hazard and Mitigation Planning Geologic Hazard and Mitigation Planning | | | | | anning] | | | |
|------------------------------------|---|----------------|----------|---------------------|---------------------|-------------------|--|--|--|
| Schedule number | M45630040 | Subject are | a | Advanced | Required or | Elective | | | |
| | | | - | Architecture | elective | | | | |
| | | | | and Civil | | | | | |
| | | | | Engineering | | | | | |
| Time of starting a course | Spring term | Day of | the | Mon.3~3 | Credit(s) | 2 | | | |
| - | | week,period | ł | | | | | | |
| Faculty | Graduate Program | n for Master's | s Degre | ee | Subject grade | 1~2 | | | |
| Department Offered | Architecture and | Civil Enginee | ring | | Beggining | | | | |
| | | | | | grade | | | | |
| Charge teacher name[Roman | 河邑 眞 KAWAM | URA Makoto | | | | | | | |
| alphabet mark] | | | | | | | | | |
| Numbering | | | | | | | | | |
| Objectives of class | | | | | | | | | |
| The objective are to underdstand | d the characteristic | s of geologic | ahzar | ds such as earthqua | akes.landslides.and | flloodings and to | | | |
| learn environment planning to mit | igate the disasters. | | | | | | | | |
| The objective are to underdstand | d the characteristic | s of geologic | ahzar | ds such as earthqua | akes,landslides,and | flloodings and to | | | |
| learn environment planning to mit | igate the disasters. | | | | | | | | |
| Contents of class | | | | | | | | | |
| 1 : An introduction to geology and | d planning | | | | | | | | |
| 2 : Earthquakes and faulting | | | | | | | | | |
| 3 : Volcanic activity | | | | | | | | | |
| 4 : Soil properties and problems | | | | | | | | | |
| 5 : Landslides | | | | | | | | | |
| 6 : Subsidence | | | | | | | | | |
| 7 : Coastal Process | | | | | | | | | |
| 8 : Flooding | | | | | | | | | |
| 9 : Groudwater | | | | | | | | | |
| 10 : Waste treatment | | | | | | | | | |
| 11 : Mineral resouses | | | | | | | | | |
| 12 : Energy resources | | | | | | | | | |
| 13 : Environmental planning | | | | | | | | | |
| 14 : Environmental law | | | | | | | | | |
| 1 : An introduction to geology and | d planning | | | | | | | | |
| 2 : Earthquakes and faulting | | | | | | | | | |
| 3 : Volcanic activity | | | | | | | | | |
| 4 : Soil properties and problems | | | | | | | | | |
| 5 : Landslides | | | | | | | | | |
| 7 : Coastal Process | | | | | | | | | |
| 8 : Flooding | | | | | | | | | |
| 9 : Groudwater | | | | | | | | | |
| 10 : Waste treatment | | | | | | | | | |
| 11 : Mineral resouses | | | | | | | | | |
| 12 : Energy resources | | | | | | | | | |
| 13 : Environmental planning | | | | | | | | | |
| 14 : Environmental law | | | | | | | | | |
| Self Preparation and Review | | | | | | | | | |
| | | | | | | | | | |
| Related subjects | | | | | | | | | |
| geology,urban planning,risk manag | gement | | | | | | | | |
| geology,urban planning,risk manag | gement | | | | | | | | |
| Notes for textbook | | | | | | | | | |
| Referrence: | | | | | | | | | |
| Griggs and Gilchrist:Geologic haza | ards,resources,and | environmenta | ıl planr | ning, | | | | | |
| Wadsworth Publishing Company,1 | 983. | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

Referrence: Griggs and Gilchrist:Geologic hazards,resources,and environmental planning, Wadsworth Publishing Company, 1983. Notes for reference Goals to be achieved ·Understanding the characteristics of geologic hazards such as earthquake,landslide and flooding. •Understanding the land use planning and law for mitigation of the disaster. $\cdot \text{Understanding the characteristics of geologic hazards such as earthquake, landslide and flooding.}$ •Understanding the land use planning and law for mitigation of the disaster. Evaluation of achievement Report and the presentation of the report. Report and the presentation of the report. Examination **Details of examination** Other information office:D-806 Tel:0532-44-6847 E-mail:kawamura@tutrp.tut.ac.jp office:D-806 Tel:0532-44-6847 E-mail:kawamura@tutrp.tut.ac.jp Reference URL preparing preparing Office hours 13:00-15:00 Tuesday 13:00-15:00 Tuesday Relations to attainment objectives of learning and education graduate course subject is not related with JABEE graduate course subject is not related with JABEE Key words geologic hazard, mitigation planning geologic hazard, mitigation planning

(M45630060)Building Science: Indoor Air Quality and Ventilation[Building Science: Indoor Air Quality and Ventilation]

| Subject name[English] | Building Science: Indoor Air Quality and Ventilation[Building Science: Indoor Air Quality and Ventilation] | | | | | | | |
|---|--|-------------|--|-------------------------|----------|--|--|--|
| Schedule number | M45630060 Subject area | | Advanced Architecture and Civil Engineering | Required or elective | Elective | | | |
| Time of starting a course | Spring term | Day of the | Thu.2~2 | Credit(s) | 2 | | | |
| | | week,period | | | | | | |
| Faculty | Graduate Program for Master's Degree Subject grade 1~2 | | | | | | | |
| Department Offered | Architecture and Civil Engineering Beggining | | | | | | | |
| | | | | grade | | | | |
| Charge teacher name[Roman alphabet mark] | 松本 博 MATSUMOTO Hiroshi | | | | | | | |
| Numbering | | | | | | | | |

Objectives of class

This course aims at providing the practical strategies to realize a good air environment, mainly indoor air quality and ventilation in buildings. The goal is to help professionals update their knowledge related to new techniques and methods on indoor climate and its control.

This course aims at providing the practical strategies to realize a good air environment, mainly indoor air quality and ventilation in buildings. The goal is to help professionals update their knowledge related to new techniques and methods on indoor climate and its control.

Contents of class

The course is offered as an introduction to a professional-level understanding of indoor air quality control and ventilation method for realizing a good air environment in buildings. The course consists of the following topics:

1. General Introduction to indoor air environment

- 2. Building related illness and indoor air quality
- 3. Physical/chemical characteristics of air quality
- 4. Measurement techniques of air pollutants
- 5. Modeling of material emission and sorption
- 6. Prediction method for indoor air quality (IAQ) in rooms
- 7. CFD analysis of air movement
- 8. Performance evaluation of ventilation systems
- 9. Ventilation system design for pollutant control
- 10. Guidelines, codes and standard
- 11. Research and Development on IAQ (1)
- 12. Research and Development on IAQ (2)
- 13. Research and Development on IAQ (3)
- 14. Discussion on IAQ related issues

15. Supplementary lecture

The course is offered as an introduction to a professional-level understanding of indoor air quality control and ventilation method for realizing a good air environment in buildings. The course consists of the following topics:

- 1. General Introduction to indoor air environment
- 2. Building related illness and indoor air quality
- 3. Physical/chemical characteristics of air quality
- 4. Measurement techniques of air pollutants
- 5. Modeling of material emission and sorption
- 6. Prediction method for indoor air guality (IAQ) in rooms
- 7. CFD analysis of air movement
- 8. Performance evaluation of ventilation systems
- 9. Ventilation system design for pollutant control
- 10. Guidelines, codes and standard
- 11. Research and Development on IAQ (1)
- 12. Research and Development on IAQ (2)
- 13. Research and Development on IAQ (3)
- 14. Discussion on IAQ related issues
- 15. Supplementary lecture

Self Preparation and Review

Related subjects

Building Climate

Building Climate

The related handout will be distributed. The related handout will be distributed. The related handout will be distributed. Notes for reference

Goals to be achieved

Achievement level of this course is to understand the background of sick building syndrome and the practical strategies to realize a good air environment by controlling indoor air quality and ventilation in buildings, and also propose the healthy and sustainable buildings.

Achievement level of this course is to understand the background of sick building syndrome and the practical strategies to realize a good air environment by controlling indoor air quality and ventilation in buildings, and also propose the healthy and sustainable buildings.

Evaluation of achievement

Reports related to this subject are reviewed to evaluate the achievement level.

Reports related to this subject are reviewed to evaluate the achievement level.

Examination

Details of examination

Other information

Room: D-710, Phone:0532-44-6838, Fax: 0532-44-6831

E-mail: matsu@ace.tut.ac.jp

Room: D-710, Phone:0532-44-6838, Fax: 0532-44-6831 E-mail: matsu@ace.tut.ac.jp

Reference URL

http://einstein.ace.tut.ac.jp/ http://einstein.ace.tut.ac.jp/

Office hours

Thursday 13:00-14:30 Thursday 13:00-14:30

Relations to attainment objectives of learning and education

Key words

Indoor Air Quality, Healthy Building, Sick Building Syndrome, Ventilation Indoor Air Quality, Healthy Building, Sick Building Syndrome, Ventilation

(M45630120)Human Settlement: Its History and Theory[Human Settlement: Its History and Theory]

| Subject name[English] | Human Settlem | ent: Its History and T | heorv[Human Settle | ment: Its History a | nd Theory] |
|---|--------------------|-------------------------|-----------------------|---------------------|------------------|
| Schedule number | M45630120 | Subject area | Advanced | Required or | Elective |
| | 1110000120 | | Architecture | elective | Liootivo |
| | | | and Civil | olocaro | |
| | | | Engineering | | |
| Time of starting a course | Spring term | Day of the | Thu 3~3 | Credit(s) | 2 |
| | opinig com | week period | | | - |
| Faculty | Graduate Progr | am for Master's Degr | | Subject grade | 1~2 |
| Department Offered | Architecture an | d Civil Engineering | | Beggining | · - |
| | | | | grade | |
| Charge teacher name[Roman | 泉田 英雄 IZU | MIDA Hideo | | 8.000 | |
| alphabet mark] | | | | | |
| Numbering | | | | | |
| | | | | | |
| Objectives of class | | | | | |
| After introducing Japanese trad | itional architectu | re, its modern develo | opment is described | in various points | of view; foreign |
| influence and introduction of we | estern technology | /, architectural educa | tion, public works | department, beaut | fication by neo- |
| classic style, modern movement | , Ginza Reconst | ruction and Parliame | nt Building projects | , building enactme | nts, response to |
| natural disasters, etc. | atomatica data da | | | the costs in the | f days for t |
| After introducing Japanese trad | itional architectu | re, its modern develo | opment is described | i in various points | or view; toreign |
| influence and introduction of we | estern technology | y, architectural educa | ition, public works | department, beaut | mcation by neo- |
| classic style, modern movement | , Ginza Reconst | ruction and Parliame | nt Building projects | , building enactme | nts, response to |
| natural disasters, etc. | | | | | |
| Contents of class | | | | | |
| 1. Introduction to Japanese archi | tecture; technica | I and aesthetic points | of view | | |
| 2. Environment and Natural Reso | urces | | | | |
| 3. Early Town Planning and Joka- | -Machi | | | | |
| 4. Buddhist and Shrine Architectu | ure | | | | |
| 5. City Excursion | | | | | |
| 6. Ancient House to Pre-Modern | House through S | hinden Style, Teahous | se Style, Shoin Style | • | |
| 7. Response to Golonialism; naval | school, lighthous | se, foreign settlement, | foreign engineers | | |
| 8. Employed Foreign Architects a | nd Engineering So | chool; Boinville, Conde | er, Imperial College, | etc. | |
| 9. First Generation of Japanese A | Architects and the | eir roles | | | |
| 10. Earthquake and Architecture | | | | | |
| 11. City Excursion | | | | | |
| 12. Modern movement | | | | | |
| 13. Frank L. Wright and Japanese | architects | | | | |
| 14. Destruction during the IIWW a | ind the reconstru | ction | | | |
| 15. Discussion | | | c · | | |
| 1. Introduction to Japanese arch | tecture; technica | I and aesthetic points | of view | | |
| 2. Environment and Natural Resol | urces | | | | |
| 3. Early Town Planning and Joka- | Machi | | | | |
| 4. Buddhist and Shrine Architecti | ure | | | | |
| 0. Uty Excursion | | hinden Stud- Tl | | | |
| 0. Ancient House to Pre-Modern | nouse through S | ninden Style, Teanous | foreign or sincer: |) | |
| Response to Colonialism; havai | nd Engine arises | se, ioreign settlement, | Toreign engineers | at a | |
| 0. Employed Foreign Architects a | | chool; Doinville, Conde | er, imperial College, | eld. | |
| 5. First Generation of Japanese A | Aroniteous and the | en roles | | | |
| 11 Oity Evolution | | | | | |
| 12 Modern movement | | | | | |
| 12. Would I Wright and Inner | orabitacta | | | | |
| 14 Destruction during the MAN | aroniceus | ation | | | |
| 15 Discussion | | | | | |
| Salf Prenaration and Poview | | | | | |
| | | | | | |
| | | | | | |
| Related subjects | | | | | |
| Knowledge of History of Archite | cture and City | | | | |

- ·Basic knowledge of Japanese history
- $\cdot \mathsf{Knowledge}$ of History of Architecture and City

| ·Basic knowledge of Japanese history |
|---|
| Notes for textbook |
| ·K. Franpton and K. Kunio, Japanese Building Practice, CUP |
| ·K. Franpton and K. Kunio, Japanese Building Practice, CUP |
| Notes for reference |
| |
| Goals to be achieved |
| Evaluation of achievement |
| ·Several reports should be submitted. |
| ·Final Presentation |
| ·Several reports should be submitted. |
| · Final Presentation |
| Examination |
| Details of examination |
| Other information |
| •Room D3-804, 6861 |
| izumida@tutrp.tut.ac.jp |
| ·Room D3-804, 6861 |
| izumida@tutrp.tut.ac.jp |
| Reference URL |
| http://gamac.tutrp.tut.ac.jp/ |
| http://gamac.tutrp.tut.ac.jp/ |
| Office hours |
| 13:30-15:00, Monday, 13:30-15:00, Wednesday. Other than these days, send me your email to take appointment. |
| 13:30–15:00, Monday, 13:30–15:00, Wednesday. Other than these days, send me your email to take appointment. |
| Relations to attainment objectives of learning and education |
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| |
| Key words |
| Japanese architecture, modern architecture, urban development |

Japanese architecture, modern architecture, urban development

(M45630140)Advanced District Planning[Advanced District Planning]

| Subject name[English] | Advanced District Planning[Advanced District Planning] | | | | | | | |
|---|--|--|--|--------------------------------------|----------|--|--|--|
| Schedule number | M45630140 | Subject area | Advanced Architecture and Civil Engineering | Required or elective | Elective | | | |
| Time of starting a course | Spring term | Day of the week,period | Tue.2~2 | Credit(s) | 2 | | | |
| Faculty | Graduate Progran | n for Master's Degre | ee | Subject grade | 1~2 | | | |
| Department Offered | Architecture and | Civil Engineering | Beggining grade | | | | | |
| Charge teacher name[Roman | 浅野 純一郎 ASANO Junichiro | | | | | | | |
| alphabet mark] | | | | | | | | |
| Numbering | | | | | | | | |
| Objectives of class To gain the practical knowledg To learn the advanced method To learn the theory and the sy To gain the practical knowledg To learn the advanced method To learn the theory and the sy | e of urban and distr s of district plannin stem of Japanese I e of urban and distr s of district plannin stem of Japanese I | rict planning. Ig and design. Iand use control sys rict planning. Ig and design. Iand use control sys | tem and land readju tem and land readju | stment projects. stment projects. | | | | |

Contents of class

- The major topics that will be addressed in this class are the followings.
- 1. Overview of the theory and concrete policy and methods about modern urban planning system in Japanese
- 2. Overview of Japanese land use control system, especially area division system and development permission.
- 3. Overview of Japanese land readjustment projects.
- 4. Practice by application of the design methods about land readjustment project and district planning.

Reporting textbook "Urban Planning System in Japan 2nd Edition" and doing workshop about land readjustment project and district planning.

The major topics that will be addressed in this class are the followings.

- 1. Overview of the theory and concrete policy and methods about modern urban planning system in Japanese
- 2. Overview of Japanese land use control system, especially area division system and development permission.
- 3. Overview of Japanese land readjustment projects.

4. Practice by application of the design methods about land readjustment project and district planning.

Reporting textbook "Urban Planning System in Japan 2nd Edition" and doing workshop about land readjustment project and district planning.

Self Preparation and Review

Related subjects

The following knowledge is desirable,

- 1) The basic knowledge on modern urban planning
- 2) The knowledge on urban planning system in your country

The following knowledge is desirable,

- 1) The basic knowledge on modern urban planning
- 2) The knowledge on urban planning system in your country

Notes for textbook

·Urban Planning System in Japan 2nd Edition

•Urban Land Use Planning System in Japan 2dn Edition

Both have been published by Japan International Cooperation Agency

Urban Planning System in Japan 2nd Edition
Urban Land Use Planning System in Japan 2dn Edition

Both have been published by Japan International Cooperation Agency

Notes for reference

Goals to be achieved

Evaluation of achievement

Submitting reports about textbook and another theme. Oral presentation: 30%, Written report: 70% Submitting reports about textbook and another theme. Oral presentation: 30%, Written report: 70%

Examination

レポートで実施 By Report

Details of examination

Other information

Reference URL

https://webct.edu.tut.ac.jp:443/webct/public/home.pl or https://moodle.imc.tut.ac.jp/ More information and pdf.files of textbook will be offered from Webct.

https://webct.edu.tut.ac.jp:443/webct/public/home.pl or https://moodle.imc.tut.ac.jp/ More information and pdf.files of textbook will be offered from Webct.

Office hours

Relations to attainment objectives of learning and education

Key words

District planning, Land use control system, Land readjustment project District planning, Land use control system, Land readjustment project

(M45630180)Advanced Computational Economics[Advanced Computational Economics]

| Subject name[English] | Advanced Computational Economics[Advanced Computational Economics] | | | | | | | | |
|---|--|------------------|----------------|---------------------|--------------------|----------|--|--|--|
| Schedule number | M45630180 | Subject | area | Advanced | Required or | Elective | | | |
| | | | | Architecture | elective | | | | |
| | | | | and Civil | | | | | |
| | | | | Engineering | | | | | |
| Time of starting a course | Spring term | Day c week,pe | of the riod | Thu.1~1 | Credit(s) | 2 | | | |
| Faculty | Graduate Program | n for Mast | er's Degr | ee | Subject grade | 1~2 | | | |
| Department Offered | Architecture and | Civil Engin | neering | | Beggining grade | | | | |
| Charge teacher name[Roman | 渋澤 博幸 SHIBU | JSAWA Hir | royuki | | 8.440 | <u> </u> | | | |
| alphabet mark | | | | | | | | | |
| | | | | | | | | | |
| Objectives of class | | | | | | | | | |
| In this course, students learn the | economic modeling | g technique | es and th | e simulation method | ology. | | | | |
| Contents of class | | g technique | es anu un | e sinulation method | ology. | | | | |
| 1-2: Input-Output Model | | | | | | | | | |
| 3-4: Simple 2 Sectors General Fo | guilibrium Model | | | | | | | | |
| 5-6: Inter-Sectoral General Equil | ibrium Model | | | | | | | | |
| 7–8: Simulation and Numerical Ex | | | | | | | | | |
| 9-11: Open Model with Exports a | nd Imports | | | | | | | | |
| 12–13: General Equilibrium Model | with Public Sector | | | | | | | | |
| 14-15: Simulation and Numerical | Example | | | | | | | | |
| 1-2: Input-Output Model | | | | | | | | | |
| 3-4: Simple 2 Sectors General Ec | quilibrium Model | | | | | | | | |
| 5-6: Inter-Sectoral General Equil | ibrium Model | | | | | | | | |
| 7-8: Simulation and Numerical Ex | ample | | | | | | | | |
| 9-11: Open Model with Exports a | nd Imports | | | | | | | | |
| 12–13: General Equilibrium Model | with Public Sector | | | | | | | | |
| 14-15: Simulation and Numerical Example | | | | | | | | | |
| Self Preparation and Review | | | | | | | | | |
| Related subjects | | | | | | | | | |
| Economics, Policy, Simulation | | | | | | | | | |
| Economics, Policy, Simulation | | | | | | | | | |
| Notes for textbook | | | | | | | | | |
| Papers will be distributed. | | | | | | | | | |
| Papers will be distributed. | | | | | | | | | |
| Notes for reference | | | | | | | | | |
| Goals to be achieved | | | | | | | | | |
| Advanced Computational Econom | nics | | | | | | | | |
| Advanced Economic Simulation M | Nodel | | | | | | | | |
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| Advanced Computational Econom | aios | | | | | | | | |
| Advanced Economic Simulation | Aodel | | | | | | | | |
| | lodel | | | | | | | | |
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| Evaluation of achievement | | | | | | | | | |
| Reports must be submitted. | | | | | | | | | |
| A: 80 Points or higher, B: 65 poin | ts or higher, C:55 p | oints or hi | gher, D: L | ess than 55 points. | | | | | |
| | | | | | | | | | |
| Reports must be submitted. | | | | | | | | | |
| A: 80 Points or higher, B: 65 poin | ts or higher, C:55 p | oints or hi | gher, D: L | ess than 55 points. | | | | | |
| | | | | | | | | | |

Examination

レポートで実施 By Report

Details of examination

Other information

Room:B-409 Tel:6963 E-mail: hiro-shibu@tut.jp

Room:B-409 Tel:6963 E-mail: hiro-shibu@tut.jp

Reference URL

www.pm.ace.tut.ac.jp www.pm.ace.tut.ac.jp Office hours

Tuesday 9:00-10:00 Tuesday 9:00-10:00

Relations to attainment objectives of learning and education

Key words

Computational Economics, Simulation Computational Economics, Simulation

(M45630200)Advanced Structural System Planning and Design II[Advanced Structural System Planning and Design II]

| Subject name[English] | Advanced Structural System Planning and Design II Advanced Structural System Planning | | | | | | | |
|-----------------------------------|---|-------------------|---------|----------------------|---------------------|--|--|--|
| | and Design II] | | | | | | | |
| Schedule number | M45630200 | Subject area | | Advanced | Required or | Elective | | |
| | | | | Architecture | elective | | | |
| | | | | and Civil | | | | |
| | | | | Engineering | | | | |
| Time of starting a course | Spring term | Day of | the | Intensive | Credit(s) | 2 | | |
| | | week,period | | | | | | |
| Faculty | Graduate Progra | m for Master's L | Degree | 9 | Subject grade | 1~2 | | |
| Department Offered | Architecture and | Givil Engineerin | ıg | | Beggining | | | |
| Charge teacher name[Roman | 95玄教務委員 5 | ikei kuomu lin-9 | 2 | | Blage | | | |
| alphabet mark] | 00米获扬安真。 | | , | | | | | |
| Numbering | | | | | | | | |
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| UDJECTIVES OF CLASS | 1 | | | | | and the state of t | | |
| It depends on the laboratory. I | ne resistered stud | dents are requi | ired to | o attend all the s | eminars, which is | arranged by the | | |
| laboratory supervisor for the spe | | s related to the | curre | ent research activit | ly of the laborator | y. The scheduled | | |
| It depends on the laboratory T | he resistered stur | dents are requi | ired to | o attend all the s | eminars which is | arranged by the | | |
| laboratory supervisor for the spe | cial study subjects | s related to the | | ent research activit | v of the laborator | v. The scheduled | | |
| program of the seminars is annou | nced by the super | visor at the guid | lance | of the seminar | | , The soliculed | | |
| Contents of class | | vicor at the gale | anoo | | | | | |
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| Self Preparation and Review | | | | | | | | |
| | | | | | | | | |
| Related subjects | | | | | | | | |
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| Notes for textbook | | | | | | | | |
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| Notes for reference | | | | | | | | |
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| Goals to be achieved | | | | | | | | |
| | | | | | | | | |
| Evaluation of achievement | | | | | | | | |
| | | | | | | | | |
| Examination | | | | | | | | |
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| Details of examination | | | | | | | | |
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| Other information | | | | | | | | |
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| Peference LIPI | | | | | | | | |
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| Office hours | | | | | | | | |
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| Relations to attainment objective | s of learning and e | oducation | | | | | | |
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| 1 | | | | | | | | |
| Key words | | | | | | | | |
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(M45630220)Advanced Environmental System Planning and Design II[Advanced Environmental System Planning and Design II]

| Subject name[English] | Advanced Environmental System Planning and Design II[Advanced Environmental System | | | | | | |
|--|--|------------------|----------|----------------------|---------------------|------------------|--|
| | Planning and Design II] | | | | | | |
| Schedule number | M45630220 | Subject area | | Advanced | Required or | Elective | |
| | | | | Architecture | elective | | |
| | | | | and Givil | | | |
| Time of starting a source | Spring torm | Day of | the | Intensive | Credit(a) | 2 | |
| Time of scarting a course | Spring term | week period | 4 | Incensive | Of Buil(s) | 2 | |
| Faculty | Graduate Program | n for Master's | Degre | e | Subject grade | 1~2 | |
| Department Offered | Architecture and Civil Engineering | | | Beggining | | | |
| | | | | grade | | | |
| Charge teacher name[Roman | S5系教務委員 5kei kyomu lin-S | | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| It depends on the laboratory. T | he resistered stud | dents are req | uired | to attend all the s | eminars, which is | arranged by the | |
| laboratory supervisor for the spe | cial study subjects | s related to th | ne curi | rent research activi | ty of the laborator | y. The scheduled | |
| program of the seminars is annou | nced by the super | visor at the gu | idance | e of the seminar. | | | |
| It depends on the laboratory. T | he resistered stud | dents are req | uired | to attend all the s | eminars, which is | arranged by the | |
| laboratory supervisor for the spe | cial study subjects | s related to the | ne curi | rent research activi | ty of the laborator | y. The scheduled | |
| Contents of class | nced by the superv | visor at the gu | lidarice | e of the seminar. | | | |
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| Solf Proparation and Paviaw | | | | | | | |
| Sell Freparation and Neview | | | | | | | |
| B L L L L L | | | | | | | |
| Related subjects | | | | | | | |
| | | | | | | | |
| Notes for textbook | | | | | | | |
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| Notes for reference | | | | | | | |
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| Goals to be achieved | | | | | | | |
| | | | | | | | |
| Evaluation of achievement | | | | | | | |
| | | | | | | | |
| Examination | | | | | | | |
| | | | | | | | |
| Details of examination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |
| | | | | | | | |
| Reference URL | | | | | | | |
| | | | | | | | |
| Office hours | | | | | | | |
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| Relations to attainment objectives of learning and education | | | | | | | |
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| | | | | | | | |
| Key words | | | | | | | |
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(M45630240)Advanced Regional System Planning and Design II[Advanced Regional System Planning and Design II]

| Subject name[English] | Advanced Regional System Planning and Design II[Advanced Regional System Planning and | | | | | | |
|--|---|--------------------|-------------------------|----------------------|------------------|--|--|
| | Design II] | | | | | | |
| Schedule number | M45630240 | Subject area | Advanced | Required or | Elective | | |
| | 1110000210 | Cubject al ca | Architecture | elective | Elective | | |
| | | | and Civil | ciccure | | | |
| | | | Engineering | | | | |
| Time of starting a course | Spring term | Day of th | e Intensive | Credit(s) | 2 | | |
| | 1 0 | week,period | | | | | |
| Faculty | Graduate Program | n for Master's De | Subject grade | 1~2 | | | |
| Department Offered | Architecture and Civil Engineering | | | Beggining | | | |
| | | | | grade | | | |
| Charge teacher name[Roman | S5系教務委員 5 | kei kyomu Iin−S | | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | L | | | | | | |
| It depends on the laboratory. T | he resistered stud | dents are require | ed to attend all the s | seminars, which is | arranged by the | | |
| laboratory supervisor for the spe | cial study subjects | s related to the o | current research activi | ity of the laborator | v. The scheduled | | |
| program of the seminars is annou | inced by the superv | visor at the guida | nce of the seminar. | | , | | |
| It depends on the laboratory. T | he resistered stud | dents are require | ed to attend all the s | seminars, which is | arranged by the | | |
| laboratory supervisor for the spe | cial study subjects | s related to the o | current research activi | ty of the laborator | y. The scheduled | | |
| program of the seminars is annou | inced by the superv | visor at the guida | nce of the seminar. | - | | | |
| Contents of class | | | | | | | |
| | | | | | | | |
| Self Preparation and Review | | | | | | | |
| | | | | | | | |
| B.I.I.I.I.I | | | | | | | |
| Related subjects | | | | | | | |
| | | | | | | | |
| Notes for textbook | | | | | | | |
| | | | | | | | |
| Notes for reference | | | | | | | |
| | | | | | | | |
| Goals to be achieved | | | | | | | |
| | | | | | | | |
| Evolution of achievement | | | | | | | |
| Evaluation of achievement | Evaluation of achievement | | | | | | |
| | | | | | | | |
| Examination | | | | | | | |
| | | | | | | | |
| Details of examination | | | | | | | |
| | | | | | | | |
| Other information | | | | | | | |
| | | | | | | | |
| Reference URL | | | | | | | |
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| Office nours | | | | | | | |
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| Relations to attainment objectives of learning and education | | | | | | | |
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| | | | | | | | |
| Key words | | | | | | | |
| | | | | | | | |
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(M45630310)Water Environment Engineering I[Water Environment Engineering I]

| Subject name[English] | Water Environme | nt Engineerin | g I[Wat | er Environment Eng | ineering I] | | |
|---|----------------------|--------------------------|-----------|---------------------|---------------|-----|--|
| Schedule number | M45630310 | 10 Subject area Advanced | | Required or | Elective | | |
| | | | | Architecture | elective | | |
| | | | | and Civil | | | |
| | | | | Engineering | | | |
| Time of starting a course | Spring term | Day of week,perio | the d | Tue.2~2 | Credit(s) | 2 | |
| Faculty | Graduate Program | n for Master' | s Degr | ee | Subject grade | 1~2 | |
| Department Offered | Architecture and | Civil Enginee | ering | | Beggining | | |
| | | | | | grade | | |
| Charge teacher name[Roman | 横田 久里子 YO | KOTA Kuriko |) | | | | |
| alphabet mark] | | | | | | | |
| Numbering | | | | | | | |
| Objectives of class | | | | | | | |
| To know and understand the wate | er pollutants in wat | er environme | nt. | | | | |
| To know and understand Environ | mental Quality Stan | ndards for Wa | iter Po | llutants in Japan. | | | |
| To know and understand the wate | er pollutants in wat | er environme | nt. | | | | |
| To know and understand Environ | mental Quality Stan | ndards for Wa | iter Po | llutants in Japan. | | | |
| Contents of class | | | | | | | |
| History of Water Pollution in Japa | an | | | | | | |
| 1) Minamata disease | | | | | | | |
| 2) Chronic cadmium poisoning | | | | | | | |
| Environmental Quality Standards | for Water Pollutant | S | | | | | |
| 1)Environmental Quality Standard | ls for Human Health | n and Monito | red Sul | ostances and Guidel | ine Values | | |
| 2)Environmental Quality Standard | ls for Conservation | of the Living | g Enviro | onment | | | |
| | | | | | | | |
| Water pollutants in water environ | ment | | | | | | |
| 1)Nutrients | | | | | | | |
| 2)Chemicals in water environment | | | | | | | |
| History of Water Pollution in Japan | | | | | | | |
| 1) Minamata disease | | | | | | | |
| 2) Chronic cadmium poisoning | | | | | | | |
| Environmental Quality Standards for Water Pollutants | | | | | | | |
| 1)Environmental Quality Standard | is for Human Health | n and Monito | red Sul | ostances and Guidel | ine values | | |
| Z)Environmental Quality Standard | is for Conservation | of the Living | g Eriviro | onment | | | |
| Watan a lintanta in materia andira | | | | | | | |
| Water pollutants in water environment | | | | | | | |
| 2)Chemicals in water environment | | | | | | | |
| Zjonemicals in water environment | | | | | | | |
| | | | | | | | |
| Related subjects | | | | | | | |
| Notes for textbook | | | | | | | |
| No textbook is required for this class. | | | | | | | |
| No textbook is required for this class. | | | | | | | |
| Notes for reference | | | | | | | |
| Goals to be achieved | | | | | | | |
| To understand the water pollution and environmental quality standard. | | | | | | | |
| To understand the water pollution and environmental quality standard. | | | | | | | |
| Evaluation of achievement | | | | | | | |
| Reports | | | | | | | |
| Reports | | | | | | | |
| Examination | | | | | | | |
| Details of examination | | | | | | | |

Other information

D-810 Tel:6851 e-mail:yokota@ace.tut.ac.jp D-810 Tel:6851 e-mail:yokota@ace.tut.ac.jp

Reference URL

Office hours

Wednesday 12:00- 13:00 Wednesday 12:00- 13:00

Relations to attainment objectives of learning and education

Key words