University of Tsukuba: Guidelines for Creating a Syllabus

Structure of the Guidelines

1. Preface

2. Items of the Syllabus

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

(Attached Materials)

Attachment 1: Syllabus Check List (Sample)

Attachment 2: Student Work Sheet (Sample)

Attachment 3: Syllabus (Sample)

Attachment 4: List of References

---

*URLs of websites cited in these Guidelines are as of March 5, 2019.

*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? The glossary appended to the Central Council for Education Report "Towards a Qualitative Transformation of University Education for Building a New Future" (August 28, 2012) states as follows. (See: http://www.mext.go.jp/en/publication/report/title01/detail01/1380275.htm)

[Class Schedule (Syllabus)]

Detailed class schedule for each course. In general, a syllabus states a university's course name; instructor name; course objectives; contents of each class session; grading philosophy; specific instructions regarding outside class work; textbooks and references; and prerequisites, etc., and serves as the basis for students to carry out preparation and study for each course. In addition, the syllabus is used as material for students to decide whether to take courses, and also used by instructors to adjust the contents of classes among themselves, by students to evaluate courses, and so on. In the US, the syllabus is in some cases considered to be a contract between instructors and students. Unlike material that provides an overview of the contents of classes (so-called course catalogs), a syllabus needs to clearly indicate course objectives and details of students' study, details concerning outside class work, and grading philosophy.

In terms of the need for the syllabus, the Standards for Establishment of Universities stipulate what information Japanese universities must provide to its students in advance, and the universities, including the University of Tsukuba, present the information through the syllabus.

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.

Thus the reason for requiring universities to create the syllabus is clearly stated, and it is provided that the syllabus should contain the above items.

(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
e. In some cases, a contract between instructors and students

In addition to the above, the syllabus plays the following roles and thus is necessary for faculty development and educational PDCA (described below in (4)). For more details, please refer to the "List of References" attached below.

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

and faculty

(3) 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 knowledge and skills (competences) to be acquired as well as learning outcomes. 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.

    c.   Introducing a course numbering system. This leads to visualization of courses that deal with common or similar content across colleges and schools.

Now, it is necessary to summarize the contents and learning outcomes of individual courses and clearly indicate the role that each course plays in the relevant degree program. The aforementioned guidelines of the Central Council for Education also stress the significance of the above. Specifically, by clearly indicating the way that competences according to the diploma policy and learning outcomes of each course correspond with each other, it must be shown that courses are appropriately positioned within the educational system. Carrying out the above will enable the clarification of a CP that realizes the DP as well as visualization 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.

Since 2008, the University of Tsukuba has compiled the "Guidelines for Creating a Syllabus" and tried to disseminate them to each faculty organization and instructor. This time, we have revised the Guidelines in consideration of the aforementioned circumstances and requirements. The revised edition takes the previous aim of "indicating items which are desirable to be described and method of entry thereof" one step further by including items which all the university's education organizations have to abide by upon creating the syllabus. We ask that you create the syllabus and make it available to people within and outside the campus following these Guidelines.

(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.

2. Items of the Syllabus

The syllabus of the University of Tsukuba includes the following items. These are the items set for the whole university and in principle it is desired to complete all the items. However, if there is a need for flexibility in consideration of course characteristics, it is possible that instructors draw up the syllabus accordingly. Even in this case, we ask instructors to understand and follow the points stated in the Guidelines. Finally, if there is nothing to write in items such as Course Prerequisites and Advisories, it is allowed to leave them blank.

Item Name	Overview of Contents (Points of the revised edition)	Explanation Page
(1) Course Information		
(1-1) Course Numbering Code / Course Number		p. 7 to p. 8
(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. 8
(2-2) Teaching Fellow and/or Teaching Assistant		
(2-3) Office Hours and Contact Information		
(3) Course Outcome		
(3-1) Relation to Degree Program Competences	♦ Among the knowledge and skills (hereinafter "competences") to be acquired as established by the degree program, copy the relevant competence(s).	p. 9 to p. 10
(3-2) Course Objectives (Learning Outcomes)	♦ 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. 10 to p. 11
(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 evaluating final examinations, papers, etc. ♦ Percentage: In cases where multiple evaluation methods are adopted, indicate the percentage that each evaluation method accounts for (final examinations: xx%, homework: xx%, etc.). ♦ Grading criteria: Indicate grading criteria that correspond to the course objective.	p. 12 to p. 13
(6) Course Requirements and Supplements		
(6-1) Textbooks, References, and Supplementary Materials.		p.14
(6-2) Other (Behavioral expectations and points to note for students during coursework)		

(Note) Knowledge and skills (competences) to be acquired

The University of Tsukuba lays down two types of competences: generic competence and specific competence. Competences as established under the degree program include both generic competence and specific competence.

Regarding the syllabus for respective courses, the degree program providing the relevant courses will be responsible for their contents, and the syllabus will be made publicly available after a systematically appropriate check. We ask not only individual instructors but also education organizations to develop such procedures and check the syllabus systematically. For checking the syllabus, please use the attached sample check list where appropriate.

In principle, 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. Even for courses only provided in Japanese, check that at least the items of course name and instructor name, which are to be listed in the "Course Catalogue", have been input in English correctly. 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.

(Note) "Remarks" in KdB

In KdB, you can input "Remarks" other than items (1) to (6) on pp. 5-6. Fixed phrases are already provided, so tick the relevant phrase(s). Although you can write freely, do not use the "Remarks" section for writing information that is more appropriate for the aforementioned sections (1) to (6). In KdB, education organizations can also set their own fixed phrases when necessary.

[Examples of fixed phrases for "Remarks" in KdB]
    Major compulsory course
    Includes gene recombination experiments
    Lectures can be conducted in English if requested
    Distance learning course
    Lectures are provided biweekly, etc.

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. If there is an item that instructors can't decide what to fill in, please consult with the appropriate person such as a curriculum coordinator in each education organization.

(1) Course Information

(1-1) Course Numbering Code / Course Number
Instruction on Course Numbering Code will be informed separately after university-wide discussion.
The Course Number 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 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.

To block spam and junk mails, KdB contains a program that prevents automatic email address harvesting while it shows raw email addresses. However, if it's very important for you to block them completely, since there is no way to do so, you don't have to disclose your email address on the syllabus.

(3) Course Outcome

(3-1) Relation to Degree Program 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. Degree program competences may include generic competences established for all schools.

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

> (Note) Competences relating to courses common for all schools
>   Indicate generic competences established for all schools.

(3-2) Course Objectives (Learning Outcomes)

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, please do not just input the competences themselves but provide a detailed description based on the course contents. By measuring how well students achieve course objectives, teachers translate learning outcome into grades.

> (Note) "Learning outcomes"
>   Items previously set as "course objectives" are interpreted as "learning outcomes" from a student's perspective.

> (Note) In cases where multiple competences of different nature are indicated, learning outcomes should desirably correspond to respective competences.

When describing course objectives, you should write from the student's point of view using practical wording. Evince course objectives that students will be able to conceive of what they can do and know after finishing coursework.

> 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 all possible 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 objectives (learning outcomes)".
   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

b.   Methods for out-of-class learning

Here, it is important to make students understand the principle that credits are awarded to learning which includes out-of-class learning hours. For securing out-of-class learning hours, provide detailed instructions as to what is desired as out-of-class learning as part of the preparative learning (preparation) indicated in "(4-3) Class Schedule". Conceivable methods include: giving students homework or assignments and making them submit their work by the next lecture, or creating a worksheet and making students submit a summary of out-of-class learning. Provide specific instructions regarding the method that is to be actually adopted.

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.

A sample is attached herein as an example of a worksheet. This sample is based on the following scenario: a worksheet is handed out at the end of class, and students are asked to write a summary of their out-of-class preparation and review and to submit it in the next lecture. The aim is to make students recognize academic achievements of out-of-class learning by having them submit (copies of) their deliverables of preparation and review with the worksheet.

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. Please confirm the following 3 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, finals, and papers in conjunction with the due date and exam period. 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. Exams (60%), Papers (20%), Weekly Comment Papers (20%)

c.　Grading Criteria
Pursuant to Article 35 of the University of Tsukuba Undergraduate School Regulations and Article 36 of the University of Tsukuba Graduate School Regulations, course exams are to be evaluated using the following grades: A+, A, B, C, or D, or P or F. Please note that P or F can be used only when departmental regulations designate applicable courses.

Furthermore, the exam guidelines for University of Tsukuba's undergraduate schools state as follows.

Grade	GP (Grading point)	Evaluation 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 final examination and achieve 60% (out of 100%).

Note that grades from A+ to C are to be determined based on final examination 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, such as a rubric, 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.

(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/syllabus-suisen)

(6-2) Other

Suggest behavioral expectations or any other things that students bear in mind during coursework.

In order to respect others, teachers may define classroom conduct and decorum for learning attitudes, tardiness, permission to leave the classroom in the midst of the coursework, etc.

Afterword

These revised Guidelines were drafted mainly by members of the Tuning Task Force (leader: Specially Appointed Professor Sadaaki Miyamoto). We received advice from people from relevant fields for creating the Guidelines. We also gained many insights from works cited in the attached List of References. We would like to take this opportunity to thank you all.

March 5, 2019

University of Tsukuba Tuning Task Force

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 Numbering Code / 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 week (class).	☐
Class hours corresponding to the number of credits are secured.	☐
Methods for out-of-class learning are indicated properly.	☐
(5) Grading Philosophy	
Grading methods, percentages, and grading criteria 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:

Student Work Sheet (Sample)

Summary of <u>mm dd, yyyy</u> (submit this sheet at the beginning of next class)

<u>Course Number / Course Name</u>

<u>Student Number / Name</u>

Items and main points of today's learning (main points can be different for each student)

Preparation for next class

Today's review and homework

Please use the back of the sheet if necessary

17

Syllabus (Sample)

Course Numbering Code / Course Number	xxxxxxxxxxxxx／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
Relation to Degree Program Competences	2. Logical and Mathematical Thinking and Analysis
Course Objectives (Learning Outcomes)	(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 Lecture 5: Two-stage Simplex method Lecture 6: Duality and its significance and overview of internal point method Lecture 7: Non-linear programming problems and convex sets and convex functions Lecture 8: Convexity of quadratic functions and nonnegative-definite matrices Lecture 9: Optimization conditions and the method of Lagrange multiplier and the Kuhn-Tucker condition Lecture 10: Newton's method, combinatorial optimization, knapsack problems, and traveling salesman problems
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 final examination and achieve 60% (out of 100%). Note that grades from A+ to C are to be determined based on final examination scores.
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.

List of References

[Relevant laws and regulations]
  Article 25-2 of the Standards for Establishment of Universities (Clarification of Assessment Standards of Academic Achievement and related things.)

> 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.

[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

(Web resources)
  - Center for the Studies of Higher Education, Nagoya University, "Teaching Tips" (in Japanese)
    http://www.cshe.nagoya-u.ac.jp/tips/index.html

  - UTokyo Faculty Development, *Interactive Teaching* (free course by MOOC) (in Japanese)
    https://www.utokyofd.com/mooc/objectives.html

  - 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]
- Central Council for Education, "Towards a Qualitative Transformation of University Education for Building a New Future - Universities Fostering Lifelong Learning and the Ability to Think Independently and Proactively" (Report) (August 28, 2012) (in Japanese)
  http://www.mext.go.jp/b_menu/shingi/chukyo/chukyo0/toushin/1325047.htm

- National Institution for Academic Degrees and Quality Enhancement of Higher Education, "Glossary of Quality Assurance System in Japanese Higher Education"
  http://www.niad.ac.jp/n_shuppan/package/

* All the above links were retrieved on March 5, 2019.