(Provisional Translation)

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University of Tsukuba: Guidelines for Creating a Syllabus

Structure of the Guidelines

(Attached Materials)
Attachment 1: Syllabus Check List (Sample)
Attachment 2: Syllabus (Sample)
Attachment 3: List of References

*URLs of websites cited in these Guidelines are as of October 29, 2025.

*The term “degree program” in these Guidelines is used to mean not only the programs named “degree program”, but also colleges, schools, graduate programs and so on.

1. Preface

(1) Definition of and Need for a Syllabus

How is a syllabus defined? In the glossary attached to the *Guidelines for Teaching and Learning Management*（「教学マネジメント指針」）issued by the University Subcommittee of the Central Council for Education in MEXT on January 22, 2020, the following statement appears.

(See: https://www.mext.go.jp/content/20200206-mxt_daigakuc03-000004749_005.pdf#page=4)

[Class Schedule (Syllabus)]
A detailed course plan for each class, used both as a reference when students decide which courses to take and as guidance for undertaking preparatory study. In general, it includes the course title, instructor’s name, course objectives, the content of each class session, methods and criteria of evaluation, specific instructions for preparatory learning, textbooks and reference materials, and enrollment conditions. It is also used for coordination of course content among instructors and for student evaluations of courses.

Furthermore, according to Article 25-2 of the Standards for the Establishment of Universities, universities are required to make syllabus explicitly available to students. They must indicate the methods and content of instruction as well as the plan for classes over the course of the academic year.

> Standards for Establishment of Universities (Ordinance of the Ministry of Education, Science and Culture No. 28 of 1956) (Excerpt)
> Article 25-2
> A university shall present a clear outline of the methodology used to give classes, the contents of classes, and a class schedule for the year to its students.
> (2) A university shall, when assessing its students' academic achievement and approving their graduation, present them with a clear outline of the standards therefor, in advance, so as to ensure objectivity and rigorousness, and shall conduct an assessment and approval process appropriately in accordance with said standards.

(2) Roles of the Syllabus

As is stated in the aforementioned glossary, the syllabus plays various roles such as the following.

a. Material for students to decide whether to take courses
b. A basis for students to carry out preparation and study for each course
c. A standard for students to use when they evaluate a course
d. Material used by instructors to adjust the contents of classes among themselves

In addition to these points, the syllabus is also considered to serve several other functions, such as those exemplified below. It has become an essential tool for conducting Faculty Development (FD) activities and for implementing the PDCA cycle in educational practices. For more details, please refer to the "List of References" attached below.

e. Material for instructors to design a course
f. Material to improve the contents of classes and course methods based on course evaluation by students and faculty

(3) Consistency Between Syllabus Preparation and Course Implementation

Given that the syllabus serves as a reference for students when selecting courses and as a tool to encourage independent study during enrollment, it is essential that the syllabus be consistent with the actual course content. Accordingly, the syllabus should accurately describe what will be covered in the course. Faculty members must take enough care to ensure that there is no discrepancy between the syllabus and what is taught, unless there is a clear academic reason for doing so.

In particular, grading methods must, as a rule, be carried out in accordance with the methods stated in the syllabus. If changes to the course plan become unavoidable, instructors should explain the reasons and details of such changes to students and proceed only after obtaining their understanding.

2. Items of the Syllabus

The syllabus items at the University of Tsukuba are as follows. These items have been established as common elements for all courses across the university, and in principle, all of them are expected to be completed. However, in cases such as enrollment conditions where there is no relevant information to provide, the corresponding item does not need to be filled in.

Item Name	Especially Important Points	Explanation Page
(1) Course Information		
(1-1) Course Number		p. 4 to p. 5
(1-2) Course Name		
(1-3) Instructional Type		
(1-4) Standard Registration Year		
(1-5) Term, Meeting Days, Period, etc.		
(1-6) Credits		
(2) Instructor Information		
(2-1) Instructor Name		p. 5 to p. 6
(2-2) Teaching Fellow and/or Teaching Assistant		
(2-3) Office Hours and Contact Information		
(3) Course Outcome		
(3-1) Competences	♦ Among the knowledge and skills (hereinafter "competences") to be acquired as established by the degree program, copy the relevant competence(s).	p. 6 to p. 7
(3-2) Course Objectives	♦ Cleary describe things that students will know, be able to do, etc. by the time they have completed the course ("can do this or that", for example).	
(3-3) Relation to Other Courses	♦ Input the names of other courses that are positioned before or after or related to the course.	
(3-4) Course Prerequisites		
(4) Course Outline		
(4-1) Course Overview		p. 7 to p. 8
(4-2) Course Keywords		
(4-3) Class Schedule		
(4-4) Course Hours Breakdown and Out-of-Class Learning	♦ For courses that combine multiple instructional types (lectures and training, etc.), indicate the percentage of course time dedicated to each instructional type (e.g. lectures: xx%, training: xx%, etc.). ♦ Describe how much out-of-class learning is required and learning methods.	

(5) Grading Philosophy		
Grading Philosophy	♦ Grading methods: Describe the methods for assessing academic achievement with feedback. ♦ Percentage: In cases where multiple evaluation methods are adopted, indicate the percentage that each evaluation method accounts for (achievement tests: xx%, homework: xx%, etc.). ♦ Grading criteria: Indicate grading criteria that correspond to the course objective. ♦ Feedback implementation policy: Describe the method and content of feedback.	p. 8 to p. 11
(6) Course Requirements and Supplements		
(6-1) Textbooks, References, and Supplementary Materials.		p. 11
(6-2) Other (Behavioral expectations and points to note for students during coursework)	♦ Include necessary information such as the policy on the use of generative AI and details regarding cost sharing for off-campus training or other activities.	

Each course syllabus should, in principle, be published under the responsibility of the degree program that offers the course, after undergoing appropriate organizational review and verification of its content. Accordingly, rather than leaving the process solely to the individual instructors in charge, each degree program must establish and maintain a system for reviewing the content and ensuring consistency of its syllabus, and operate this system on an ongoing basis. For checking the syllabus, please use the attached sample check list where appropriate.

The syllabus of the University of Tsukuba will be created and made publicly available via KdB. Please refer to the KdB manual for how to use.
(See: https://ksp.sec.tsukuba.ac.jp/wp/wp-content/uploads/2012/11/kdb_for_faculties.en_1.pdf)

For KdB, input the same information in both Japanese and English. The other items to be listed in the “Course Catalogue” (such as meeting days and period), excluding the course overview, will be automatically translated to English by KdB.

3. Contents, Method of Entry, etc. of Each Item

Regarding all the following items, the syllabus needs to be written from students’ point of view so that they can understand what is required of them in registering for a course and what they will be able to achieve.

(1) Course Information

(1-1) Course Number
*This item will be automatically generated from the course management information registered in KdB.

(1-2) Course Name

*This item will be automatically generated from the course management information registered in KdB.

(1-3) Instructional Type

This item is for the instructional type (lectures, class exercises, lab experiments, training, and combinations thereof).

*This item will be automatically generated from the course management information registered in KdB.

(1-4) Standard Registration Year

This item is for the standard registration year as established by the education organization which offers the course.

*This item will be automatically generated from the course management information registered in KdB.

(1-5) Term, Meeting Days, Period, etc.

This item is for the term, meeting days, and period (including intensive courses).

*This item will be automatically generated from the course management information registered in KdB.

(1-6) Credits

This item will be automatically generated from the course management information registered in KdB.

(2) Instructor Information

(2-1) Instructor Name

This item will be automatically generated from the course management information registered in KdB.

(2-2) Teaching Fellow and/or Teaching Assistant (excluding the courses in Doctoral-Level Programs)

Indicate whether Teaching Fellows (TFs) or Teaching Assistants (TAs) provide support in class. If they do, input how many TFs/TAs the course will have. If it is yet-to-be-determined or if none applies, it is unnecessary to write down the headcount, etc.

> e.g. One TA is assigned.

(2-3) Office Hours and Contact Information

Input the office hours, location, phone number, email address, and so forth.

During office hours, teachers allow students to reach them without any appointment. In view of teachers are often times busy or out of office, office hours prevent students from missing contact. Therefore, you need to set a specific time period. With regards to students' class schedules, teachers should arrange proper office hours in terms of break time between classes and provide opportunities as many as possible for students to pay a call.

e.g. – Indicate an applicable day of the week and period. If necessary, it is also possible to input exact time (from xx am/pm to xx am/pm) instead of the period.)
- Make up individual standards (i.e. I don't set up any office hours, so please let me know in advance if you come and see me.), etc.

(3) Course Outcome

(3-1) Competences

Input information based on each degree program's policy. In order to clarify the relationship between competences and individual courses, simply copy the relevant competence(s) from among the competences established by the degree program.

e.g. Related to 2. Logical and Mathematical Thinking and Analysis.

For undergraduate/graduate school common courses, the syllabus should describe the generic competences.

(3-2) Course Objectives

Based on a thorough consideration of the relationship between course objectives and competences, clearly describe things that are expected of students, and things that students will know, be able to do, etc. by the time they have completed the course. For this section, rather than simply reproducing the wording of the competence statements, the syllabus should include specific descriptions that are directly relevant to the content of the course. By measuring how well students achieve course objectives, teachers translate the achievement into grades.

(Note) In cases where multiple competences are indicated, Course Objectives should desirably correspond to respective competences.

When describing course objectives, you should write from the student's point of view using practical wording. It is important to describe the course objectives in such a way that students can envision the kinds of knowledge and abilities they will acquire by the end of the course—for example, "What will I be able to do?" or "What will I come to know?" after completing the class.

e.g. [1] Student-Centered Model (good example):
- Acquire knowledge of xxx and be able to explain about xxx
- Acquire skills of xxx by learning xxx and examining xxx.

[2] Teacher-Centered Model (bad example):
- Aim at expounding on xxx.

(3-3) Relation to Other Courses

Input the names of other courses that are positioned before or after or related to the course.

*In KdB, only the names and course numbers of the courses selected will be displayed, and the information of which courses are positioned before or after the course will not be displayed.

(3-4) Course Prerequisites

For actualizing systematic course registration, describe prerequisite conditions for taking the course.

> e.g. Students who have gained credits for xxx (course name)

(4) Course Outline

(4-1) Course Overview

Provide the course overview which enables students to systematically grasp the whole picture of course perspectives.

*This item will be automatically generated from the course management information registered in KdB.

(4-2) Course Keywords

Line up keywords regarding course topics, in order to aid students to understand the course overview.

(4-3) Class Schedule

Present detailed weekly schedules corresponding to course progress to make it easier for students to prepare and review for class.

Class schedule must meet the following criteria:

a. Descriptions correspond to “course objective”.
b. Select and arrange weekly schedule in student-friendly format.
c. Class hours corresponding to the number of credits are secured.

Also, if TF is delivering a part of coursework, please indicate that effect on class schedule.

For an example of creating a class schedule, please refer to the attached syllabus (sample).

> (Note) TF is able to deliver a lecture only in an auxiliary manner and when the lecture is attended and overseen by a course instructor.

(4-4) Course Hours Breakdown and Out-of-Class Learning

For materializing the credit system, provide information regarding the following two points:

a. Course hours breakdown

For courses that combine multiple instructional types (lectures, training, etc.), indicate the percentage of course time dedicated to each instructional type (e.g. lectures: xx%, class exercises: xx%, etc.). In addition, please note that a required amount of time for a course must be calculated according to its instructional types (see the note below).

> e.g. This course combines lectures (50%) and class exercises (50%).

(Note) Course hours and credits

Based on the Standards for Establishment of Universities, one-credit courses are comprised of contents requiring 45 hours of learning (including out-of-class learning).
At the University of Tsukuba, the number of course hours for one credit are defined as follows. (Refer to article 30 and appended table 2 of the School Regulations for details.)

Lectures, class exercises: 15 to 30 hours (30 to 15 hours out of class)

Lab experiments, training, or practical application: 30 to 45 hours (15 to 0 out of class)

* At the University of Tsukuba, one period (75 min.) counts as 1.5 hours (90 min.).

In case that teachers incorporate combined structures in coursework; they must show each percentage engaging in coursework.
Please note that some combination of instructional types (e.g. lectures and training) require a different amount of time for one credit.

b. Methods for out-of-class learning

It is important to ensure that students understand the principle that academic credits are awarded based on total learning time, which includes study conducted outside of class.
To help students secure sufficient time for out-of-class learning, instructors should clearly specify what kind of study activities are expected outside of class, particularly as part of the preparatory learning (pre-study) described in section (4-3) “Course Schedule.”

e.g. - Homework will be given after each class. Submit your homework as a short paper in the next class.
- Students should read xxx of the designated textbook beforehand.
- Submit papers about topics designated at the conclusion of each class session.
- A quiz on the contents of the previous lesson will be administered at the beginning of each lesson so review the contents.
- Prepare for each class session to interpret the meaning of technical terms, vocabularies and so forth.

Course instructors and degree programs are expected to be creative about giving homework, setting and using worksheet formats, etc. so that students can secure time for out-of-class learning and study hard.

(5) Grading Philosophy

To show students that grading is carried out in a rigorous manner, describe how teachers assess achievement of course objectives. Teachers must apply grading methodology and criteria to see what factors will be included and how students will be evaluated. As a general rule, grading shall be conducted with confirmation of academic achievement accompanied by feedback, and shall be conducted in an appropriate manner according to the nature of

the class (we will not conduct "final exams" that are conducted in a one-way manner solely for the purpose of grading). (See: https://kyoikusuishin.tsukuba.ac.jp/?p=35451) Please confirm the following 4 grading philosophies. Since attendance to class is a prerequisite for grading, attendance cannot be included in grading.

(Note) Enthusiasm for class participation (questions, discussions, etc.) can be taken into consideration when grading.

a. Grading Methodology (including deadlines for homework and other things related to grading)

Design grading methodologies, such as quizzes, assignments, achievement tests, and papers in conjunction with the due date and implementation time. Grading methodology enables students to systematically begin preparations for coursework.

If instructors require students to ask questions during class, they should indicate the number of times students are required to do so and how that will affect their grades.

b. Grading Percentage

In cases where instructors apply multiple grading methods, clearly indicate allocated percentages to make the total 100%.

e.g. Achievement Tests (60%), Papers (20%), Weekly Comment Papers (20%)

c. Grading Criteria

Grades for courses at the University of Tsukuba are expressed using the grades A+, A, B, C, or D, or alternatively P or F, in accordance with Article 35 of the University of Tsukuba Undergraduate Academic Regulations and Article 36 of the Graduate School Academic Regulations. If a course is to be graded on a Pass/Fail (P/F) basis, it is necessary to complete the required procedure by specifying this in the detailed rules of the relevant academic unit. Furthermore, the grading scale and the corresponding GP(Grade Point) values are defined as follows.

Grade	GP (Grading point)	Grading criteria	Reference (Full score: 100 points)
A+	4.3	Achieved the goal with excellent results	90-100 points
A	4	Achieved the goal with good results	80-89 points
B	3	Achieved the goal	70-79 points
C	2	Achieved the minimum goal	60-69 points
D	0	Did not achieve the goal	Less than 60 points
P	-	Attained the standard level of coursework	-
F	-	Did not attain the standard level of coursework	-

In consideration of the above, clearly indicate grading criteria corresponding to course objectives. It is desired to phase grading criteria accurately reflecting the course objectives. Even in the case where teachers appraise multiple performances with multiple measures; they must include information on how each performance will be weighted and how they will be evaluated in an integrated manner as far as possible.

e.g. Grading philosophy example

Grading will be carried out in the following two phases, and students fulfilling the criteria below will pass.

(1) Regarding the items cited in relation to course objectives, simple problems based on text examples will be given as practice exercises and homework. Submit the above and achieve 80% (out of 100%) for every item.

(2) Solve general problems in the achievement test and achieve 60% (out of 100%).

Note that grades from A+ to C are to be determined based on the achievement test scores.

Grading criteria should be established according to the course objectives and described as specifically as possible so that instructors can provide clear answers to inquiries about grades from students. One way is to prepare a criteria table in addition to the syllabus and provide it to students. Establish grading criteria appropriate for each course following the example below.

(Example) A case where grading criteria are based on papers

Grading items	Standard + extra A to A+	Standard B	Minimum passing score C	Failed D
(1) Setting problems	The background is described clearly, and the problem is set based on a review of existing research.	The background explanation and problem setting are appropriate, and existing research is reviewed.	The background and setting are explained.	Either the background or setting is not explained.
(2) Developing arguments	The structure and development of the argument exhibit creativity.	The development of the argument is clear.	The argument is comprehensible.	The argument is not clear.
(3) Deriving conclusions	The argument is original and creative, and the conclusion is persuasive.	A clear conclusion is derived.	There is no contradiction between the development of the argument and the conclusion.	The conclusion is abrupt.

[Notes for this table]

- An A+ will be given to particularly exceptional students with an A.
- Students with a C or higher grade for each criterion will pass.
- For example, final scores are derived as A=85, B=75, and C=65 based on the percentage ratio of grading items (1): (2): (3) = 4: 4: 2. For example, when (1) is A, (2) is C, and (3) is A, 0.4*85+0.4*65+0.2*85=77, and the final score would be B.
- As another example, the lowest grade (score) can be set as the final grade. For example, when there are two As and one C, the final grade is C.

d. Feedback Implementation Policy

As a general rule, the method and content of the feedback on quizzes, assignments, achievement tests, and papers, etc., will be described. For specific examples of feedback for each grading method and examples to be included in the syllabus, please refer to the “Guidelines for Grading by Educational Evaluation”.

(See: https://kyoikusuishin.tsukuba.ac.jp/?p=35541)

Apart from the 'Grading Philosophy' section, it is not prohibited to include statements such as “after describing specific feedback methods, etc. review the course content based on this feedback and make efforts to understand it.” in the “Other (Behavioral expectations and points to note for students during coursework)” section.

(6) Course Requirements and Supplements

(6-1) Textbooks, References, and Supplementary Materials

Write down if a textbook will be used and given that students will purchase it, specify the title, author, publisher, and published year. If there are materials to be introduced as further reading, specify the title, etc. in the same manner as the textbook.

In case there are handouts promoting better understanding of the contents of classes, please submit type of materials, such as print-outs or downloaded data from certain websites, and when and how often to distribute (each class, collectively in the beginning of the semester, etc.) these.

In addition, particularly for common and introductory courses, teachers are required to scrupulously create a list of references to further encourage highly-motivated students to spark their interests in relevant fields. As recommended supplements, teachers may put certain informative website addresses (URLs) and introduce proper academic gatherings for students. When teachers put URLs, it is also recommended that they put access dates too, to check and avoid broken links.

If assigned textbooks or other supplementary materials are not possessed by the University libraries, please ask the libraries for acquiring the requisites.

(See: https://www.tulips.tsukuba.ac.jp/lib/en/service/kyoin-suisen)

(6-2) Other

If there are any expectations for students, important notes for attending the class, or information regarding expenses and insurance requirements associated with off-campus activities or fieldwork, these should be clearly stated.

Since classes are conducted through the collaborative efforts of both instructors and students, the syllabus should also specify, in concrete terms, the expected attitudes and behaviors during class, such as participation, punctuality, and policies regarding lateness or early departure.

Refer to the “Guidelines for the Utilization of Generative AI in Education 2024 (For Faculty Members)” and appropriately describe the stance on the use of Generative AI in classes, including the reasons, philosophy, and rules. At the beginning of the class, please inform students to refer to the 'Guidelines for the Utilization of Generative AI in Education 2024 (For Students).

(See: (For Faculty Members) https://www.tsukuba.ac.jp/about/action-management/pdf/GenerativeAI-guidelines-faculty-en.pdf)

(See: (For Students) https://www.tsukuba.ac.jp/about/action-management/pdf/GenerativeAI-guidelines-students-en.pdf)

4. Column

(1) Degree Program and Syllabus

The Order for Enforcement of the School Education Act was revised in March 2016 (enforced in April 2017), and all universities (undergraduate programs) were obliged to draw up and publish the following three policies: “Diploma Policy” (DP), “Curriculum Policy” (CP), and “Admissions Policy” (AP). Graduate programs are also desired to do the same for DP and CP, in addition to AP which has been mandatory.

> The Order for Enforcement of the School Education Act (Order of the Ministry of Education, No. 11 of 1947) (Excerpt)
> Article 165-2 A university shall establish the following policies (only item (iii) for a graduate school) for each university, college, department, or program (each graduate school or graduate program for a graduate school) in consideration of the educational aim thereof.
>
> (i) Diploma Policy
>
> (ii) Curriculum Policy
>
> (iii) Admissions Policy

At the same time, the Central Council for Education published the guidelines for the formulation and application of the “diploma policy”, “curriculum policy”, and “admissions policy” (March 31, 2016, Committee for University Education, Subdivision on Universities of the Central Council for Education), which clearly indicated the direction for materializing the above order. Namely, Japanese universities are strongly desired to clarify the three policies more from the viewpoints below and to deliver and improve curricula based on the three policies, and thereby to promote a PDCA cycle (see (4) below) starting from the three policies.

Graduate schools are also encouraged to make active efforts towards formulating not only AP but also DP and CP. It is strongly desired to further clarify the DP, CP, and AP by actualizing the knowledge and skills to be acquired corresponding to diplomas, as well as promote a PDCA cycle (see (4) below) starting from the three policies.

a. Diploma Policy (DP): students with what sort of knowledge and skills (referred to as competences) should be awarded with a diploma.
b. Curriculum Policy (CP): what sort of curriculum is provided to enable students to acquire such knowledge and skills.
c. Admissions Policy (AP): what sort of students are to be admitted to that end.

Furthermore, it is vital for a degree program to visualize the process towards a degree as much as possible, and thereby to assure the quality of the degree. To this end, the University of Tsukuba is implementing various initiatives including below. The syllabus, which provide the contents and overview of individual courses, serve as the basis for implementing the above measures.

a. Establishing the competences. This leads to clarification of “knowledge” and “skills” to be acquired.
b. Creating a curriculum map. This leads to visualization of relevance among courses and learning outcomes related to each course.

Now, it is necessary to summarize the content and learning objectives of each course in the syllabus and to clarify the role that each course plays within the corresponding degree program. The significance of this process is also

emphasized in the Guidelines of the Central Council for Education mentioned above. Specifically, by indicating how the competences defined in the Diploma Policy correspond to the learning objectives of each course, it becomes possible to demonstrate that each course is appropriately positioned within the overall educational curriculum.

Implementing this alignment enables the clarification of Curriculum Policies (CPs) that realize the DP, as well as the visualization of the curriculum structure through a curriculum map.
The materialization of credits, that is, securing learning time in each course, is also considered to be an issue. To take lectures as an example, it is well known that national regulations stipulate that 30 hours of preparation and review are required for 15 hours of lecture. The syllabus play an important role as the basis to provide instructions on how and what to study outside classroom to students.

(4) Faculty Development and Educational PDCA Cycle

The syllabus is closely related to faculty development, and there is a need to visualize the system and process by which education in the university as a whole is to be improved through not only improving education at the level of individual instructors but also at the level of education organizations. PDCA refers to the four separate phases of the process for improving education, namely: Plan (what sort of education curriculum and educational contents are planned); Do (implementing education based on the plan); Check (reviewing the results of implementation); and Action (reconsidering the system based on the results of reviewing for the next plan). Since PDCAs have a dynamic nature in that they are always subject to reviewing and improvement due to changes in external circumstances or internal motivation, a PDCA is followed by another PDCA and then yet another PDCA, which is why we call this a PDCA cycle.

Therefore, the syllabus and course contents are not static, and it is now considered that these should always be subject to revision based on the opinions of students, instructors, and other stakeholders. In each education organization and degree program, it has become ever more important to respond to the responsibility that society has entrusted our university with by clarifying the PDCA system and visualizing the actual process of education improvement.

Since its establishment to this day, the University of Tsukuba has led the way for university reform in Japan. Therefore, other universities and society are watching us closely to see what sort of educational reform will be brought about by implementing various initiatives. We believe that it is the duty of the university’s instructors to consider this reform as both an ordeal and an opportunity to further improve education curriculum and contents.

Attachment 1

Syllabus Check List (Sample)

* Create one list for each course. After the check by the main course instructor, fill in the following information.

Relevant degree program name	
Course Number	
Course Name	
Name of checker	

Items to be checked	Check
General matters	
The present syllabus has been made upon the understanding that universities are required to create and post a syllabus with content common for all schools in the university.	☐
The present syllabus has been made upon the understanding that courses can be further improved by utilizing it.	☐
(1) Course Information	
The course name, instructional type, standard registration year, term, meeting days, and period are displayed correctly in both Japanese and English.*	☐
(2) Instructor Information	
If there are multiple instructors, all their names are displayed.*	☐
(3) Course Outcome	
Course objectives are indicated from the student's perspective.	☐
Competences established by the degree program are indicated.	☐
Course objectives are set based on a thorough consideration of their connection with the competences.	☐
(4) Course Outline	
Specific learning content is indicated for each class.	☐
Class hours corresponding to the number of credits are secured.	☐
Contents & Methods for out-of-class learning are indicated properly.	☐
(5) Grading Philosophy	
Grading methods, percentages, grading criteria, and feedback implementation policy are indicated.	☐
Attendance is not included in the grading criteria.	☐
(6) Course Requirements and Supplements	
Textbooks, references, and/or supplementary materials are indicated.	☐
If applicable, other points to note for students are provided	☐

*These items will be automatically generated from the course management information registered in KdB.

[Degree Program Column]

* This column is used for confirmation by degree program curriculum organizers (for example, the curriculum committee members).

I have checked this document and hereby declare that the above is true and correct.

Date: mm dd, yyyy

Position in the degree program:

Name:

Attachment 2

Syllabus (Sample)

Course Number	FG○○○○○
Course Name	Basis for optimization
Instructional Type	Lectures and class exercises
Standard Registration Year	Third Year
Term, Meeting Days, Period, etc.	Spring AB Tuesday 5, 6
Course Credits	2
Instructor Name	○○○○
Teaching Fellow and/or Teaching Assistant	N/A
Office Hours and Contact Information	xx Building xxx, Tuesday 6 to 7 pm Students who wish to visit at a different day/time should contact by email beforehand
Competences	2. Logical and Mathematical Thinking and Analysis
Course Objectives	(1) Understanding general usage of notations for optimization problems, and, if an optimal solution does not exist, understanding a global optimal solution and local optimal solution, etc. (2) Capable of understanding and calculating linear programming problems, production planning problems and nutrition problems, and graphic solutions. (3) Capable to creating and calculating tableaus for solutions for production planning problems and two-stage procedures in the simplex method. (4) Understanding and creating dual problems and understanding the weak duality theorem. (5) Capable of showing whether or not it is a convex set and whether or not it is a convex function for relatively simple sets and functions. (6) Knowing the conditions for a quadratic form to be a convex and capable of calculating cases of two, three, or more variables. (7) Capable of calculating a Hessian matrix for relatively simple functions and showing the conditions for them to be a convex. (8) Knowing the method of Lagrange multiplier and the Kuhn-Tucker condition and capable of obtaining a solution by applying them to simple problems. (9) Capable of providing a simple explanation of representative calculation methods relating to the optimization calculation method. (10) Capable of explaining about representative problems concerning combinatorial optimization.
Relation to Other Courses	Linear Algebra I, Linear Algebra II, Linear Algebra III, Analysis I, Analysis II

Course Prerequisites	N/A
Course Overview	Lectures will cover the following themes: system expression, assessment methodology, when a constraint is given, and basic mathematical techniques for optimizing objective functions (LP, NLP, combinatorial optimization, etc.).
Course Keywords	Optimization, linear programming problems, non-linear programming problems, combinatorial optimization
Class Schedule	The course will be carried out based on handouts. When attending the lecture, in addition to reading handouts, students are advised to take notes to gain a better understanding. Note that class exercise hours shall be provided. Lecture 1: Concept of optimization, various optimization problems, mathematical preparation, notations, writing optimization problems, and global optimal solutions and local optimal solutions Lecture 2: Linear programming problems, examples and graphic solutions, and standard forms of linear programming problems Lecture 3: Review of linear algebra and the basic principles of linear programming Lecture 4: Simplex method and two-stage simplex method Lecture 5: Duality and its significance and overview of internal point method Lecture 6: Non-linear programming problems and convex sets and convex functions Lecture 7: Convexity of quadratic functions and nonnegative-definite matrices Lecture 8: Optimization conditions and the method of Lagrange multiplier and the Kuhn-Tucker condition Lecture 9: Newton's method, combinatorial optimization, knapsack problems, and traveling salesman problems Lecture 10: Achievement test and feedback
Course Hours Breakdown and Out-of-Class Learning	Lectures (60%), Class exercises (40%) Make sure to review. Homework will be given out. Write out the main points of preparations (including the above) onto a student worksheet indicated separately and submit the sheet together with your homework in the next class.
Grading Philosophy	Grading will be carried out in the following two phases, and students fulfilling the criteria below will pass. (1) Regarding the items cited in relation to course objectives, simple problems based on text examples will be given as practice exercises and homework. Submit the above and achieve 80% (out of 100%) for every item. (2) Solve general problems in the achievement test and achieve 60% (out of 100%). Note that grades from A+ to C are to be determined based on the achievement test scores. For exercises and homework, individual feedback will be posted on manaba as necessary. For the achievement test, after collecting the answers, the intention of the questions and examples of correct answers will be explained. After grading, overall feedback will be posted on manaba.
Textbooks, References, and Supplementary Materials	No designated textbook: The course will be carried out based on handouts. References: Yasunori Endo and Sadaaki Miyamoto, “An Optimization Primer,” Corona Publishing Co., Ltd., 2018
Other (Behavioral expectations and points to note for students during coursework)	Optimization theory covered in this lecture is necessary for not only various aspects of engineering such as energy minimization, route optimization, scheduling problems, but also for all aspects of human activity such as economics and finance. Basic knowledge of linear algebra is a prerequisite for the linear programming problems dealt with in this lecture. Regarding non-linear optimization, eigenvalue problems of symmetric matrices in Linear Algebra III will be used, and the mean-value theorem and partial derivatives in Analysis will be used. Students are expected not only to be able to calculate but also get accustomed to logical and abstract thinking.

	Don’t chat in class. Please refer to the “Guidelines for the Use of Generative AI in Education (For Students)” and use AI appropriately. Since the suggestions and answers provided by Generative AI may not always be accurate, please evaluate the information critically and assess the content responsibly.

Attachment 3

List of References

[Significance of the syllabus, how to write and utilize it, grading methods (including a rubric example), etc.]

(Publications)

- Hiroaki Sato (ed.), *Lesson Methods and Design for University Instructors*, Tamagawa University Press, 2010 (in Japanese)

- Hidehiro Nakajima (ed.), *Series: University Teaching Methods 1: Designing Lessons*, Tamagawa University Press, 2016 (in Japanese)

- Kayoko Kurita and the Japan Center for Educational Research and Innovation, *Interactive Teaching: Designing Lessons That Promote Active Learning*, Kawai Publishing, 2017 (in Japanese)

- Dannelle Stevens, Antonia Levi, *Introduction to Rubrics: An Assessment Tool to Save Grading Time, Convey Effective Feedback, and Promote Student Learning* (Hiroaki Sato, Trans.), Tamagawa University Press, 2014 (in Japanese)

(Web resources)

- Tokyo Geidai Liberal Arts Center, FD: *How to Write a Syllabus* (in Japanese)
  https://www.youtube.com/watch?v=f3lGVu1KcEc&thttp://www.cshe.nagoya-u.ac.jp/tips/index.html

- University of Osaka Department of Teaching & Learning Support, *Series: Mastering University Teaching* (in Japanese)

- UTokyo Faculty Development, *Interactive Teaching*
  https://www.he.u-tokyo.ac.jp/activities/interactive-teaching/

- Cosponsored by JABEE and the Japanese Society for Engineering Education, "Education Workshop Series for Globally Competent Engineers, No. 3" (held on March 29, 2014) (material)
  Achievement assessment method (2): How to create a rubric (in Japanese)
  https://jabee.org/doc/1982.pdf
  Methods for grading achievement of objectives relating to learning and education (in Japanese)
  https://jabee.org/doc/1983.pdf

[Glossary]

- National Institution for Academic Degrees and Quality Enhancement of Higher Education, "Glossary of Quality Assurance System in Japanese Higher Education"
  https://niadqe.jp/glossary/

* All the above links were retrieved on October 29, 2025.