2018（Term Ⅰ・Ⅲ・Ⅴ）
School Specific Course Syllabus
For International Programs
(School of Agricultural Sciences)

Table of Contents

科目名　Course Title	
数学演習1a(Mathematics Tutorial Ia)	
学科・専攻　Department/Program	受講年次　Grade
G30 All program	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910825	Fall semester Tue：4
単位数　Credit	科目区分　Course type
1	Basic Specialized Courses

担当教員　Instructor	RICHARD Serge charle(RICHARD Serge charles)
所属研究室　Laboratory	Graduate School of Mathematics
連絡先　Contact	richard@math.nagoya-u.ac.jp
居室　Room	Sci. Bldg A, 237

講義の目的とねらい　Course purpose

The aim of this course is to deepen the understanding of calculus and to cultivate the ability to apply mathematical knowledge. The course is mainly intended for students taking Calculus I.

履修要件　Prerequisite

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit a Course Withdrawal Request Form when the student has no intention of finishing the course during the semester.

成績評価　Grading

Your final grade will be determined by homework (50%) and quizzes (50%).

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The grading scale will be: S: 90-100, A: 80-89, B: 70-79, C: 60-69, F: 0-59.

関連する科目　Related courses

Calculus I, registration code : 0064511.

教室　Class room

Check the Course Timetable.
Room 407 of Science Building A.

授業内容　Content
Exercises sheets will be provided each week before the tutorial, and will be available on the web site of the course. Homework will be due every week during the tutorial. For more information: http://www.math.nagoya-u.ac.jp/~richard/fall2018.html

教科書　Textbook
参考書　Recommended reading
連絡方法　Contact method
Email to : richard@math.nagoya-u.ac.jp
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
数学演習1b(Mathematics Tutorial Ib)	
学科・専攻　Department/Program	受講年次　Grade
G30 All program	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910826	Fall semester Tue：4
単位数　Credit	科目区分　Course type
1	Basic Specialized Courses

担当教員　Instructor	DARPOE Erik Olof(DARPOE Erik Olof)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose

The aim of this course is to provide essential mathematical knowledge necessary to further study mathematics and other sciences at university level. The course is intended for students taking Linear algebra I.

履修要件　Prerequisite

High-school level mathematics.

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Any student who does not participate in the final exam will receive the grade “ Absent ”. It is not necessary to submit a course withdrawal request form.

成績評価　Grading

The assessment of this course coincides with the assessment of the course Linear Algebra II.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Any student who does not participate in the final exam will receive the grade “ Absent ”.

関連する科目　Related courses

The course is intended for students taking Linear algebra I.

教室　Class room

Check the Course Timetable.

授業内容　Content
Linear systems, matrices, vectors, linear maps, matrix multiplication, the inverse of a linear map, subspaces of Rn, image and kernel, linear independence, bases, dimension, coordinates, orthogonal bases, the Gram–Schmidt algorithm, QR factorisation, orthogonal complement, orthogonal maps, least square approximations.

教科書　Textbook
None
参考書　Recommended reading
Otto Bretscher: Linear Algebra with Applications, fourth edition, Pearson 2009. ISBN: 978-0-13-600926-9
連絡方法　Contact method
Phone: 052-789-5612 Office: A-331, Science building A.
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. The reference book is available in the Main library and in the Science library (enough copies in total for all students).

科目名　Course Title	
数学演習1(Mathematics Tutorial I)	
学科・専攻　Department/Program	受講年次　Grade
G30 All program	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910801	Fall semester Tue：4
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	RICHARD Serge charle(RICHARD Serge charles)
所属研究室　Laboratory	Graduate School of Mathematics
連絡先　Contact	richard@math.nagoya-u.ac.jp
居室　Room	Sci. Bldg A, 237
担当教員　Instructor	DARPOE Erik Olof(DARPOE Erik Olof)
所属研究室　Laboratory	Graduate School of Mathematics
連絡先　Contact	darpo@math.nagoya-u.ac.jp
居室　Room	Sci. Bldg A, 331

講義の目的とねらい　Course purpose
The aim of this course is to deepen the understanding of calculus and of linear algebra, and to cultivate the ability to apply mathematical knowledge. The course is mainly intended for students taking Calculus I and linear algebra I.
履修要件　Prerequisite
履修取り下げについて　Course withdrawal
<可否>　Possible <条件> Submit a Course Withdrawal Request Form when the student has no intention of finishing the course during the semester.
成績評価　Grading
Your final grade will be determined by homework (50%) and quizzes (50%).
不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades
The grading scale will be: S: 90-100, A: 80-89, B: 70-79, C: 60-69, F: 0-59.

関連する科目　Related courses
教室　Class room
Check the Course Timetable. Science Building A, rooms 407 & 408.

授業内容　Content
Exercises sheets will be provided each week before the tutorial. Homework are due the following week.

教科書　Textbook
参考書　Recommended reading
連絡方法　Contact method
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
物理学基礎演習1a(Fundamental Physics Tutorial Ia)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910822	Fall semester Fri：3
単位数　Credit	科目区分　Course type
1	Basic Specialized Courses

担当教員　Instructor	TAMA Florence Muriel(TAMA Florence Muriel)
所属研究室　Laboratory	computational biophysics
連絡先　Contact	florence.tama@nagoya-u.jp
居室　Room	
担当教員　Instructor	FOONG See Kit(FOONG See Kit)
所属研究室　Laboratory	
連絡先　Contact	skfoong@eken.phys.nagoya-u.ac.jp
居室　Room	

講義の目的とねらい　Course purpose

This is the companion course to the lecture course Fundamentals of Physics I on introductory calculus-based mechanics. It offers exercises to cultivate the ability to analyze and solve problems, as well as presentation and discussion skills so as to participate effectively in discussions among peers and instructors, leading to mastering the concepts introduced in the lecture course. Therefore students taking the lecture course are expected to register for this tutorial course.

履修要件　Prerequisite

No prerequisite is required; however, students without a good background in high school physics and basic calculus must be prepared to spend more time on this course, and are advised to take this into consideration when deciding their course load.

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Students must follow the standard procedure for course withdrawal

成績評価　Grading

Attendance and participation (30%)
Weekly assignments and Quizzes (70%)

不可（F）と欠席の基準　　Criteria for "Absent" &"Fail" grades
Class attendance is required. Absentee must give a valid reason supported by documents. A student will receive an “ Absent ” grade if he is absent for more than 2 times without valid reason.
関連する科目　　Related courses
Fundamentals of Physics I; Calculus I
教室　　Class room
Check the Course Timetable. ES034 and ES035

授業内容　　Content
See syllabus for Fundamentals of Physics I.

教科書　　Textbook
Students are required to purchase the online Fundamentals of Physics Extended 10th Edition International Student Version with WileyPLUS Set (John Wiley & Sons, 2010　ISBN:9780470576083) [However, do not purchase it before the first class meeting where further details will be announced in class]
参考書　　Recommended reading
連絡方法　　Contact method
By appointment. Please email instructors to make an appoinment.
その他　　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. • Concurrent registration for Fundamentals of Physics I is required. • Students are expected to participate actively in class activities throughout the course.

科目名　Course Title	
物理学基礎演習1b(Fundamental Physics Tutorial Ib)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910823	Fall semester Fri：3
単位数　Credit	科目区分　Course type
1	Basic Specialized Courses

担当教員　Instructor	GELLOZ Bernard Jacqu(GELLOZ Bernard Jacques)
所属研究室　Laboratory	
連絡先　Contact	florence.tama@nagoya-u.jp
居室　Room	
担当教員　Instructor	TAMA Florence Muriel(TAMA Florence Muriel)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose
This is a companion course to Fundamental Physics II, and offers practical exercises for mastering the concepts introduced in the lecture courses. Students taking the lecture courses should also take this tutorial class
履修要件　Prerequisite
履修取り下げについて　Course withdrawal
<可否>　Possible <条件> Students need to submit a Course Withdrawal Request Form if they have no intention of finishing a course during the semester.
成績評価　Grading
Weekly tutorials, quizzes, attendance (Weighting to be advised)
不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Class attendance is required. Absentees must give a valid reason (e.g. doctor ’ s certificate). A student who is absent from more than 3 sessions will receive zero for the semester attendance mark. The “ Absent ” grade is reserved for students who withdraw until just after the final quiz. After that day, a letter grade will be awarded based on marks earned
from all assessment during the semester.

関連する科目　Related courses

Calculus I, Calculus II, Linear Algebra I, Linear Algebra II, Fundamentals of Physics I, III & IV

教室　Class room

Check the Course Timetable.
Check the Course Timetable

授業内容　Content

See syllabus for Fundamental Physics II.

教科書　Textbook

Fundamentals of Physics Extended 10th Edition International Student Version with WileyPLUS Set (John Wiley & Sons, 2010 ISBN: 9781118230749)

参考書　Recommended reading

連絡方法　Contact method

By email: florence.tama@nagoya-u.jp

その他　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.
*See "Course List and Graduation Requirements" for your program for your enrollment year.

- No pre-requisite is required; however, students without a good background in high school physics and basic calculus are expected to spend more time on this course, and are advised to take this into consideration when deciding their course load.
- Concurrent registration for Fundamental Physics II is required.
- Students are expected to participate actively in class activities throughout the course.

科目名　Course Title	
物理学基礎演習1(Fundamental Physics Tutorial I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	1st
授業形態　Class style	必修・選択の別　Compulsory or Elective
演習	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910802	Fall semester Fri：3
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	TAMA Florence Muriel(TAMA Florence Muriel)
所属研究室　Laboratory	
連絡先　Contact	florence.tama@nagoya-u.jp
居室　Room	
担当教員　Instructor	GELLOZ Bernard Jacqu(GELLOZ Bernard Jacques)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	
担当教員　Instructor	FOONG See Kit(FOONG See Kit)
所属研究室　Laboratory	
連絡先　Contact	skfoong@eken.phys.nagoya-u.ac.jp
居室　Room	

講義の目的とねらい　Course purpose
This course consists of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib. Please contact the instructor of Ia and Ib and refer to the syllabus of each course for details.
履修要件　Prerequisite
Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.
履修取り下げについて　Course withdrawal
<可否>　Possible <条件> Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.
成績評価　Grading

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

不可（F）と欠席の基準　　Criteria for "Absent" &"Fail" grades

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

関連する科目　　Related courses

教室　　Class room

Check the Course Timetable.
Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

授業内容　　Content

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

教科書　　Textbook

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

参考書　　Recommended reading

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

連絡方法　　Contact method

Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

その他　　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.
Please refer to the syllabus of Fundamental Physics Tutorial Ia and Fundamental Physics Tutorial Ib for details.

科目名　Course Title	
生化学1(Biochemistry I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910805	Fall semester Mon：1
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	YOU Young-Jai(YOU Young-Jai)
所属研究室　Laboratory	Genetic and Metabolic Regulation of Behavior
連絡先　Contact	yjyou@bio.nagoya-u.ac.jp
居室　Room	SS508

講義の目的とねらい　Course purpose
The purpose of this course is to introduce the biomolecules and their contributions to life.
履修要件　Prerequisite
N/A
履修取り下げについて　Course withdrawal
<可否>　Possible <条件> Submit the Course Withdrawal Request form by the sixth lecture
成績評価　Grading
Evaluation will be based on in-class participation, assignments and examinations.
不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades
Absent – based on submission of Course Withdrawal Request Form. Fail – based on “ Failed ” results of examinations and assignments.
関連する科目　Related courses
Biochemistry II, III, and IV (Terms IV, V, and VI, respectively)
教室　Class room
Check the Course Timetable. A407 (Science building A, room 407)

授業内容　Content
1. Introduction: What does chemistry do with biology? 2. Thermodynamics 3. Water: Physical & chemical properties of water. 4. Amino Acids 5. Proteins: 2D structures 6. Proteins: 3D structures 7. Proteins in action: Hemoglobin 8. Tools to study protein functions 9. Proteins in action: enzymes 10. DNA, RNA and genome 11. Tools to study genomes

教科書　Textbook
1. Principles of Biochemistry by Voet, D., Voet, J.G. and Pratt, C.W., Wiley and son, Inc. USA. ISBN: 78-11809244-6, 4th edition 2. Biochemistry by Berg, Tymoczko, Stryer, 8th edition. 3. Lehninger Principles of Biochemistry by Nelson and Cox, 7th edition.
参考書　Recommended reading
Recommended reading will be suggested in the class.
連絡方法　Contact method
via email
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
生理・解剖学1(Physiology and Anatomy I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913021	Fall semester Mon：2
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	VASSILEVA Maria(VASSILEVA Maria)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose

This course is designed to deepen students` knowledge in human physiology and anatomy. The course focuses on understanding the normal function of organs and organ systems, as well as how those functions change in disease. Students will familiarize themselves with the appropriate scientific terminology and advanced physiology concepts.

履修要件　Prerequisite

Strongly recommended to have completed Fundamentals of Biology II

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture. For later course withdrawal contact the lecturer.

成績評価　Grading

Evaluation will be based on in-class participation, assignments and examinations.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent: based on submission of Course Withdrawal Request Form.
Fail: Total accumulated score of less than 60%.

関連する科目　Related courses

教室　Class room

Check the Course Timetable.
A 408

授業内容　Content

1. Respiratory system
2. Cardiovascular system
3. Renal system
4. Gastrointestinal system
5. Endocrine system
6. Reproductive system

教科書　Textbook

Anatomy and Physiology by OpenStax College, free downloadable textbook
(https://openstaxcollege.org/textbooks/anatomy-and-physiology)

参考書　Recommended reading

1. Berne & Levy Principles of Physiology, Levy, Koeppen and Stanton; Mosby.
2. Human Physiology, The basis of medicine, Pocock and Richards; Oxford University Press.
3. Physiology, 3rd ed., Constanzo; Elsevier.
4. Netter`s Essential Physiology, Mulroney and Myers; Saunders.

連絡方法　Contact method

By e-mail

その他　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
分析化学(Analytical Chemistry)	
学科・専攻　Department/Program	受講年次　Grade
G30 Chemistry	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910806	Fall semester Tue：1
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	SAMJESKE Gabor(SAMJESKE Gabor)
所属研究室　Laboratory	Inorganic Chemistry Laboratory
連絡先　Contact	E-mail: gsamjeske@chem.nagoya-u.ac.jp
居室　Room	

講義の目的とねらい　Course purpose

The course will introduce the fundamentals of analytical chemistry and mainly focuses on classical but still widely used wet chemical methods, combined with an overview of the instrumental techniques used in contemporary chemical analysis.

履修要件　Prerequisite

Laboratory in Chemistry is mandatory!

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Nagoya University approved system; students can withdraw from this course if they submit the request form to the instructor by the officially published date.

成績評価　Grading

Intermediate exam: 30%, final exam: 70%
TOTAL 100% = 100 pts.
Grades: "S" = 100 - 90% (more than 90 pts), "A" = 89 - 80% (89 - 80 pts), "B" = 79 - 70% (79 - 70pts), "C" = 69 - 60% (69 - 60 pts), "F" = 59 - 0% (fewer than 60 pts)

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Ask the instructor

関連する科目　Related courses

Inorganic Chemistry I + II, Chemistry of Inorganic Materials I, Laboratory in Chemistry

教室　Class room
Check the Course Timetable. Check the Course Timetable.

授業内容　Content
Analytical Chemistry will cover the following topics ・Acid - base equilibria ・Precipitation/gravimetry ・Redox equilibria ・Titration ・Spectrochemical methods ・Chromatography

教科書　Textbook
None
参考書　Recommended reading
Gary D. Christian; " ANALYTICAL CHEMISTRY, 7TH EDITION"; 2013; Publication Hoboken, N.J.: John Wiley & Sons
連絡方法　Contact method
Either after the classes or during the office hours/by email (to be announced)
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title		
数理物理学演習1(Mathematical Physics Tutorial I)		
学科・専攻　Department/Program		受講年次　Grade
G30 Physics		2nd
授業形態　Class style		必修・選択の別　Compulsory or Elective
演習		* See "Remarks"
時間割コード　Registration code		開講期・曜日・時限　Semester,Day & Period
0910824		Fall semester Tue：4
単位数　Credit		科目区分　Course type
1		Basic Specialized Courses
担当教員　Instructor	阿部　智広(ABE Tomohiro)	
所属研究室　Laboratory	KMI	
連絡先　Contact	abetomo@kmi.nagoya-u.ac.jp	
居室　Room	ES617	

講義の目的とねらい　Course purpose

Students taking Mathematical Physics I should also take this tutorial class. This course introduces first order and second order ordinary differential equations and their solution methods. Students master exact and approximate analytical techniques for initial value problems that arise in physics, engineering and chemistry. Questions of existence, uniqueness and convergence are also discussed. Fourier series follow naturally from the 2nd order theory and these are investigated, too.

履修要件　Prerequisite

Calculus I, Calculus II, Linear Algebra I, Linear Algebra II;or Consent of Instructor

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Ask the instructor.

成績評価　Grading

tutorial Attendance: 50%; Class performance: 50%

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The “ Absent ” grade is reserved for students who withdraw by November 14.
After that day, a letter grade will be awarded based on marks earned from
all assessments during the semester.

関連する科目　Related courses

Mathematical Physics Tutorial I, Mathematical Physics II

教室　Class room
Check the Course Timetable. ES033.

授業内容　Content
• First order ordinary differential equation (ODE) initial value problems. Integration factor; separable equations; systems of ODEs (Hamiltonian systems); phase plane, flow. Uniqueness and existence theorems. Some differences between linear and nonlinear ODEs. • Second order linear ODE initial value problems. Homogeneous solution. Proving linear independence (Wronskian). Method of Undetermined Coefficients; Variation of Parameters. Series solutions: ordinary point, regular singular point; convergence tests; Method of Frobenius. Examples from physics, engineering and chemistry. • Fourier series. Dirichlet conditions. Role of symmetry. Gibbs phenomenon. Effect of jump discontinuity on speed of convergence. Integration and differentiation of Fourier series. • Fourier transform, convolution, Dirac delta function. Laplace transform.

教科書　Textbook
None.
参考書　Recommended reading
1. Boas M.L., 2006, Mathematical Methods in the Physical Sciences, 3rd ed., John Wiley & Sons. 2. Strang, G., Introduction to Linear Algebra, 4th Edition, Chapter 6. 3. Arfken G.B. & Weber H.J., 2005, Mathematical Methods for Physicists, 6th ed., Elsevier Academic Press. (Copies are available in the library.)
連絡方法　Contact method
Office: ES Building, ES617 Phone: 052-789-6580 Email: abetomo@kmi.nagoya-u.ac.jp
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. *See Course List and Graduation Requirements for your program for your enrollment year. Concurrent registration in Mathematical Physics I is advised.

科目名　Course Title	
数理物理学1(Mathematical Physics I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910810	Fall semester Tue：5
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	WOJDYLO John Andrew(WOJDYLO John Andrew)
所属研究室　Laboratory	S-Lab
連絡先　Contact	john.wojdylo@s.phys.nagoya-u.ac.jp
居室　Room	ES033

講義の目的とねらい　Course purpose

This course is a companion course to Mathematical Physics II. This course introduces first order and second order ordinary differential equations and their solution methods. Students master analytical techniques for problems that arise in physics, engineering and chemistry. Questions of uniqueness of solutions and convergence are also discussed. Students are also introduced to Fourier series, the Fourier transform, convolution, Laplace transform, and the Dirac delta function. Students will find this mathematical methods course helpful in other units such as Quantum Mechanics, Analytical Mechanics, Electricity and Magnetism, as well as in Automotive Engineering and other engineering courses.

This course has dual aims: 1) to convey mathematical principles; 2) to improve students ’ technical ability – i.e. ability to express intuition in mathematical terms and ability to solve problems.

履修要件　Prerequisite

Calculus I; Calculus II; Linear Algebra I; Linear Algebra II, or Consent of Instructor

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Withdraw by November 16.

成績評価　Grading

Attendance: 5%; Weekly Quizzes and Assignments: 25%; Mid-term exam: 35%; Final Exam: 35%

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The “ Absent ” grade is reserved for students who withdraw by November 16. After that day, a letter grade will be awarded based on marks earned from all assessment during the semester.

関連する科目　Related courses
Mathematical Physics Tutorial I, Mathematical Physics II
教室　Class room
Check the Course Timetable.

授業内容　Content
• First order ordinary differential equation (ODE) initial value problems. Integration factor; separable equations; systems of ODEs (Hamiltonian systems); phase plane, flow. Uniqueness and existence theorems. Some differences between linear and nonlinear ODEs. • Second order linear ODE initial value problems. Homogeneous solution. Proving linear independence (Wronskian). Method of Undetermined Coefficients; Variation of Parameters. Series solutions: ordinary point, regular singular point; convergence tests; Method of Frobenius. Examples from physics, engineering and chemistry. • Fourier series. Dirichlet conditions. Role of symmetry. Gibbs phenomenon. Effect of jump discontinuity on speed of convergence. Integration and differentiation of Fourier series. • Fourier transform, convolution, Dirac delta function. Laplace transform.

教科書　Textbook
Boyce W., DiPrima R, Elementary Differential Equations, 7th –10th Ed., Wiley.
参考書　Recommended reading
1. Boas M.L., 2006, Mathematical Methods in the Physical Sciences, 3rd ed., John Wiley & Sons. 2. Strang, G., Introduction to Linear Algebra, 4th Edition, Chapter 6. 3. Arfken G.B. & Weber H.J., 2005, Mathematical Methods for Physicists, 6th ed., Elsevier Academic Press. (Copies are available in the library.)
連絡方法　Contact method
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. • Students taking Mathematical Physics I should also take Mathematical Physics Tutorial I. • Concurrent registration in Mathematical Physics II is recommended as that unit is a prerequisite for Electricity and Magnetism I. • The book by Boas is also useful for Mathematical Physics II and Electricity and Magnetism.

科目名　Course Title	
有機化学1(Organic Chemistry I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Chemistry	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910807	Fall semester Wed：1
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	SHIN Jiyoung(SHIN Jiyoung)
所属研究室　Laboratory	E1#832
連絡先　Contact	jyshin@apchem.nagoya-u.ac.jp
居室　Room	E2#476

講義の目的とねらい　Course purpose

The main purpose of this course is to acquire a logical framework for understanding fundamental organic chemistry. This framework emphasizes how the structures of organic molecules, as well as the electron density configurations, are related to patterns of chemical reactions. On the basis of the knowledge, how to solve practical problems is learned sequentially.

履修要件　Prerequisite

Fundamentals chemistry I and II

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Ask the course instructor.

成績評価　Grading

Examination [total 70%: two midterms(20% for each) and one final (30%)], Attendance (10%), and Assignment of Homework (20%): S(x≧90), A(90>x≧80), B(80>x≧70), C(70>x≧60), and F(60>x).

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

In the cases of any unavoidable reasons such as sickness, accident, or no attendance school, the student may get a grade of 'Absent' through the judgment of the course instructor and the student, when the student submits a 'Course Withdrawal Request Form' to receive the 'Absent' grade.　Furthermore, no submission of sickness/absence reports and lack of attendance score will result in 'F' grade.　It is for the protection of other attendances in the corresponding course from the frequent absences of the specific/uncertain student(s).

関連する科目　Related courses

Organic Chemistries II-V.

教室　Class room

Check the Course Timetable.
E141

授業内容　Content

1. Structure and Bonding in Organic Molecules: Hybridization
2. Structures of Organic Molecules and Their Stereochemistry
 - Alkanes and Cycloalkanes
 - Alkenes and Alkynes
 - Delocalized π-System
3. Structures and Reactivity
 - Polar and Nonpolar Molecules
 - Formal Charge and Oxidation States
 - Acids and Bases versus Electrophiles and Nucleophiles
 - Chemical Reactions: Additions, Substitutions, and Eliminations
 - Chemical Kinetics: Transition State, Intermediate, Endothermic and Exothermic Processes, and Activation Energy
4. Aliphatic Nucleophilic Substitutions: SN1 and SN2
 - Chemical Kinetics: Stabilities of Reaction Intermediates (Carbocations: Hyperconjugation and Resonances)
 - Stereochemistry upon the Stable Reaction Intermediate
 - Unimolecular Nucleophilic Substitutions (SN1): Favor Substrates, Nucleophiles, Leaving Groups, and Solvents
 - Bimolecular Nucleophilic Substitutions (SN2); Favor Substrates, Nucleophiles, Leaving Groups, and Solvents
 - Comparison of SN1 and SN2
 - Competing Reactions of SN1: Rearrangement and Unimolecular Elimination (E1)
 - Competing Reaction of SN2: Bimolecular Elimination (E2)
 - Unimolecular Elimination of Conjugate Bases (E1CB)and SN2
- Chemical Kinetics: Stabilities of Reaction Intermediates (Carbocations: Hyperconjugation and Resonances)
- Stereochemistry upon the Stable Reaction Intermediate
- Unimolecular Nucleophilic Substitutions (SN1): Favor Substrates, Nucleophiles, Leaving Groups, and Solvents
- Bimolecular Nucleophilic Substitutions (SN2); Favor Substrates, Nucleophiles, Leaving Groups, and Solvents
- Comparison of SN1 and SN2
- Competing Reactions of SN1: Rearrangement and Unimolecular Elimination (E1)
- Competing Reaction of SN2: Bimolecular Elimination (E2)
- Unimolecular Elimination of Conjugate Bases (E1CB)

教科書　Textbook

Organic Chemistry: Structure and Function (Seventh Edition), Peter C. Vollhardt and Neil E. Schore, (W. H. Freeman and Company), New York, 2014, Chapters 1-7.

参考書　Recommended reading

連絡方法　Contact method

Students can communicate with the course instructor face-to-face either in the class or through the appointment. Contact by an e-mail is also available.

その他　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
解析力学1(Analytical Mechanics I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910808	Fall semester Wed：2
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	重森　正樹(SHIGEMORI Masaki)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose

This is the first of two courses in analytical mechanics. Analytical mechanics abstracts from Newtonian machanics and generalizes it to a beautiful and versatile framework that can be applied to various areas of physics, such as quantum mechanics, statistitical mechanics, and relativity. After a survey of elementary princples, we discuss the core concepts of Lagrangian and Hamiltonian mechanics, with special emphasis on symmetry principles, followed by some explicit examples.

履修要件　Prerequisite

Calculus I & II, Fundamentals of Physics I &II, and concurrent registration of Mathematical Physics I & II

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
You may withdraw from the course following the standard procedure of the School of Science.

成績評価　Grading

Will be based on attendance, homework and exams (The details will be announced in class)

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The “ Absent ” grade is reserved for students who withdraw by the deadline. After that day, a letter grade will be given based on the assessment during the semester.

関連する科目　Related courses

Analytical Mechanics II, Quantum Mechanics I

教室　Class room

Check the Course Timetable.
Check the course timetable.

授業内容　Content

1. Survey of elementary principles
2. Variational principles and Lagrangian mechanics
3. Symmetries and conservation laws
4. Hamiltonian mechanics
5. Central force problem

教科書　Textbook

H. Goldstein, C. Poole and J. Safko, "Classical Mechanics", Pearson; 3rd edition (2013), ISBN-10: 1292026553, ISBN-13: 978-1292026558

参考書　Recommended reading

L. D. Landau and E. M. Lifschitz, "Mechanics: Volume 1 (Course of Theoretical Physics)", Butterworth-Heinemann; 3rd edition (1976), ISBN-10: 0750628960, ISBN-13: 978-0750628969.
L. N. Hand and J. D. Finch, "Analytical Mechanics", Cambridge University Press (1999), ISBN-10: 0521575729, ISBN-13: 978-0521575720.

連絡方法　Contact method

その他　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.
*See "Course List and Graduation Requirements" for your program for your enrollment year.
You are required to register for Physics Tutorial Ia (the tutorial for AM I) concurrently, unless you have passed the course.

科目名　Course Title	
細胞学2(Cell Biology II)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910829	Fall semester Wed：3
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	VASSILEVA Maria(VASSILEVA Maria)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose

This course continues the Cell Biology series of courses with purpose to deepen students’ knowledge in basic cell organization and functions.
Cell Biology II focuses on intracellular transport, and how cells communicate and respond to the environment. Furthermore, it will provide details on the essential concepts of how plant and animal cells generate energy.

履修要件　Prerequisite

Strongly recommended to have completed Cell Biology I.

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture. For later course withdrawal contact the lecturer.

成績評価　Grading

Evaluation is based on in-class participation, assignments and examinations.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent: based on submission of Course Withdrawal Request Form.
Fail: Total accumulated score of less than 60%.

関連する科目　Related courses

Cell Biology I, Cell Biology III

教室　Class room

Check the Course Timetable.
A 408

授業内容　Content

1. Intracellular Compartments and Transport;
2. Cell Communication;
3. How Cells Obtain Energy from Food;
4. Energy Generation in Mitochondria and Chloroplasts.

教科書　Textbook

Essential Cell Biology, B. Alberts et al., Garland Science.

参考書　Recommended reading

Becker`s world of the cell, Hardin, Bertoni, Kleinsmith, Pearson.
Molecular Biology of the Cell, B. Alberts et al., Taylor & Francis.

連絡方法　Contact method

By e-mail

その他　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.
IMPORTANT!
This course uses the time slots for both Cell Biology I and Cell Biology II and meets twice a week. This course starts in the second quarter of the Fall semester.

G30 Program (School of Agricultural Sciences), (Undergraduate)

Agricultural Science

Registration code	0913001	**Credits**	2.0
Course Category	Specialized Courses	**Class room**	Room 6
Term (Semester)/Day/Period	Ⅲ(2nd year 1st semester)/Wed/5(16:30-18:00)		
Instructor	INOUE Naoko (Lectures are also given by other professors.)		
Contact	Office: Graduate School of Bioagricultural Sciences, Rm A242 Phone: 052-789-4074 E-mail: ninoue@agr.nagoya-u.ac.jp		

Course Purpose

We are beset by an array of global concerns such as the depletion of food and energy resources, poverty and health problems, and the destruction of the natural- and living-environments. This course, by taking as its base recent developments in the field of life sciences, aims to propose possible solutions to the above, through the analysis of biological production, symbiosis, and frontier technology in the field of bioscience.

Course Contents

1. Introduction (INOUE Naoko)
2. Ecology of irrigated rice fields (MURASE Jun)
3. International cooperation for agricultural development (ITO Kasumi)
4. Basic reproductive endocrinology (TSUKAMURA Hiroko)
5. Insecticides and pest management (MINAKUCHI Chieka)
6. Genetically modified crops 1 (TANIGUCHI Mitsutaka)
7. Genetically modified crops 2 (Joyce Abad CARTAGENA)
8. Enzyme engineering (IWASAKI Yugo)
9. Current trend in crop production in Japan (YAMAUCHI Akira)
10. Biomass chemistry (AOKI Dan)
11. Nutrition and food sciences (KITAURA Yasuyuki)
12. Interaction between plants and climate (KOTANI Ayumi)
13. Group discussion 1 (INOUE Naoko)
14. Group discussion 2 (INOUE Naoko)
15. Remarks (INOUE Naoko)

Grading

Evaluation will be based on in-class participation and assignments.

Course Withdrawal TBA	**Criteria for "Absent" & "Fail" Grades** TBA
Prerequisite	**Related Courses**

Text Book	
Reference Book	TBA
Remarks	Japanese undergraduates and short-visit international students may also take the lecture.

科目名　Course Title	
物理化学1(Physical Chemistry I)	
学科・専攻　Department/Program	**受講年次　Grade**
G30 Chemistry	2nd
授業形態　Class style	**必修・選択の別　Compulsory or Elective**
講義	* See "Remarks"
時間割コード　Registration code	**開講期・曜日・時限　Semester,Day & Period**
0910809	Fall semester Thu：1
単位数　Credit	**科目区分　Course type**
2	Basic Specialized Courses

担当教員　Instructor	BUTKO Peter(BUTKO Peter)
所属研究室　Laboratory	
連絡先　Contact	Phone: 789-2480 E-mail: pbutko@chem.nagoya-u.ac.jp
居室　Room	A Building-318-1 (Science & Agriculture)

講義の目的とねらい　Course purpose

The purpose of this course is to learn what physical chemistry is all about and to grasp important principles and facts about physical chemistry. The course begins with perfect gas law, proceeds to thermodynamics, and finishes with applications of thermodynamics to simple mixtures.

履修要件　Prerequisite

Fundamentals of Chemistry I and II

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Students that do not intend to finish the course must submit a Course Withdrawal Request Form with the Instructor's signature. The last day to withdraw without academic penalty is the 6th lecture period.

成績評価　Grading

Two exams: 100 points each, final exam (comprehensive): 200, homework: 50. TOTAL: 450.
Grade "S": 100-90% (405 or more points), "A": 89-80% (404 - 360 pts), "B": 79-70% (359 - 315 pts), "C": 69-60% (314 - 270 pts), "F": 59-0% (fewer than 270 pts).

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The “ Absent ” grade is reserved for students that withdraw by the 6th lecture period. After that day, a letter grade will be awarded based on grades earned from all assignments during the semester.

関連する科目　Related courses

教室　Class room
Check the Course Timetable. A-407

授業内容　Content
1 The Properties of Gases 1 (Ch. 1) 2 The Properties of Gases 2 (Ch. 1) 3 The First Law 1 (Ch. 2) 4 The First Law 2 (Ch. 2) 5 Pre-exam Review & EXAM 1 (Chs. 1 & 2) 6 The Second and Third Laws 1 (Ch. 3) 7 The Second and Third Laws 2 (Ch. 3) 8 Physical Transformations of Pure Substances (Ch. 4) 9 Simple Mixtures 1 (Ch. 5) 10 Simple Mixtures 2 (Ch. 5) 11 Pre-exam Review & EXAM 2 (Chs. 3 – 5) 12 Chemical Equilibrium 1 (Ch. 6) 13 Chemical Equilibrium 2 (Ch. 6) 14 Pre-final Review 15 FINAL EXAM (Ch. 1 – 6)

教科書　Textbook
P. Atkins and J. de Paula: Atkins ’ Physical Chemistry, 10th Ed., Oxford University Press, 2014
参考書　Recommended reading
連絡方法　Contact method
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
遺伝学1(Genetics I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913003	Fall semester Thu：2
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	VASSILEVA Maria(VASSILEVA Maria)
所属研究室　Laboratory	
連絡先　Contact	mnvassileva@bio.nagoya-u.ac.jp
居室　Room	E202

講義の目的とねらい　Course purpose

This course will deepen basic knowledge of genetics, and is the beginning of a series of courses on Genetics.
Students will learn the mechanisms of fundamental processes related to how genetic information can be inherited rigidly and flexibly from generation to generation.
Students are expected to become confident at using appropriate scientific terminology, explain the basic genetics concepts and be able to analytically manipulate this information.

履修要件　Prerequisite

Strongly recommended to have completed Fundamentals of Biology 1

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture to receive an Absent grade. For later course withdrawal contact the lecturer.

成績評価　Grading

Evaluation is based on in-class participation, assignments and examinations.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail – based on a total accumulated score of less than 60%.

関連する科目　Related courses

Genetics II, Genetics III

教室　Class room
Check the Course Timetable. A 407

授業内容　Content
Overall theme of the course - Maintenance of the genome Detailed content: 1. Mendelian genetics 2. DNA and RNA structure 3. Chromosomes, chromatin, and the nucleosome 4. Replication of DNA 5. Mutability and repair of DNA 6. Genetic recombination

教科書　Textbook
Molecular Biology of the Gene, Watson, James D. et al., Pearson Education.
参考書　Recommended reading
Essentials of Genetics, William S. Klug et al., Benjamin Cummings. Molecular Biology of the Cell, B. Alberts et al., Taylor and Francis.
連絡方法　Contact method
by e-mail
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
統計物理学1(Statistical Physics I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910812	Fall semester Fri：2
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses
担当教員　Instructor	HOSSAIN Akter(HOSSAIN Akter)
所属研究室　Laboratory	
連絡先　Contact	
居室　Room	

講義の目的とねらい　Course purpose

The purpose of Statistical Physics I is to understand the basic laws that govern
macroscopic bodies consisting of an enormous number of atoms and molecules. This first part of the course covers universal phenomenological laws, called thermodynamic laws, and their applications.
The main focus of this course is to understand the basic principles of classical
thermodynamics which are the basis for macroscopic understanding of all the physical phenomena. The applications in automotive engineering are also introduced.

履修要件　Prerequisite

Calculus

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Ask the instructor.

成績評価　Grading

●Grade Assessment
Grades will be based on class participation, assignments and a final examination.
30% for attendance
30% for assignments
40% for final examination

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Ask the instructor.

関連する科目　Related courses

教室　　Class room
Check the Course Timetable.

授業内容　　Content
●Course Topics 1.Thermal Equilibrium and Temperature 2.State Equations, Partial Differentials, Units and Dimensions 3.The First Law of Thermodynamics (energy, isothermal and adiabatic processes) 4.The Second Law of Thermodynamics 5.Entropy 6.Thermodynamic Functions 7.Phase Equilibrium and Chemical Equilibrium 8.Kinetic Theory and Statistical Mechanics

教科書　　Textbook
Printed handouts will be provided.
参考書　　Recommended reading
●Additional Reading Modern Engineering Thermodynamics; Robert T. Balmer; Academic Press (2010)
連絡方法　　Contact method
●Contacting Faculty Students can ask questions at any time during classes. Questoins during off-class hours can be asked at the lecturer's room (Engineering Building No.3 North Wing, Room 223 (3125)) or via e-mail: akter.hossain@mae.nagoya-u.ac.jp
その他　　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
細胞学1(Cell Biology I)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	2nd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910811	Fall semester Fri：3
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	VASSILEVA Maria(VASSILEVA Maria)
所属研究室　Laboratory	
連絡先　Contact	mnvassileva@bio.nagoya-u.ac.jp
居室　Room	E202

講義の目的とねらい　Course purpose

This course is expected to deepen students ’ knowledge in basic cell organization, and is the beginning of series of courses on Cell Biology.
Cell Biology I course provides students with an overview of basic cell processes: basics of cell chemistry and genetics, and cell membrane function.

履修要件　Prerequisite

Strongly recommended to have completed Fundamentals of Biology I

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture. For later course withdrawal contact the lecturer.

成績評価　Grading

Evaluation is based on in-class participation, assignments and examinations.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail - a total accumulated score of less than 60%.

関連する科目　Related courses

Cell Biology II, Cell Biology III

教室　Class room

Check the Course Timetable.
A 408

授業内容　Content
1. Basic cell organization and basic chemistry of the cell; 2. Protein structure and function; 3. Basic genetics; 4. Cell membrane structure and function.

教科書　Textbook
Essential Cell Biology, B. Alberts et al., Garland Science.
参考書　Recommended reading
Becker`s world of the cell, Hardin, Bertoni, Kleinsmith, Pearson. Molecular Biology of the Cell, B. Alberts et al., Taylor & Francis.
連絡方法　Contact method
By e-mail
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. IMPORTANT! This course uses the time slots for both Cell Biology I and Cell Biology II and meets twice a week. Thus the course completes in the first quarter of Fall semester. The time slots (twice a week) in the second quarter of the Fall semester will be used for Cell Biology II course.

科目名　Course Title	
生理・解剖学2(Physiology and Anatomy II)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913022	Fall semester Tue：2
単位数　Credit	科目区分　Course type
2	Specialized Courses

担当教員　Instructor	YOU Young-Jai(YOU Young-Jai)
所属研究室　Laboratory	Genetic and Metabolic Regulation of Behavior
連絡先　Contact	yjyou@bio.nagoya-u.ac.jp
居室　Room	SS508

講義の目的とねらい　Course purpose

The purpose of this course is to provide the fundamentals of neuroscience required to ultimately understand how we think and behave. We will cover the basic concepts of neuroscience and the structure and the function of the sensory and the motor systems.

履修要件　Prerequisite

Understanding fundamentals of biology is beneficial

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture

成績評価　Grading

Evaluation will be based on in-class participation, assignments and examinations.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail – based on “ Failed ” results of examinations and assignments.

関連する科目　Related courses

Physiology I

教室　Class room

Check the Course Timetable.
Science Building A, Room A-408

授業内容　Content
1. Introduction: structure and function of neurons and glia 2. Electrical signaling and ion channels 3. Synaptic transmission and synaptic plasticity 4. Motor system 4.1 Motor circuits: Lower Motor Neurons 4.2 Motor circuits: Upper Motor Neurons 4.3 Brain control of movement: Cerebellum and Basal ganglia 5. Sensory perception and integration 5.1 Somatosensory system 5.2 Visual system 5.3 Auditory and vestibular system 5.4 Chemical senses

教科書　Textbook
1. Neuroscience, Dale Purves et al., Sinauer 2. Fundamental Neuroscience, Larry Squire et al. 4 ed.
参考書　Recommended reading
Recommended reading will be suggested during the classes.
連絡方法　Contact method
via e-mail
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year. *See "Course List and Graduation Requirements" for your program for your enrollment year.

科目名　Course Title	
化学物理学(Chemical Physics)	
学科・専攻　Department/Program	受講年次　Grade
G30 Physics	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913071	Fall semester Wed：1
単位数　Credit	科目区分　Course type
2	Specialized Courses

担当教員　Instructor	岡本　祐幸(OKAMOTO Yuko)
所属研究室　Laboratory	Theoretical Biophysics
連絡先　Contact	okamoto@tb.phys.nagoya-u.ac.jp
居室　Room	510 Science Hall

講義の目的とねらい　Course purpose

The purpose of this course is to learn about the statistical thermodynamics which can describe the behaviors of molecules in physical, chemical, and biological systems.

履修要件　Prerequisite

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Withdrawal is permitted up to the day that is specified by the University.

成績評価　Grading

Attendance: 10 %, Homework Sets: 20 %, Exams: 70 %

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

The “ Absent ” grade is reserved for students who withdraw by the day that is specified by the University. After that day, a letter grade will be awarded based on marks earned from all assessment during the semester.

関連する科目　Related courses

Biophysics, Statistical Physics I

教室　Class room

Check the Course Timetable.
ES034

授業内容　Content
1. Mathematical Tools 2. Extremum Principles 3. Heat, Work, and Energy 4. Entropy and the Boltzmann Law 5. Thermodynamic Driving Forces 6. The Logic of Thermodynamics 7. Laboratory Conditions and Free Energy 8. Maxwell's Relations and Mixtures 9. The Boltzmann Distribution Law 10. The Statistical Mechanics of Simple Gases and Solids 11. Temperature and Heat Capacity 12. Chemical Equilibria

教科書　Textbook
K.A. Dill and S. Bromberg, "Molecular Driving Forces" 2nd ed. (Garland Science).
参考書　Recommended reading
F. Reif, "Fundamentals of Statistical and Thermal Physics" (McGraw-Hill).
連絡方法　Contact method
By e-mail.
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
遺伝学3(Genetics III)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913009	Fall semester Wed：2
単位数　Credit	科目区分　Course type
2	

担当教員　Instructor	杉山　伸(SUGIYAMA Shin)
所属研究室　Laboratory	DG
連絡先　Contact	5039
居室　Room	E207
担当教員　Instructor	金森　章(KANAMORI Akira)
所属研究室　Laboratory	DG
連絡先　Contact	2537
居室　Room	E207
担当教員　Instructor	八木　克将(YAGI Yoshimasa)
所属研究室　Laboratory	DG
連絡先　Contact	5039
居室　Room	E207
担当教員　Instructor	五島　剛太(GOSHIMA Gota)
所属研究室　Laboratory	Z3
連絡先　Contact	6175
居室　Room	

講義の目的とねらい　Course purpose
This course introduces the principles of molecular genetics.
履修要件　Prerequisite
A basic knowledge of molecular genetics

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture.

成績評価　Grading

Each instructor will be responsible for 100 points for a course-total of 400 points.
Evaluation will be based on in-class participation (0-30%) and assignments or examinations (70-100%), with percentage depending on the individual instructor.
Grading scale: S=90-100%; A=80-89%; B=70-79%; C=60-69%; F=below 59%, of 400 point total.
Formal requests for special considerations concerning health problems etc. should be submitted with documentation through the student's Student Advisor as early as possible.

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail – based on “ Failed ” results of examinations and assignments.

関連する科目　Related courses

Genetics I, Genetics II

教室　Class room

Check the Course Timetable.
Science Building A, Room A-408

授業内容　Content

Topics covered: Regulation of gene expression, genomics, systems biology, and methodology.
Lectures based on "Molecular Biology of the Gene", by James D. Watson et al. will be given by 4 faculty members of the Division of Biological Science (Chapter numbers are according to the 6th (7th) edition).
Chapter 16 (18) "Transcriptional Regulation in Prokaryotes" by Akira Kanamori
Chapter 17 (19) "Transcriptional Regulation in Eukaryotes" by Akira Kanamori and Shin Sugiyama
Chapter 18 (20) "Regulatory RNA"by Shin Sugiyama
Chapter 19 (21) "Gene Regulation in Development and Evolution"by Yoshimasa Yagi
Chapter 20 (22) "Genome Analysis and Systems Biology" by Yoshimasa Yagi and Gohta Goshima
Chapter 21 (7) "Techniques of Molecular Biology" by Gohta Goshima
Chapter 22 (Appx.1)"Model Organisms" by Gohta Goshima

教科書　Textbook

Molecular Biology of the Gene, James D. Watson et al. CSH Press/Pearson (6th edition or newer)
ISBN 978-0805395921 (6th ed.), 978-0321762436 (7th ed.)

参考書　Recommended reading

連絡方法　Contact method

その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
計算化学(Computational Chemistry)	
学科・専攻　Department/Program	受講年次　Grade
G30 Chemistry	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913072	Fall semester Thu：1
単位数　Credit	科目区分　Course type
2	Specialized Courses

担当教員　Instructor	柳井　毅(YANAI Takeshi)
所属研究室　Laboratory	Quantum Chemistry Laboratory
連絡先　Contact	6397
居室　Room	ITbM 302

講義の目的とねらい　Course purpose

Computers and computing technologies are becoming increasingly important as a tool to facilitate complex work and expand ones' abilities for carrying out chemical studies. In this class, attendees will learn basics of programming for effectively using computer and write programs in Python language for numerical analysis, chemical calculations, etc.

履修要件　Prerequisite

履修取り下げについて　Course withdrawal

<可否>　Improper
<条件>

成績評価　Grading

Evaluation of attendance and programs prepared in this class

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades

Students may get‘ absent ’ grades in the cases of any unavoidable reasons such as sickness, accident, and so on. In the case of no attendance, students will get‘ failed ’ grades.

関連する科目　Related courses

教室　Class room

Check the Course Timetable.
理学部A館2階A250室
A250 (room 250, Building A, Science Building)

授業内容　Content
1. Introduction to Python programming 2. Basics of program 3. Algorithms 4. Numerical analysis methods 5. Practice 6. Presentation

教科書　Textbook
参考書　Recommended reading
https://docs.python.org/3/tutorial/
連絡方法　Contact method
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
細胞学3(Cell Biology III)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913010	Fall semester Thu：2
単位数　Credit	科目区分　Course type
2	

担当教員　Instructor	杉山　伸(SUGIYAMA Shin)
所属研究室　Laboratory	DG
連絡先　Contact	5039
居室　Room	E207
担当教員　Instructor	髙木　新(TAKAGI Shin)
所属研究室　Laboratory	DG
連絡先　Contact	2537
居室　Room	E207
担当教員　Instructor	木下　専(KINOSHITA Makoto)
所属研究室　Laboratory	Cell Regulation
連絡先　Contact	3653
居室　Room	SS323

講義の目的とねらい　Course purpose
This course covers basic topics in cell biology. Students who successfully co mplete this course will understand fundamental biological phenomena at the molecular and cellular levels that include the cytoskeletal systems, mitosis and meiosis, and intercellular communications in multicellular organisms. They will develop insights into the complexities of cell structure and function, the underlying molecular events, the dynamic properties of living cells, and how these contribute to the generation and functioning of the whole organism.
履修要件　Prerequisite
履修取り下げについて　Course withdrawal

<可否> Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture.

成績評価 Grading

Each instructor will be responsible for 100 points of a course-total of 300 points.
Evaluation will be based on in-class participation (0-30%) and assignments or examinations (70-100%), with percentage depending on the individual instructor.
Grading scale: S=90-100%; A=80-89%; B=70-79%; C=60-69%; F=below 59%, of 300 point total.
Formal requests for special considerations concerning health problems etc. should be submitted with documentation through the student's Student Advisor as early as possible.

不可（F）と欠席の基準 Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail – based on “ Failed ” results of examinations and assignments.

関連する科目 Related courses

教室 Class room

Check the Course Timetable.
A-408

授業内容 Content

Chapter 17 Cytoskeleton (by Kinoshita),
Chapter 18 The Cell Division Cycle, Chapter 19 Sex and Genetics + α (by Sugiyama),
Chapter 20 Cellular Communities: Tissues, Stem Cells and Cancer + α (by Takagi),
"From cell biology to physiology and pathology" (by Kinoshita),
Exam

教科書 Textbook

Essential Cell Biology (3rd ed.) Bruce Alberts et al.

参考書 Recommended reading

連絡方法 Contact method

Kinoshita
SS323
052-789-3653
kinoshita.makoto@c.mbox.nagoya-u.ac.jp

Sugiyama
E207
052-789-5039
ssugiya@bio.nagoya-u.ac.jp

Takagi
E207
052-789-2537
takagi@bio.nagoya-u.ac.jp

その他　　Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
地球惑星科学(Earth and Planetary Sciences)	
学科・専攻　Department/Program	受講年次　Grade
G30 All program	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0910818	Fall semester Fri：1
単位数　Credit	科目区分　Course type
2	Basic Specialized Courses

担当教員　Instructor	HUMBLET Marc Andre(HUMBLET Marc Andre)
所属研究室　Laboratory	Department of Earth and Planetary Sciences, Geobiology Group
連絡先　Contact	Phone: 052-789-3037 / E-mail: humblet.marc@f.mbox.nago ya-u.ac.jp
居室　Room	Science building E, 516

講義の目的とねらい　Course purpose

In this course students will learn about the characteristics of the planets and other components of our solar system (orbital parameters, atmospheric conditions, internal structure and composition, geomorphology, geological activity). We will use the knowledge of our own planet Earth as a reference to understand processes occurring elsewhere. During the past fifty years, various spacecrafts and exploration vehicles have been used to considerably expand our knowledge of the solar system and send back to Earth ever more detailed pictures of distant worlds. The course will review the different means of space exploration and use abundant data acquired by past and ongoing missions to illustrate the characteristics of the planets. A recurrent topic throughout the course will be the fascinating question of the existence of extraterrestrial life and its detection. We will also discuss the future of space exploration.

履修要件　Prerequisite

履修取り下げについて　Course withdrawal

<可否>　Possible
<条件>
A student who wishes to withdraw from the course needs to submit a Course Withdrawal Request Form by the end of November. in order to receive an “ Absent ” grade. This deadline does not apply to students who drop the class part-way through for an exceptional reason (e.g. illness, accident).

成績評価　Grading

Students will be graded following the five-step S-A-B-C-F grade evaluation system.
S: 90-100%, A: 80-89%, B: 70-79%, C:60-69%, F: 59-0%
Two quizzes: 20% (10% each)
Two short reports: 20% (10% each)
Oral presentation: 20%
Written essay: 40%

不可（F）と欠席の基準　Criteria for "Absent" &"Fail" grades
A student will be given an “ Absent ” grade if he or she submits a Course Withdrawal Request Form by the end of November. This deadline does not apply to students who drop the class part-way through for an exceptional reason (e.g. illness, accident). A “ Fail ” grade is given to students who obtain a final score of less than 60%.
関連する科目　Related courses
教室　Class room
Check the Course Timetable.

授業内容　Content
1. Introduction 2. The Solar System 3. Space Exploration 4. The Earth-Moon System 5. Mercury 6. Venus 7. Mars 8. The asteroid belt 9. Jupiter 10. Saturn 11. Uranus & Neptune 12. Trans-Neptunian Objects

教科書　Textbook
参考書　Recommended reading
連絡方法　Contact method
その他　Remarks
*See Course List and Graduation Requirements for your program for your enrollment year.

科目名　Course Title	
生化学3(Biochemistry III)	
学科・専攻　Department/Program	受講年次　Grade
G30 Biology	3rd
授業形態　Class style	必修・選択の別　Compulsory or Elective
講義	* See "Remarks"
時間割コード　Registration code	開講期・曜日・時限　Semester,Day & Period
0913011	Fall semester Fri：2
単位数　Credit	科目区分　Course type
2	

担当教員　Instructor	澤田　均(SAWADA Hitoshi)
所属研究室　Laboratory	Marine Developmental Biochemistry
連絡先　Contact	ex.2514, hsawada@bio.nagoya-u.ac.jp
居室　Room	Building B, room 315
担当教員　Instructor	小嶋　誠司(KOJIMA Seiji)
所属研究室　Laboratory	Biomembrane Functions
連絡先　Contact	ex.2993, z47616a@cc.nagoya-u.ac.jp
居室　Room	Building G, room 409
担当教員　Instructor	打田　直行(UCHIDA Naoyuki)
所属研究室　Laboratory	Plant Pattern Formation
連絡先　Contact	ex.2841, uchinao@itbm.nagoya-u.ac.jp
居室　Room	ITbM305

講義の目的とねらい　Course purpose

This course focused on the metabolisms of biomolecules (Part IV, METABOLISM in the textbook), including carbohydrates, lipids, amino acids/proteins, and nucleic acids. The students learn the concept of free energy, mechanism of ATP production, catabolism and anabolism of biomolecules.

履修要件　Prerequisite

Prerequisite:
Biochemistry I and II
Basic knowledge of biology and chemistry

履修取り下げについて　Course withdrawal

<可否> Possible
<条件>
Submit Course Withdrawal Request form by the sixth lecture.

成績評価 Grading

Evaluation will be based on in-class participation, assignments and examinations.
Presence will be marked. In-class participation will be considered an important element in overall grading.

不可（F）と欠席の基準 Criteria for "Absent" &"Fail" grades

Absent – based on submission of Course Withdrawal Request Form.
Fail – based on “ Failed ” results of examinations and assignments.

関連する科目 Related courses

Cell Biology I and II, Biochemistry I and II

教室 Class room

Check the Course Timetable.
A408

授業内容 Content

1. Bioenergetics
2. Glycolysis and the pentose phosphate pathway
3. Additional pathways in carbohydrate metabolism (Glycogen metabolism and gluconeogenesis)
4. The citric acid cycle
5. Mitochondrial ATP synthesis
6. Photosynthesis
7. Synthesis and degradation of lipids
8. Synthesis and degradation of amino acids
9. Regulation of fuel metabolism
10. Synthesis and degradation of nucleotides

教科書 Textbook

Principles of Biochemistry (2013), International Student Version (Fourth edition) by Donald Voet, Judith G. Voet, Charlotte W. Pratt (John Wiley & Sons)

参考書 Recommended reading

Molecular Biology of the Cell, by B. Alberts et al. (Taylor & Francis; 5th Revised Edition)
Biochemistry, 3rd Edition, by Donald Voet, Judith G. Voet (John Wiley & Sons)
Principles of Biochemistry, by A.L. Lehninger et al. (W.H.Freeman & Co.)

連絡方法 Contact method

E-mail (Hitoshi Sawada: hsawada@bio.nagoya-u.ac.jp) or phone (052-789-2514).

その他 Remarks

*See Course List and Graduation Requirements for your program for your enrollment year.