Department of Civil Engineering

1. Program Outline

Civil Engineering is the practice of developing a civilized built environment in harmony with our natural surroundings, in which we may live safely and comfortably. The Department of Civil and Environmental Engineering at Tokyo Tech trains its students to develop technical engineering skills in a diverse and international environment, with the goal of producing tomorrow's global leaders in the Civil Engineering industry and in academia. Students in the Department learn the fundamentals of civil engineering through a variety of courses, and then receive intensive training in their specific field of interest by conducting cutting-edge research under the close guidance of a distinguished faculty member.

2. Course Outlines

[Master's degree]

In the Master's degree program, students are trained to develop technical engineering skills in a diverse and international environment, giving them the tools to become tomorrow's global leaders in the Civil Engineering industry. To achieve this goal, the Department seeks to confer the following skills to students:

- · Theoretical understanding of the fundamentals of engineering necessary for professional practice and research.
- Technical skills and knowledge required for practice and research in the field of civil engineering.
- Appreciation of the societal responsibilities of civil engineers, and understanding of the ethics of the practice.
- · Management and communication skills necessary to be competitive in the global marketplace.

[Doctoral degree]

In the Doctoral degree program, students are trained to develop cutting-edge technical engineering skills in a diverse and international environment, giving them the tools to become tomorrow's global leaders in the Civil Engineering industry and in academia. To achieve this goal, the Department seeks to confer the following skills to students:

- Theoretical understanding of the fundamentals of engineering necessary for professional practice and research.
- Technical skills and knowledge required for cutting-edge research in their field of civil engineering, and the ability to apply this research to practical use.
- · Creativity required for producing, communicating, and applying new research ideas and knowledge.
- Understanding and appreciation of cultural diversity, necessary for the international practice of civil engineering.
- Communication and leadership skills needed for the international practice of civil engineering.

3. Guide to Study in Department of Civil Engineering

[Master's degree]

For the Master's degree, students engage in the following program of study:

- A) Fundamental courses which cover the breadth of science and engineering Broad, fundamental engineering courses are offered to convey the foundation for building professional skill for the practice of civil engineering.
- B) In-depth courses focused on specific fields within civil engineering Students may take in-depth courses in 4 or more of the 6 major fields within civil engineering, in order to acquire a deep understanding of the profession.
- C) Practical internships and seminars Students enroll in internships and seminars to acquire an in-depth understanding of how theory is applied to practice in the field of civil engineering.
- D) Problem-solving and communication training

By engaging in original research focused on a specific problem and completing a Master's thesis, students learn to work independently and proactively, and to communicate their results convincingly.

[Doctoral degree]

For the Doctoral degree, students engage in the following program of study:

- A) Practical education for cutting-edge research and practice
 By engaging in research toward a Doctoral dissertation, students work together with a faculty advisor to develop cutting-edge experimental and analytical methods that push the frontier of civil engineering research and practice.
- B) Communication training for participation in international projects Doctoral coursework (including seminars and research presentations), writing of the Doctoral dissertation, and presentation of the Doctoral dissertation are all conducted in English. This gives students the communication ability necessary to engage successfully in overseas projects.
- C) Problem-solving and leadership training

By engaging in doctoral research, students learn how to be leaders in their field and to solve problems in an ethical manner. Students will participate in field-specific and interdisciplinary seminars, and will interact with foreign students, researchers, and civil engineering practitioners via conferences and collaborative research. This will impart students with skills to further their ambitions to engage in international business or collaboration.

4. Graduation Requirements

[Master's degree]

For a Master's degree a student must take 30 credits or more and meet other requirements as follows: (1) Credits

- 30 credits or more from the graduate school courses in total.
- 8 credits from the Seminar Courses(講究科目)*1
- 16 credits or more from the Courses by Departments(専門科目群)*2
- ・2 credits or more from the Liberal Arts and General Education(G)(大学院教養・共通科目群).

(2) Thesis

The student must complete a mater thesis research, submit a thesis for the degree and take and pass the final examination given after the submission of her/his thesis for the qualification.

*1: Seminar in each term must be taken. 8 credits are the requirement for the normal study period of master study, i.e., two years, or four semesters. If the student completes the master study in less than 4 semesters, the required credit is reduced according to the number of spent semesters, e.g., 4 credits for two semesters (minimum), and 6 credits for 3 semesters.

*2: Courses in Department of Civil Engineering are categorized into seven fields, namely, (1) Structural Engineering, (2) Hydraulic and Environmental Engineering, (3) Geotechnical Engineering, (4) Transportation and Infrastructure Planning, (5) Concrete and Material Engineering, (6) Earthquake Engineering, (7) Common Basic Science. As requirements for master degree, the student in Department of Civil Engineering should acquire at least two courses from the field which she/he specializes. The student should also acquire at least one course from each of the other four fields, in which the category (7) is compulsory.

[Doctoral degree]

For a Doctoral degree a doctoral candidate must satisfy the following requirements:

- (1) Seminar in each term must be taken.
- (2) If the student enrolls the Integrated Doctoral Educational Program, he/she is required to complete one Off-Campus Project.
- (3) The intermediate examination in the 4th semester and the prefinal examination in the beginning of the 6th semester must be approved.
- (4) The candidate must complete and upload a thesis for the degree, and take the final examination and evaluation of his/her thesis.

The candidate who satisfies the above requirements and passes the final examination is awarded a Doctoral degree. Students should consult with their own supervisors about the study plan.

5. Tables of Courses

Research Courses (研究科目群)

Course	Dept. offering course* ¹	Regist- ration number	Credit	Semester S: Spring A:Autumn	Opening year a: Annually e: Even o: Odd	Category, Remarks
Seminar Courses (講究科目)						
Seminar of Civil and Environmental Engineering I, II, III, IV	CE	61701 61702 61703 61704	2	S A S A	a	Required for Master degree
Seminar of Development and Environmental Engineering (CE) I II, III, IV	CE	61705 61706 61707 61708	2	A S A S	a	Required for Master degree in SEP* ²
Seminar of Civil and Environmental a Engineering V, VI, VII, VIII, IX, X	CE	61801 61802 61803 61804 61805 61806	2	S A S A S A	a	Required for Doctoral degree
Seminar of Development and Environmental Engineering (CE) V, VI, VII, VIII, IX , X	CE	61851 61852 61853 61854 61855 61856	2	A S A S A S	a	Required for Master degree in SEP* ²
Graduate Research Courses (研究関連科目)						
Special Lecture on Civil and Environmental Engineering I –VI	CE	61851 61852 61853 61854 61855 61856	1 or 2	S A S A S A	a	For Doctoral student

*1 CE: Dept. Civil Engineering

*2 SEP: Sustainable Engineering Program (IGP(A))

<u>Courses by Departments</u>(専門科目群)

Course	Dept. offering course* ¹	Regist- ration number	C	red	it	Semester S: Spring A:Autumn	Opening year a: Annually e: Even o: Odd	Category, Remarks
Fracture Control Design of Steel Structures	CE	61005	2	0	0	А	e	(1)
Introduction to Solid Mechanics	CE	61065	2	0	0	S	а	(1)(3)(5)(6)
Advanced Course on Elasticity Theory	CE	61048	2	0	0	А	а	(1)(3)(5)(6)
Analysis of Vibration and Elastic Wave	MEI	77019	2	0	0	S	0	(1)
Advanced Course on Coastal Environments	MEI	77048	2	0	0	S	e	(2)
Regional Atmospheric Environment	IDE	70009	1	0	0	А	а	(2)
Aquatic Environmental Science	CE	61073	2	0	0	S	e	(2)
Environmental Statistics	CE	61074	2	0	0	S	0	(2)(7)
Water Quality Dynamics	CE	61082	2	0	0	А	e	(2)
GIS in Water Resources Engineering	CE	61080	1	1	0	А	а	(2)

Water Resource Systems CE 6108 2 0 S a (2) Open Channel Hydraulics FST 98057 1 0 0 S a (2) Environmental Hydraulics EST 98067 1 0 0 S a (2) Geo-Havironmental Engineering CH 61049 2 0 0 A a (3) (6) Stability Problems in Geotechnical CE 61034 2 0 0 A a (3) (6) Rechances of Geomaterials CH 61038 2 0 0 A a (3) (6) Infrastructure and Transportation Planning CE 61041 2 0 0 A e (4) Project Evaluation for Sustainable IDE 70030 2 0 0 A a (4) Infrastructure and Transportation Engineering BE 92047 2 0 0 A a (4) <t< th=""><th>Advanced Hydrology and Water Resources Management</th><th>CE</th><th>61079</th><th>2</th><th>0</th><th>0</th><th>А</th><th>а</th><th>(2)</th></t<>	Advanced Hydrology and Water Resources Management	CE	61079	2	0	0	А	а	(2)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Water Resource Systems	CE	61085	2	0	0	S	а	(2)
Invironmental Hydraulics IST 98067 1 0 0 S a (2) Watershed Hydrology FST 98067 1 0 0 S a (2) Goe-Environmental Engineering CE 61044 2 0 0 S a (2) (3) Physical Modelling in Geotechnics CE 61044 2 0 0 A a (3) (6) Machanics of Geomaterials CE 61034 2 0 0 S a (3) (6) Advanced Mathematical Methods for Infastructure and Transportation Planning CE 61081 2 0 A e (4) Transportation Retwork Analysis CE 61081 2 0 A e (4) Theory of Regional Planning Process BE 20243 1 0 A a (5) Theory of Regional Planning and the Environment BE 20203 1 0 A a (5) He	Open Channel Hydraulics	EST	98053	1	0	0	S	а	(2)
Watershed Hydrology FST 98060 1 0 0 S a (2) Geo-Environmental Engineering CE 61049 2 0 0 A a (3) (6) Stability Problems in Geotechnical CE 61034 2 0 0 A a (3) (6) Stability Problems in Geotechnical CE 61034 2 0 0 A a (3) (6) Mechanics of Geomaterials CE 61048 2 0 0 A e (4) Transportation Network Analysis CE 61061 0 0 A e (4) Infrastructure Distribution for Sustainable IDI: 70030 2 0 0 A a (4) Infrastructure Dianing and the Environment DE 2047 2 0 0 A a (4) Infrastructure DE 70043 2 0 0 A a <t< td=""><td>Environmental Hydraulics</td><td>EST</td><td>98067</td><td>1</td><td>0</td><td>0</td><td>S</td><td>а</td><td>(2)</td></t<>	Environmental Hydraulics	EST	98067	1	0	0	S	а	(2)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Watershed Hydrology	EST	98060	1	0	0	S	а	(2)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Geo-Environmental Engineering	CE	61049	2	0	0	S	а	(2)(3)
	Physical Modelling in Geotechnics	CE	61061	2	0	0	А	а	(3)(6)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Stability Problems in Geotechnical	CE	61034	2	0	0	А	a	(3) (6)
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Mechanics of Geomaterials	CE	61038	2	0	0	S	а	(3)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Advanced Mathematical Methods for	~		-	-		~		(-)
$\begin{array}{rransportation Network Analysis CE 6106 1 0 0 A e e (4) \\ \hline Project Evaluation Economics CE 6106 1 0 0 0 A e e (4) \\ \hline Project Evaluation for Sustainable IDE 70030 2 0 0 S a (4) \\ \hline Project Evaluation for Sustainable IDE 70030 2 0 0 S e e (4) \\ \hline Project Evaluation for Sustainable IDE 70031 2 0 0 0 S e e (4) \\ \hline Provionmental Transportation Engineering BE 92047 2 0 0 A a a (4) \\ \hline Provionmental Transportation Engineering BE 92047 2 0 0 A a a (4) \\ \hline Provionmental Transportation Engineering DE 70043 2 0 0 A a a (5) \\ \hline Provionmental Transportation Engineering DE 70043 2 0 0 A a a (5) \\ \hline Provionmental Transportation Engineering DE 70043 2 0 0 A a a (5) \\ \hline Provionmental Transportation States for IDE 70041 2 0 0 A a a (5) \\ \hline Protection of Resources and Wastes for IDE 70041 2 0 0 A a a (6) \\ \hline Protection of Resources and Wastes for IDE 70041 2 0 0 A a a (6) \\ \hline Protection of Resources and Wastes for Environment DE 92008 1 1 0 0 A a a (6) \\ \hline Protection Structure Ce E 61083 1 0 0 A a a (6) \\ \hline Protection Structure Reduction BE 92008 1 1 0 0 A a a (6) \\ \hline Protection Construction Management CE 61047 2 0 0 A o (1)-(6) \\ \hline Protection Construction Management CE 61047 2 0 0 A o (1)-(6) \\ \hline Protection Construction Management CE 61047 2 0 0 A a a (1)-(6) \\ \hline Advanced Topics in Civil Engineering ID CE 61054 2 0 0 A a a (1)-(6) \\ \hline Advanced Topics in Civil Engineering ID CE 61054 2 0 0 A a a (1)-(6) \\ \hline Advanced Topics in Civil Engineering ID CE 61078 0 1 0 A a a - \\ \hline International Collaboration 1 CE 61078 0 1 1 0 S a a - \\ \hline International Collaboration 1 CE 61072 0 1 0 A a a - \\ \hline Advanced Tochnical Communication Skills 1 CE 61078 0 1 1 0 A a a - \\ \hline International Internship 1 CE 61078 0 1 1 0 A a a - \\ \hline Civil A Brivnomental Engineering A, B, \\ C, D & \hline Collaboration R Civil Engineering A, B, \\ C, D & \hline Collaboration R Civil Engineering A, B, \\ C, D & \hline Collaborative Project in Civil Engineering A, B, \\ C, D & \hline Collaborative Project in Civil Engineering A, B, \\ C, D & \hline Collaborative Project in Civil Engineering A, $	Infrastructure and Transportation Planning	CE	61014	2	0	0	S	0	(4)(7)
Transportation Economics CE 61066 1 0 A e (4) Infrastructure IDE 70030 2 0 0 S a (4) Theory of Regional Planning Process BE 92048 1 0 0 A o (4) Environmental Transportation Engineering BE 92048 1 0 0 A a (4) City/Transport Planning and the Environment BE 92048 1 0 0 A a (4) Machanes of Structural Concrete CE 61003 2 0 0 A a (5) Maintenance of Infrastructure CE 61083 2 0 0 A a (6) Earthquake and Tsunami Disaster Reduction BE 92046 1 0 A a (1) (6) Earthquake and Tsunami Disaster Reduction BE 92046 1 0 A a (1) (6) <	Transportation Network Analysis	CE	61081	2	0	0	A	e	(4)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Transportation Economics	CE	61066	1	0	0	A	e	(4)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Project Evaluation for Sustainable Infrastructure	IDE	70030	2	0	0	S	а	(4)
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Theory of Regional Planning Process	BE	92047	2	0	0	S	e	(4)
$\begin{array}{c} \mbox{City/Tansport Planning and the Environment} & BE & 92035 & 1 & 0 & 0 & A & a & (4) \\ \mbox{Advanced Concrete Technology} & IDE & 70043 & 2 & 0 & 0 & A & a & (5) \\ \mbox{Mechanics of Structural Concrete} & CE & 61003 & 2 & 0 & 0 & S & o & (5) \\ \mbox{Itilization of Resources and Wastes for} & IDE & 70041 & 2 & 0 & 0 & A & a & (5) \\ \mbox{Maintenance of Infrastructure} & CE & 61083 & 2 & 0 & 0 & S & e & (1) (5) (6) \\ \mbox{Basics and Applications of Stochastic} & BE & 92008 & 1 & 1 & 0 & A & a & (6) \\ \mbox{Processes} & BE & 92008 & 1 & 1 & 0 & 0 & A & a & (6) \\ \mbox{Earthquake and Tsunami Disaster Reduction} & BE & 92046 & 1 & 0 & 0 & A & a & (6) \\ \mbox{Earthquake and Tsunami Disaster Reduction} & BE & 92046 & 1 & 0 & 0 & A & a & (6) \\ \mbox{Processes} & CE & 61047 & 2 & 0 & 0 & A & o & (1) \sim (6) \\ \mbox{Processes} & CE & 61047 & 2 & 0 & 0 & A & o & (1) \sim (6) \\ \mbox{Probabilistic Concepts in Engineering Design} & CE & 61047 & 2 & 0 & 0 & A & a & (1) \sim (6) \\ \mbox{Advanced Topics in Civil Engineering II } CE & 61042 & 2 & 0 & 0 & A & a & (1) \sim (6) \\ \mbox{Advanced Topics in Civil Engineering II } CE & 61055 & 2 & 0 & 0 & A & a & (1) \sim (6) \\ \mbox{Advanced Technical Communication Skills II } CE & 61063 & 1 & 1 & 0 & S & a & - \\ \mbox{Advanced Technical Communication Skills II } CE & 61071 & 0 & 1 & 0 & S & a & - \\ \mbox{International Collaboration II } CE & 61071 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61071 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61071 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61071 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 2 } CE & 61078 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61078 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61078 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 1 } CE & 61078 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 2 } CE & 61078 & 0 & 1 & 0 & A & a & - \\ \mbox{International Internship 2 } CE & 61078$	Environmental Transportation Engineering	BE	92048	1	0	0	A	0	(4)
Advanced Concrete TechnologyIDE70043200Aa(5)Mechanics of Structural ConcreteCE 61003 200S0(5)Utilization of Resources and Wastes for EnvironmentIDE 70041 200Aa(5)Maintenance of InfrastructureCE 61083 200Se(1) (5) (6)Basics and Applications of Stochastic ProcessesBE92008110Aa(6)Earthquake and Tsunami Disaster ReductionBE92046100Aa(6)Principles of Construction ManagementCE 61046 200Ao(1) ~(6)Principles of Construction ManagementCE 61047 200Aa(1) ~(6)Advanced Topics in Civil Engineering I International Collaboration ICE 61052 110Aa $-$ Advanced Technical Communication Skills IICE 61062 110Aa $-$ International Collaboration IICE 61077 010Aa $-$ International Internship 2CE 61077 010Aa $-$ International Internship 2CE 61077 010Aa $-$ International Internship 1CE 61077 010Aa $-$ <td>City/Transport Planning and the Environment</td> <td>BE</td> <td>92035</td> <td>1</td> <td>0</td> <td>0</td> <td>А</td> <td>a</td> <td>(4)</td>	City/Transport Planning and the Environment	BE	92035	1	0	0	А	a	(4)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Advanced Concrete Technology	IDE	70043	2	0	0	A	a	(5)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Mechanics of Structural Concrete	CE	61003	2	0	0	S	0	(5)
EnvironmentIDE 70041 2 0 0 A a (5) Maintenance of InfrastructureCE 61083 2 0 0 S e $(1)(5)(6)$ Basics and Applications of StochasticBE 92008 1 1 0 A a (6) ForcessesBE 92046 1 0 A a (6) Earthquake and Tsunami Disaster ReductionBE 92046 1 0 A a (6) Principles of Construction ManagementCE 61046 2 0 A o $(1) \sim (6)$ Principles of Construction ManagementCE 61047 2 0 A a $(1) \sim (6)$ Advanced Topics in Civil Engineering ICE 61047 2 0 A a $(1) \sim (6)$ Advanced Topics in Civil Engineering IICE 61063 1 1 0 A a $$ International Collaboration ICE 61071 0 1 0 A a $$ International Internship 1CE 61071 0 1 0 A a $$ Civil and Environmental Engineering Off-Campus Project I, IICE 61071 0 1 0 A a $$ Civil and Environmental Engineering Off-Campus Project in Civil Engineering A, B, C, DCE 61089 61091 0 1 A a $-$ Off Campus Project in Civil Engi	Utilization of Resources and Wastes for	UDE	70041	_		0	~	-	(5)
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Environment	IDE	/0041	2	0	0	A	а	(5)
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Basics and Applications of Stochastic Processes	BE	92008	1	1	0	А	а	(6)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Earthquake and Tsunami Disaster Reduction	BE	92046	1	0	0	А	а	(6)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Civil Engineering Analysis	CE	61013	1	0	0	А	0	(7)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Principles of Construction Management	CE	61046	2	0	0	А	0	$(1) \sim (6)$
Advanced Topics in Civil Engineering I CE 61084 2 0 S a (1)~(6) Advanced Topics in Civil Engineering II CE 61055 2 0 A a (1)~(6) Advanced Technical Communication Skills I CE 61062 1 1 0 S a Advanced Technical Communication Skills II CE 61063 1 1 0 A a International Collaboration I CE 61071 0 1 0 S a International Collaboration II CE 61077 0 1 0 A a International Internship 1 CE 61077 0 1 0 A a Civil and Environmental Engineering CE 61511 0 0 4 S a Required for Off-Campus Project (CE)1, II CE 615151 0 0 4 S a Required for Off Campus Project in Civil Engineering A, B, C, D CE 61089 0	Probabilistic Concepts in Engineering Design	CE	61047	2	0	0	А	0	(1) (3) (5) (6)
Advanced Topics in Civil Engineering II CE 61055 2 0 A a (1)~(6) Advanced Technical Communication Skills I CE 61062 1 1 0 S a Advanced Technical Communication Skills II CE 61063 1 1 0 A a International Collaboration I CE 61071 0 1 0 A a International Collaboration II CE 61077 0 1 0 A a International Internship 1 CE 61077 0 1 0 A a Civil and Environmental Engineering CE 61171 0 1 0 A a Off-Campus Project (CE) I, II CE 61552 0 0 4 S a Required for Off Campus Project in Civil Engineering A, B, C, D CE 61088 0 0 1 S A a Courses for International A, B, C, D Ce 61093 <	Advanced Topics in Civil Engineering I	CE	61084	2	0	0	S	а	$(1) \sim (6)$
Advanced Technical Communication Skills I CE 61062 1 1 0 S a Advanced Technical Communication Skills II CE 61063 1 1 0 A a International Collaboration I CE 61071 0 1 0 A a International Collaboration II CE 61077 0 1 0 A a International Internship 1 CE 61077 0 1 0 A a International Internship 2 CE 61078 0 1 0 A a Civil and Environmental Engineering CE 61511 0 0 4 A a Required for Off-Campus Project 1, II CE 61551 0 0 4 A a Required for Off-Campus Project in Civil Engineering A, B, C, D CE 61088 0 0 1 A a a Courses for Ingineering A, B, C, D Ce 61092	Advanced Topics in Civil Engineering II	CE	61055	2	0	0	А	а	$(1) \sim (6)$
Advanced Technical Communication Skills IICE61063110AaInternational Collaboration ICE61071010SaInternational Collaboration IICE61072010AaInternational Internship 1CE61077010AaInternational Internship 2CE61078010AaCivil and Environmental Engineering Off-Campus Project I, IICE61511 61512004S AaRequired for IDEP*2Environmental Engineering Off-Campus Project (CE)1, IICE61551 61552004S 	Advanced Technical Communication Skills I	CE	61062	1	1	0	S	а	_
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Advanced Technical Communication Skills II	CE	61063	1	1	0	А	а	—
International Collaboration IICE 61072 0 1 0 A a $-$ International Internship 1CE 61077 0 1 0 S a $-$ International Internship 2CE 61078 0 1 0 A a $-$ Civil and Environmental Engineering Off-Campus Project I, IICE 61511 61552 0 0 4 S a Required for IDEP*2Environmental Engineering Off-Campus Project (CE) I, IICE 61551 61552 0 0 4 S a Required for SEP*3Off Campus Project in Civil Engineering A, B, C, DCE 61088 61091 0 0 1 S a a Courses for IIDP*4Teaching and Training Skills in Civil Engineering A, B, C, DCE 61092 61095 0 0 1 S a a Courses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61096 61095 0 0 1 S a a Courses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61096 61098 0 0 1 S a a Courses for IIDP*4	International Collaboration I	CE	61071	0	1	0	S	а	—
International Internship 1CE 61077 0 1 0 S a $-$ International Internship 2CE 61078 0 1 0 A a $-$ Civil and Environmental Engineering Off-Campus Project I, IICE 61511 61512 0 0 4 S A a Required for IDEP*2Environmental Engineering Off-Campus Project (CE)I, IICE 61551 61552 0 0 4 S A a Required for SEP*3Off Campus Project in Civil Engineering A, B, C, DCE 61088 61090 61091 0 0 1 S A a Required for SEP*3Off Campus Project in Civil Engineering A, B, C, DCE 61088 61094 61095 0 0 1 S A a Courses for IIDP*4Teaching and Training Skills in Civil Engineering A, B, C, DCE 61097 61095 0 0 1 S A a Courses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61097 61099 0 0 1 S A a Courses for IIDP*4	International Collaboration II	CE	61072	0	1	0	А	а	—
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Civil and Environmental Engineering Off-Campus Project I, IICE 61511 61512 004S AaRequired for IDEP*2Environmental Engineering Off-Campus Project (CE) I, IICE 61551 61552 004S AaRequired for SEP*3Off Campus Project in Civil Engineering A, D, C, DCE 61088 61091 001S AaRequired for SEP*3Off Campus Project in Civil Engineering A, B, C, DCE 61088 61091 001S AaCourses for IIDP*4Teaching and Training Skills in Civil Engineering A, B, C, DCE 61092 61095 001S AaCourses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61096 61097 61099 001S AaCourses for IIDP*4	International Internship 2	CE	61078	0	1	0	А	а	_
Off-Campus Project I, IICE 61512 0 0 4 A a Interpretent of IDEP*2Environmental Engineering Off-Campus Project (CE)I, IICE 61551 61552 0 0 4 S A a Required for SEP*3Off Campus Project in Civil Engineering A, B, C, DCE 61088 61091 0 0 1 S A a Courses for IIDP*4Teaching and Training Skills in Civil Engineering A, B, C, DCE 61092 61095 0 0 1 S A a Courses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61096 61095 0 0 1 S A a Courses for IIDP*4Collaborative Project in Civil Engineering A, B, C, DCE 61096 61097 61099 0 0 1 S A a $Courses forIIDP*4$	Civil and Environmental Engineering		61511	-	-	-	S		Required for
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Off-Campus Project I, II	CE	61512	0	0	4	Ă	а	IDEP*2
Off Campus Project in Civil Engineering A, B, C, DCE	Environmental Engineering Off-Campus Project (CE)I, II	CE	61551 61552	0	0	4	S A	а	Required for SEP* ³
$\begin{array}{c c} Chr Campus Project in Civil Engineering A, B, \\ C, D \\ \hline \\ Ce \\ B, C, D \\ \hline \\ Ce $			61088				G		0
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	C, D	CE	61089 61090	0	0	1	S A	а	Courses for IIDP* ⁴
Teaching and Training Skills in Civil Engineering A, B, C, DCE			61091						
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Teaching and Techning Obility in Civil		61092				C		Comment form
$\begin{array}{c c} \text{Engineering A, B, C, D} & \text{Inder}^{\text{rescale}} & \text{Inder}^{resca$	Leaching and Training Skills in Civil	CE	61093	0	0	1	S A	а	Courses for
Collaborative Project in Civil Engineering A, B, C, D $CE = \begin{bmatrix} 61095 \\ 61097 \\ 61098 \\ 61099 \end{bmatrix} = \begin{bmatrix} 61096 \\ 0 \\ 1 \end{bmatrix} = \begin{bmatrix} S \\ A \end{bmatrix} = \begin{bmatrix} C \\ B \\ A \end{bmatrix} = \begin{bmatrix} C \\ Courses for \\ IIDP^{*4} \end{bmatrix}$	Engineering A, B, C, D		61005				А		IIDP**
Collaborative Project in Civil Engineering A, B, C, D $CE \begin{bmatrix} 01090\\ 61097\\ 61098\\ 61099 \end{bmatrix} \begin{bmatrix} 0\\ 0\\ 1 \end{bmatrix} \begin{bmatrix} S\\ A \end{bmatrix} a \begin{bmatrix} Courses for\\ IIDP^{*4} \end{bmatrix}$			61002						
B, C, D $CE = \begin{bmatrix} 01077 \\ 61098 \\ 61099 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix} 0 \\ A \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} \begin{bmatrix}$	Collaborative Project in Civil Engineering A		61090				S		Courses for
	B. C. D	CE	61098	0	0	1	A	а	IIDP* ⁴
	_, _, _		61099						

* CE: Dept. Civil Engineering

IDE: Dept. International Development Engineering

MEI: Dept. Mechanics and Environmental Informatics

BE: Dept. Built Environment

- *2 IDEP: Integrated Doctoral Educational Program
- *3 SEP: Sustainable Engineering Program (IGP(A))
- *4 IIDP: Innovator and Inventor Development Platform

Descriptions of the courses listed above except for the courses for IIDP are provided at those either for "Development and Environmental Engineering Course of Sustainable Engineering Program: IGP(A)" (refer to III.International Graduate Program (IGP-A) Sustainable Engineering Program 5.1 Development and Environmental Engineering Course) or "Earthquake Engineering Program: IGP(A)" (refer to III.International Graduate Program on Earthquake Engineering 5. Syllabus of Course Subjects). The descriptions of the courses for IIDP are provided below.

61088

61089

61090

61091

Off Campus Project in Civil Engineering A, B, C, D

Spring Semester(1)(2) Autumn Semester(1)(2) (0-0-1) (Every Year) for Doctor Degree

Academic Advisor

[Aims and Scope]

The student will take part in an actual project done by an institution or private company. Project period is within one month. Through this internship project the student will experience the actual practice in her/his own field and have proper prospects of her/his future profession. Finally, enrolled students are required to make the presentation of their internship.

61092

61093

61094

61095

Teaching and Training Skills in Civil Engineering A, B, C, D

Spring Semester(1)(2) Autumn Semester(1)(2) (0-0-1) (Every Year) for Doctor Degree

Academic Advisor

[Aims and Scope]

The student will act as a teaching assistant in an institution. The student will experience the actual practice in her/his own field to enhance the teaching and training skills for her/his future profession.

61096

61097

61098

61099

Collaborative Project in Civil Engineering A, B, C, D

Spring Semester(1)(2) Autumn Semester(1)(2) (0-0-1) (Every Year) for Doctor Degree

Academic Advisor

[Aims and Scope]

Through collaborative works on group projects and presentations on specific issues, the student will enhance the ability of mutual communication, negotiation, and collaboration.