Graduate Major in Urban Design and Built Environment

【Master's Degree Program】

1. Outline

Graduate Major in Urban Design and Built Environment offers a comprehensive academic program for studying the current status of urban design and built environment, and for solving relevant emerging issues and social concerns. In this program, students study “safety,” “functionality,” “comfort,” “history,” and “environmental-friendliness” in urban environment which are necessary for proposing urban design and built environment in the future.

In the Urban Design and Built Environment program, students are trained to acquire broad knowledge, and develop capacity to build and maintain resilient urban design and built environment which are human- and environmentally-friendly, invulnerable against disaster, and well-coordinated with local culture and climate. Students are also trained to be engineers and researchers with well-rounded education and international communication skills who are aware of their responsibilities as leaders, and active internationally in the field of the urban design and built environment.

In order to attain this goal, the program is composed of two subjects: courses and researches. Students learn foundations for understanding urban design and built environment at advanced level by taking courses, and acquire necessary knowledge for expert engineers through research works.

The graduate major of Urban Design and Built Environment is jointly offered by Department of Architecture and Building Engineering, and Department of Civil and Environmental Engineering, and prospective students are expected to have prior knowledge about foundations of Architecture and Building Engineering, or of Civil and Environmental Engineering at undergraduate level.

In the Master’s Degree program, students are trained to acquire broad range of necessary knowledge and engineering for understanding urban design and built environment in an interdisciplinary and well-organized way, and hence to contribute to generation, regeneration and utilization of resilient urban design and built environment.

2. Competencies Developed

The graduate major of Urban Design and Built Environment seeks to confer the following skills to students:

- Logical thinking and analytical methods for understanding urban design and built environment comprehensively
- Insight for finding problems and spirit of inquiry for solving them concerning urban design and built environment
- Ability to develop a diverse view of things with well-rounded education and engineering ethics
- Communication ability to convey unique ideas and proposals to others appropriately
- Ability to planning and implementing a project by collaborating with others
- Communication skills to write, discuss, and make presentations analytically in English

3. Learning Goals

For the Master’s degree of Urban Design and Built Environment, students engage in the following program of study:

(A) Fundamental courses focused on the foundations of urban design and built environment

Required courses with practical work, and elective courses of broad range of subjects are offered to convey the foundation for the theory of urban design and built environment.

(B) Practical courses focused on the applications of the theory of urban design and built environment

Courses of practice in coordination with the fundamental courses, and elective courses of broad subjects are offered to convey the application of the theory of urban design and built environment.

(C) Courses for developing a broad vision of urban design and built environment taken by students proactively

Courses of creative experiments and practices where subjects are developed and proposed by students proactively, with a regular orientation, a face-to-face advice from a supervisor and an open laboratory.

(D) Courses for learning the relationship between society, and urban design and built environment

Courses for learning practice in society and engineering ethics offered by invited lecturers who are socially acknowledged.

(E) Courses for training communication skills

Courses for developing the abilities to complete a Master's thesis, and to make presentations of the thesis at seminars and conferences.

4. IGP Completion Requirements

The following requirements must be met to complete the Master's Degree Program of this major.

1. Attain a total of 34 credits or more from 400- and 500-level courses.
2. From the courses specified in the Graduate Major in Urban Design and Built Environment curriculum,
   - 8 credits acquired from Research Seminars;
   - a minimum of 9 credits acquired from Major Courses; and
   - a minimum of 5 credits acquired from Liberal Arts and Basic Science Courses
     (3 credits from Humanities and Social Science Courses of which 2 credits must be from 400-level courses and 1 credit from 500-level courses, and 2 credits from Career Development Courses).
3. Pass the master's thesis review and defense.

Table M1 shows course categories and the number of credits required to complete the Master's Degree Program of this major. It also shows the required minimum credits in each course category and points to be noted when selecting the required courses and electives.

The learning goals to be obtained by students through courses are listed as "associated learning goals". Prior to registering courses, students need to fully understand the course goals.

Table M1. Graduate Major in Urban Design and Built Environment Completion Requirements

Course category		<Required courses> Required credits	<Electives> Minimum credits required	Minimum credits required	Associated learning goals	Comments
Liberal arts and basic science courses	Humanities and social science courses		•2 credits from 400-level •1 credit from 500-level	5 credits	C,E	
	Career development courses		2 credits		C,D	All Graduate Attributes (GA) should be acquired. (Refer to Section 7 for the definition of GA.)
	Other courses					
Core courses	Research seminars	Urban Design and Built Environment Seminar S1 Urban Design and Built Environment Seminar F1 Urban Design and Built Environment Seminar S2 S Urban Design and Built Environment Seminar F2 A total of 8 credits, 2 credits each from the above courses.		22 credits	A,B,C,D,E	
	Research-related courses				B,C	
	Major courses	4 credits	5 credits		A,B,C,D	
	Major courses and Research-related courses <u>outside</u> the Graduate Major in Urban Design and Built Environment standard curriculum					
Total required credits		A minimum of 34 credits including those attained according to the above conditions				
Note		・Japanese Language and Culture Courses offered to international students can be recognized as equivalent to the Humanities and Social Science Courses of the corresponding course level. ・For details of the Liberal Arts and Basic Science Courses, please refer to the relevant sections. ・10 credits acquired at other university can be transferred after submission of the designated form, and approval by supervisor, lecturer and program head.				

	• **More than 2 credits of Research-related are NOT included for completing the Master's Degree Program of this major.** • **Academic Presentation is required for the IGP student.**

5. IGP Courses

Table M2 shows the Core Courses of the Master's Degree Program in this major. Graduate Majors listed in the Comments column offer core courses that are recognized as equivalent to the corresponding Major Courses or Research-related Courses in the standard curriculum of this major.

Table M2. Core Courses of the Graduate Major in Urban Design and Built Environment

Course category		Course number	Course title			Credits	Competencies	Learning goals	Comments
Research seminars	400 level	UDE.Z491.R	◎		Urban Design and Built Environment Seminar S1	0-2-0	1,3,5	A,B,C,E	
		UDE.Z492.R	◎		Urban Design and Built Environment Seminar F1	0-2-0	1,3,5	A,B,C,E	
	500 level	UDE.Z591.R	◎		Urban Design and Built Environment Seminar S2	0-2-0	1,3,5	A,B,C,E	
		UDE.Z592.R	◎		Urban Design and Built Environment Seminar F2	0-2-0	1,3,5	A,B,C,E	
Major courses	400 level	UDE.D408.L			History of Cities and Urban Planning	2-0-0	1,2,3	A,B	
		UDE.D448.L			Architectural Awareness & Design	2-0-0	1,3,4,5	A,B	
		UDE.E402.L			GIS and Digital Image Processing for Built Environment	1-0-0	1,5	A,B	
		UDE.E403.L			Introduction to Atmospheric Urban Environment	1-0-0	1,4,5	A,B	
		UDE.E404.L			Basic Engineering on Thermal Environment	1-0-0	1,4,5	A,B	
		UDE.P404.L			City/Transport Planning and the Environment	1-0-0	1,5	A,B	
		UDE.S401.L		O	Dynamics of Structures	2-0-0	1,4,5	A,B	
		UDE.S402.L			Nonlinear Behavior of Concrete and Concrete Members	2-0-0	1,2,5	A,B	
		UDE.S404.L			Passive-control Structures and Base-isolated Structures against Earthquakes	2-0-0	1	A,B	
		UDE.S405.L			Post-earthquake Damage Evaluation and Rehabilitation of Steel Structures	2-0-0	1,5	B,D	
		UDE.S406.L			Tensor Analysis for Building Structure	1-0-0	1	A,B	
		UDE.S431.L			Basics of Stochastic Process for Earthquake Engineering	1-0-0	1,4,5	A,B	
		UDE.S433.L			Introduction on Theory of Earthquake Ground Motion	1-0-0	1,4,5	A,B	
		UDE.S435.L			Earthquake and Tsunami Disaster Reduction	1-0-0	1,2	A,B	
		UDE.Y493.L	◎		Academic Presentation F1	0-1-0	1,3	E	Required for IGP students, IGP and fellowship student only
		UDE.Y494.L	◎		Academic Presentation S1	0-1-0	1,3	E	Required for IGP students, IGP and fellowship student only
		UDE.P424.L			Principles of Construction Management	2-0-0	1,2	A,B	【Civil Engineering】

									(CVE.F432)
		UDE.P441.L			Environment Design in Japan	1-0-0	1,2,5	B	【Civil Engineering】(CVE.N421)
		UDE.E451.L		O	Theories in Urban Analysis and Planning II	2-0-0	1,2,5	A,B	【Architecture and Building Engineering】(ARC.P442)
		UDE.D461.L			Theories in Urban Analysis and Planning I	2-0-0	1,2,3,4,5	A,B	【Architecture and Building Engineering】(ARC.P441)
		UDE.D462.L			Architectural Preservation and Renovation	2-0-0	1,2,4,5	A,B	【Architecture and Building Engineering】(ARC.D402)
		UDE.E464.L			Theory of Architectural Design II	2-0-0	1,2,3,4,5	A,B	【Architecture and Building Engineering】(ARC.D446)
		UDE.S461.L		E	Applied Building Structural Design	2-0-0	1,2,3,4,5	A,B	【Architecture and Building Engineering】(ARC.S421)
		UDE.S463.L		O	Advanced Course on Design of Prestressed Concrete Structure	2-0-0	1,5	A,B	【Architecture and Building Engineering】(ARC.S403)
	500 level	UDE.E502.L			Indoor Air Environment	1-0-0	1,4,5	A,B	
		UDE.E504.L			Applied Atmospheric Urban Environment	1-0-0	1,4,5	A,B	
		UDE.E505.L			Applied Engineering on Thermal Environment	1-0-0	1,4,5	A,B	
		UDE.E506.L			Numerical Simulation of Environments	1-0-0	1	A,B	
		UDE.S501.L			Disaster Mitigation for Building Structures	2-0-0	1,2,5	A,B	
		UDE.S503.L			Seismic Design for Nonstructural Components	1-0-0	1,5	A,B	
		UDE.S531.L			Microtremor Survey Techniques using Theory of Stochastic Process	1-0-0	1,4,5	A,B	
		UDE.S532.L			Application of Theory of Earthquake Ground Motion in Earthquake Engineering	1-0-0	1,4,5	A,B	
		UDE.S534.L			Remote Sensing for Disaster Management	1-0-0	1,5	A,B	
		UDE.Y593.L	◎		Academic Presentation F2	0-1-0	1,3	E	Required for IGP students, IGP and fellowship student only
		UDE.Y594.L	◎		Academic Presentation S2	0-1-0	1,3	E	Required for IGP students, IGP and fellowship student only

Note:
• ◎: Required course, ○: Restricted elective, O: Odd academic years, E: Even academic years
• Competencies: 1 = Specialist skills, 2 = Liberal arts skills, 3 = Communication skills, 4 = Applied skills (inquisitive thinking and/or problem-finding skills), 5 = Applied skills (practical and/or problem-solving skills)
• 【 】Course offered by another graduate major
• The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number UDE.D400.R): A: Common, D: Urban and Community Design, E: Urban Environmental System, P: Urban Planning and Transportation Planning, S: Urban Disaster Management, Y: IPISE, Z: Urban Design and Built Environment Seminar and Laboratory.

6. IGP Courses That Can Be Counted as Humanities and Social Science Courses

None

7. IGP Career Development Courses and IGP Courses That Can Be Counted as Career Development Courses

In order to fulfill the completion requirements for the master's degree program, students must attain at least 2 credits in Career Development Courses, and should satisfy all of the Graduate Attributes (GA) specified in Table MA-1 of the "Career Development Courses" listed as one of the "Liberal Arts and Basic Science Courses" in the Guide to Graduate Education and International Graduate Program, as well as shown below. Students will be evaluated in regards to GA achievements at the time of their degree completion. As to the courses with two GAs, both GAs stipulated for the courses are considered to be acquired if students receive the corresponding credits for those courses.

Career Development Courses and Major Courses that enable students to acquire GA and that are recognized as equivalent to Career Development Courses, offered by the Graduate Major, are listed in Table M3 below. Students can also acquire GA and credits by taking the Career Development Courses offered by Innovator and Inventor Development Platform (IIDP) listed as one of the "Liberal Arts and Basic Science Courses" in the Guide to Graduate Education and International Graduate Program.

However, it must be noted that credits attained from those courses that can be counted as Career Development Courses can be counted towards the completion requirements of master's degree program, either for the Major Courses or for the Career Development Courses (i.e., not for both). Nevertheless, even in the cases from those mentioned above where attained credits pertaining to these courses are not considered as Career Development Courses, their associated GAs may be considered by the Graduate Major to have been acquired.

For Graduate Attributes, refer to the Guide to the Career Development Courses.
The Graduate Attributes of the Master's Degree Program are listed in Table MA-1 as follows:

GA0M: You can clearly plan your own career and recognize the abilities necessary for realizing it while considering ethics and relevance to societal problems.

GA1M: You can acquire the knowledge, skills, and ethics necessary for realizing your planned career and contribute to societal problem-solving while collaborating with other experts

Table M3. Courses of the Graduate Major in Urban Design and Built Environment recognized as equivalent to Career Development Courses, and Career Development Courses

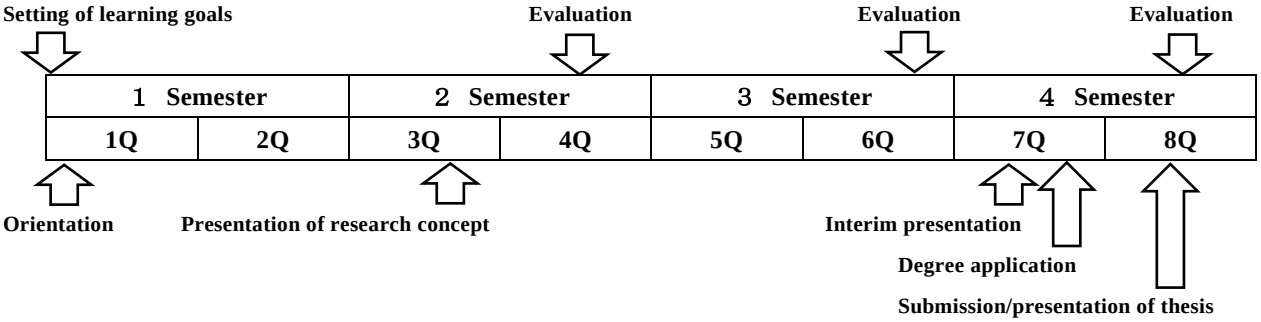
Course category	Course number	Course title	Credits	GA*	Learning goals	Comments
Courses that can be counted as Career Development Courses	UDE.P401.L	Project Management	1-0-0	GA0M	B,D	In Japanese
	UDE.E432.L	Practice of Environmental Design based on Environment-Behavior Study I	1-0-0	GA1M	B,D	In Japanese
	UDE.E433.L	Practice of Environmental Design based on Environment-Behavior Study II	1-0-0	GA1M	B,D	In Japanese
Career Development Courses	UDE.Z571	Master's Recurrent Program 1-1 of Urban Design and Built Environment	0-0-1	GA0M GA1M		Career Development Course offered by the Graduate Major in Urban Design and Built Environment. You cannot count for the Major Course.
	UDE.Z572	Master's Recurrent Program 1-2 of Urban Design and Built Environment	0-0-1	GA0M GA1M		
	UDE.Z573	Master's Recurrent Program2 of Urban Design and Built Environment	0-0-2	GA0M GA1M		

Credits in Career Development Courses must be attained from among the above-listed courses and those listed as such in the Liberal Arts and Basic Science Courses Guide.
The courses listed on Table M3 can be included as credits acquired from Major Courses or from Career Development Courses exclusively.

＊GA: Graduate Attributes

8. Research Related to the Completion of Master Theses

In research related to the completion of Master thesis, students need to experience a series of research process, and to improve the ability of solving problems and communication skills. The process of the completion of Master thesis is indicated below.



・Presentation of research concept and Interim presentation

Students need to conduct presentation of research concept in 3Q and interim presentation in 7Q in order to clearly set their own research background and objectives from the viewpoint of career development.

After the presentation of research concept, students can register 600-level major courses on the condition that they satisfy ‘the requirements.’ However, it is noted that 600-level major courses cannot be included into the required credits for the completion of the Master's Degree Program of this major.

・Examination guidelines of Master thesis

Master thesis should contain new academic insights in Urban Design and Built Environment, or useful evidences that contribute to development of technology in Urban Design and Built Environment. Master thesis must include students’ own unique ideas, written by students themselves.

・Examination process of Master thesis

The committee for Master thesis is composed of three or more panels. After the review by the panels, students must conduct oral presentation and pass the final examination and evaluation. For Master thesis submitted by students who continue to Doctoral Degree Program, the committee for the Master thesis is composed of five or more panels.

【Doctoral Degree Program】

1. Outline

In the program of Urban Design and Built Environment, in addition to the acquired knowledge and engineering at Master's course level, students are trained to develop research capacity and creativity by which they conduct the most advanced research by themselves, and to take international leadership in contribution to generation, regeneration and utilization of future urban design and built environment.

The graduate major of Urban Design and Built Environment is jointly offered by Department of Architecture and Building Engineering, and Department of Civil and Environmental Engineering, and prospective students are expected to have prior knowledge about foundations of Architecture and Building Engineering, or of Civil and Environmental Engineering at undergraduate and Master's course level.

The program of Urban Design and Built Environment offers courses for learning the most advanced knowledge and technologies concerning functionality, comfort and safety of urban design and built environmental system. The program is also designed to train professional researchers with necessary creativity and research ability through seminars and courses through which students conduct the most advanced research by themselves.

2. Competencies Developed

The graduate major of Urban Design and Built Environment seeks to confer the following skills to students:

- Ability to think flexibly toward new value creation
- Imagination for taking an international view of urban design and built environment and relevant issues, founded on relevant broad expertise, knowledge, and engineering
- Ability to take leadership in planning and implementing a project by collaborating with others
- Comprehensive ability to make research proposals which respect humanity and ethics
- Communication skills to write, discuss, and make presentations analytically in English

3. Learning Goals

For the Doctor's degree of Urban Design and Built Environment, students engage in the following program of study:

(A) Courses focused on the academic application of the theories of urban design and built environment

Courses for developing ability to propose solutions to the issues by students themselves, where the subjects are also found by students themselves.

(B) Courses focused on the practical application of the theories of urban design and built environment

Courses for developing ability to propose solutions to the issues in society based on the expert knowledge acquired by students themselves.

(C) Courses for training communication skills

Courses for training the abilities to complete a Doctoral thesis, and to make presentations of the thesis at seminars and national and international conferences.

4. IGP Completion Requirements

The following requirements must be met to complete the Doctoral Degree Program of this major.

1. Attain a total of 24 credits or more from 600-level courses.
2. From the courses specified in the Graduate Major in Urban Design and Built Environment curriculum,
   - 12 credits acquired from Research Seminars;
   - a minimum of 6 credits acquired from Major Courses; and
   - a minimum of 6 credits acquired from Liberal Arts and Basic Science Courses
     (2 credits from Humanities and Social Science Courses, and 4 credits from Career Development Courses).
3. Pass the doctoral thesis review and defense.

Table D1 shows course categories and the number of credits required to complete the Doctoral Degree Program of this major. It also shows the required minimum credits in each course category and points to be noted when selecting the required courses and electives.

The learning goals to be obtained by students through courses are listed as “associated learning goals”. Prior to registering courses, students need to fully understand the course goals.

Table D1. Graduate Major in Urban Design and Built Environment Completion Requirements

Course category		<Required courses> Required credits	<Electives> Minimum credits required	Minimum credits required	Associated learning goals	Comments
Liberal arts and basic science courses	Humanities and social science courses		2 credits	6 credits	C	
	Career development courses		4 credits		B,C	All Graduate Attributes (GA) should be acquired. (Refer to Section 7 for the definition of GA.)
	Other courses					
Core courses	Research seminars	Urban Design and Built Environment Seminar S3 Urban Design and Built Environment Seminar F3 Urban Design and Built Environment Seminar S4 S Urban Design and Built Environment Seminar F4 Urban Design and Built Environment Seminar S5 Urban Design and Built Environment Seminar F5 A total of 12 credits, 2 credits each from the above courses.		18 credits	A,B,C	
	Research-related courses					
	Major courses	6 credits			A,B,C	
	Major Courses and Research-related courses <u>outside</u> the Graduate Major in Urban Design and Built Environment standard curriculum					
Total required credits		A minimum of 24 credits including those attained according to the above conditions				
Note		・Japanese Language and Culture Courses offered to international students can be recognized as equivalent to the Humanities and Social Science Courses of the corresponding course level. ・For details of the Liberal Arts and Basic Science Courses, please refer to the relevant sections.				

	• 10 credits acquired at other university can be transferred after submission of the designated form, and approval by supervisor, lecturer and program head. **• More than 2 credits of Research-related are NOT included for completing the Master's Degree Program of this major.** **• Academic Presentation is required for the IGP student.**

5. IGP Courses

Table D2 shows the Core Courses of the Doctoral Degree Program of this major. Graduate Majors listed in the Comments column offer core courses that are recognized as equivalent to the corresponding Major Courses or Research-related Courses in the standard curriculum of this major.

Table D2. Core Courses of the Graduate Major in Urban Design and Built Environment

Course category		Course number	Course title			Credits	Competencies	Learning goals	Comments
Research seminars	600 level	UDE.Z691.R	◎		Urban Design and Built Environment Seminar S3	0-2-0	1,3,4,5	A,B,C	
		UDE.Z692.R	◎		Urban Design and Built Environment Seminar F3	0-2-0	1,3,4,5	A,B,C	
		UDE.Z693.R	◎		Urban Design and Built Environment Seminar S4	0-2-0	1,3,4,5	A,B,C	
		UDE.Z694.R	◎		Urban Design and Built Environment Seminar F4	0-2-0	1,3,4,5	A,B,C	
		UDE.Z695.R	◎		Urban Design and Built Environment Seminar S5	0-2-0	1,3,4,5	A,B,C	
		UDE.Z696.R	◎		Urban Design and Built Environment Seminar F5	0-2-0	1,3,4,5	A,B,C	
Major courses	600 level	UDE.A601.L			Off Campus Project in Urban Design and Built Environment	0-0-4	1,2,3,4,5	B	
		UDE.A611.L			Internship (Urban Design and Built Environment)	0-0-1	1,3,5	B	Fellowship student only
		UDE.Y681.L	◎		Academic Presentation F3	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only
		UDE.Y682.L	◎		Academic Presentation S3	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only
		UDE.Y683.L	◎		Academic Presentation F4	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only
		UDE.Y684.L	◎		Academic Presentation S4	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only
		UDE.Y685.L	◎		Academic Presentation F5	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only

		UDE.Y686.L	◎		Academic Presentation S5	0-1-0	1,3	A,C	Required for IGP students, IGP and fellowship student only
		UDE.Z681.L			Urban Design and Built Environment Project S3・1	0-0-1	1,3,4,5	A,B	
		UDE.Z682.L			Urban Design and Built Environment Project S3・2	0-0-1	1,3,4,5	A,B	
		UDE.Z683.L			Urban Design and Built Environment Project F3・1	0-0-1	1,3,4,5	A,B	
		UDE.Z684.L			Urban Design and Built Environment Project F3・2	0-0-1	1,3,4,5	A,B	
		UDE.Z685.L			Urban Design and Built Environment Project S4・1	0-0-1	1,3,4,5	A,B	
		UDE.Z686.L			Urban Design and Built Environment Project S4・2	0-0-1	1,3,4,5	A,B	
		UDE.Z687.L			Urban Design and Built Environment Project F4・1	0-0-1	1,3,4,5	A,B	
		UDE.Z688.L			Urban Design and Built Environment Project F4・2	0-0-1	1,3,4,5	A,B	
		UDE.A605.L			Cooperative Education through Research Internships of Urban Design and Built Environment	0-0-4	1,3,4,5	D	

Note:
- ◎: Required course, ○: Restricted elective, O: Odd academic years, E: Even academic years
- Competencies: 1 = Specialist skills, 2 = Liberal arts skills, 3 = Communication skills, 4 = Applied skills (inquisitive thinking and/or problem-finding skills), 5 = Applied skills (practical and/or problem-solving skills)
- 【 】Course offered by another graduate major
- The character preceding the three digits in the course number denotes the course's subdiscipline (i.e., "D" represents the subdiscipline code in the course number UDE.D600.R): A: Common, D: Urban and Community Design, E: Urban Environmental System, P: Urban Planning and Transportation Planning, S: Urban Disaster Management, Y: IPISE, Z: Urban Design and Built Environment Seminar and Laboratory.

6. IGP Courses That Can Be Counted as Humanities and Social Science Courses

None

7. IGP Career Development Courses and IGP Courses That Can Be Counted as Career Development Courses

In order to fulfill the completion requirements for the doctoral degree program, students must attain at least 4 credits in Career Development Courses, and should satisfy all of the Graduate Attributes (GA) specified in Table A-1 of the “Career Development Courses” listed as one of the “Liberal Arts and Basic Science Courses” in the Guide to Graduate Education and International Graduate Program, as well as shown below. Students will be evaluated in regards to GA achievements at the time of their degree completion. As to the courses with two GAs, both GAs stipulated for the courses are considered to be acquired if students receive the corresponding credits for those courses.

Career Development Courses and Major Courses that enable students to acquire GA and that are recognized as equivalent to Career Development Courses, offered by the Graduate Major, are listed in Tables D3 below. Students can also acquire GA and credits by taking the Career Development Courses offered by Innovator and Inventor Development Platform (IIDP) listed as one of the “Liberal Arts and Basic Science Courses” in the Guide to Graduate Education and International Graduate Program.

However, it must be noted that credits attained from those courses that can be counted as Career Development Courses can be counted towards the completion requirements of doctoral degree program, either for the Major Courses or for the Career Development Courses (i.e., not for both). Nevertheless, even in the cases from those mentioned above where attained credits pertaining to these courses are not considered as Career Development Courses, their associated GAs may be considered by the Graduate Major to have been acquired.

For Graduate Attributes, refer to the Guide to the Career Development Courses.

The Graduate Attributes of the Doctoral Degree Program are listed in Table A-1 as follows:

GA0D: You can clearly design your own career and contribute to realizing scientific, technological, or social innovation through a comprehensive understanding of the knowledge, skills, social responsibilities and ethics required to become an active member of academia and/or industry.

GA1D: You can lead in realizing scientific, technological, or social innovation by acquiring the advanced leadership skills, entrepreneurial skills, knowledge and expertise, and by developing social responsibility necessary for materializing your designed career.

Table D3. Courses of the Graduate Major in Urban Design and Built Environment recognized as equivalent to Career Development Courses, and Career Development Courses

Course category	**Course number**	**Course title**	**Credits**	**GA***	**Learning goals**	**Comments**
Courses that can be counted as Career Development Courses	UDE.A601.L	Off Campus Project in Urban Design and Built Environment	0-0-4	GA0D GA1D	B	
	UDE.A605.L	Cooperative Education through Research Internships of Urban Design and Built Environment	0-0-4	GA1D	D	
Career Development Courses	UDE.Z671	Doctoral Recurrent Program 1 of Urban Design and Built Environment	0-0-1	GA0D GA1D		Career Development Course offered by the Graduate Major in Urban Design and Built Environment. You cannot count for the Major Course.
	UDE.Z672	Doctoral Recurrent Program 2-1 of Urban Design and Built Environment	0-0-2	GA0D GA1D		
	UDE.Z673	Doctoral Recurrent Program 3 of Urban Design and Built Environment	0-0-3	GA0D GA1D		
	UDE.Z674	Doctoral Recurrent Program 4 of Urban Design and Built Environment	0-0-4	GA0D GA1D		
	UDE.Z675	Doctoral Recurrent Program 2-2 of Urban Design and Built Environment	0-0-2	GA0D GA1D		

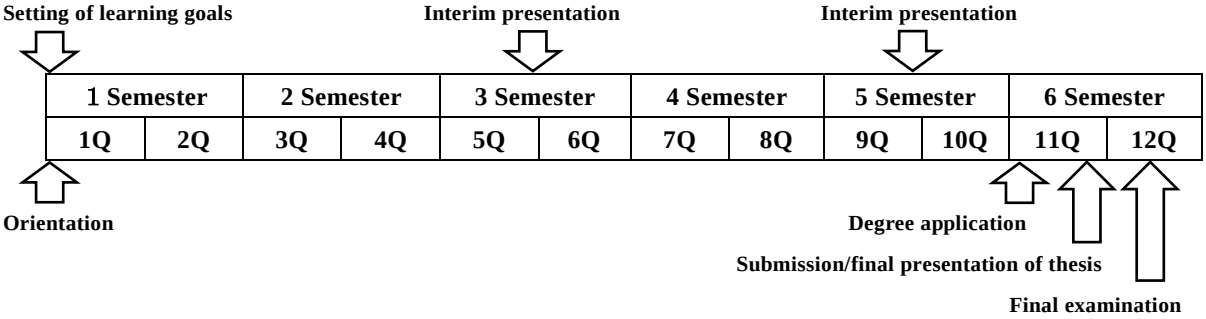
Credits in Career Development Courses must be attained from among the above-listed courses and those listed as such in the Liberal Arts and Basic Science Courses Guide.

＊GA: Graduate Attributes

Students enrolled in the educational program for leading graduate schools, the Tokyo Tech Academy for Leadership (ToTAL) or WISE Programs may be offered courses recognized as equivalent to Career Development Courses besides those listed as such in the “Liberal Arts and Basic Science Courses” in the Guide to Graduate Education and International Graduate Program. For details about available courses or completion requirements, please refer to the Study Guide of the Academy that offers the relevant program.

8. Research Related to the Completion of Doctoral Theses

In research related to the completion of Doctoral thesis, students need to improve the ability of setting problems and communication skills as well as the ability of solving problems. Students obtain these abilities during setting of learning goals and their evaluations. As the diagram below indicates, the research of Doctoral thesis is evaluated through the first and second interim presentations and final presentation of thesis in the consistent way of Urban Design and Built Environment toward the completion of Doctoral thesis. Students must also pass the final examination of expertise and foreign language before obtaining Doctoral degree.



・Examination guidelines of Doctoral thesis

Doctoral thesis should contain new unique insights and sufficient academic values in Urban Design and Built Environment, written by students themselves. The major parts of Doctoral thesis must be published in well-established international academic journals, or admitted as the same quality.

・Examination process of Doctoral thesis

The committee for Doctoral thesis is composed of five or more panels. It is recommended to invite panels from other universities, institutes and companies positively. After passing interim examination and preparatory examination, students must submit Doctoral thesis and conduct oral presentation. Doctoral thesis must pass review in advance by panels and final examination and evaluation. In final examination, students must prove the ability in Urban Design and Built Environment by reading relevant English papers.