



# Civil Engineering (CE)

## Curriculum Outline

The Civil Engineering Program aims to produce graduates with sufficient fundamental knowledge in broad fields, and at the same time with strong knowledge in a specific area. This will enable graduates to serve the industrial sectors in Thailand where the need for specialists is increasing day by day. In this curriculum, two main areas of study are provided for selection. They are 1) general civil engineering, and 2) infrastructure engineering.

The general civil engineering option gives emphasis to various major fields of civil engineering, which include 1) structural engineering, 2) concrete engineering, 3) soil and foundation engineering, 4) water resources engineering, and 5) transportation engineering. The infrastructure engineering option, though still concentrating on the above major fields, puts more emphasis on knowledge related to infrastructure.

The total credits for major engineering subjects in both options are uniformly distributed to all five major fields, except for the field of structural engineering which has a slightly larger number of credits. For students in the infrastructure engineering option, a few major courses provided in the general civil engineering option are replaced by courses related to the infrastructure engineering field.

Further specialization can be achieved through the elective courses and the project. A practical training course is also provided to let students have a chance to practice civil engineering during their studies. In the practical training course, students will be placed in organizations that are related to their specialty in order to provide them with some practical experiences in their specialized field. In this curriculum, it is possible for students to study their elective courses at other universities, including foreign universities, as exchange students during the final semester. With special arrangements, it will also be possible for students to have thorough practical training during the final semester.

## Structure and Components

<b>1. General Basic Courses</b>	<b>30</b>	<b>Credits</b>
1.1 Part I	21	Credits
1.1.1 Humanities	2	Credits
1.1.2 Social Sciences	5	Credits
1.1.3 Languages	9	Credits
1.1.4 Science and Mathematics	5	Credits
1.2 Part II	9	Credits
<b>2. Core Courses</b>	<b>114</b>	<b>Credits</b>
2.1 Compulsory Courses	93	Credits
2.1.1 Science and Mathematics	21	Credits
2.1.2 Civil Engineering Courses	61	Credits
2.1.3 Non-Civil Engineering Courses	11	Credits
2.2 Compulsory Elective Courses	18	Credits
2.3 Technical Elective Courses	3	Credits
<b>3. Free Elective Courses</b>	<b>6</b>	<b>Credits</b>
<b>Total</b>	<b>150</b>	<b>Credits</b>

## Details of the Curriculum

<b>1. General Basic Courses</b>	<b>30</b>	<b>Credits</b>
1.1 Part I	21	Credits
1.1.1 Humanities	2	Credits
TU110		
1.1.2 Social Sciences	5	Credits
TU100	TU120	
1.1.3 Languages	9	Credits
EL171	EL172	TU140
1.1.4 Science and Mathematics	5	Credits
ITS100	TU130	
1.2 Part II	9	Credits
GTS132	GTS133	GTS202
<b>2. Core Courses</b>	<b>114</b>	<b>Credits</b>
2.1 Compulsory Courses	93	Credits
2.1.1 Science and Mathematics	21	Credits
MAS116	MAS117	MAS210
SCS138	SCS139	SCS176
SCS184		
2.1.2 Civil Engineering Courses	61	Credits
CES201	CES202	CES215
CES312	CES321	CES322
CES332	CES333	CES343
CES352	CES353	CES361
CES371	CES381	CES382
CES414	CES426	CES444
2.1.3 Non-Civil Engineering Courses	11	Credits
GTS302	IES371	MES300
MES350		
2.2 Compulsory Elective Courses	18	Credits
2.2.1 (CES303 and CES407) or (CES303 and (CES405 and CES406)) or CES408		
2.2.2 <b>Option I: General Civil Engineering</b>		
CES302	CES315	CES341
CES423		
<b>Option II: Infrastructure Engineering</b>		
CES305	CES344	CES424
CES450		
2.3 Technical Elective Courses	3	Credits
Select 3 credits from the list of courses offered by the Civil Engineering Program, except basic courses.		
CESxxx		
<b>3. Free Elective Courses</b>	<b>6</b>	<b>Credits</b>
Select any courses offered by the university, except basic courses.		
XXXxxx, XXXxxx		
<b>Total Credit Requirement</b>	<b>150</b>	<b>Credits</b>

## CE Curriculum : 150 Credits

### Course

Credits (lecture-practice-self study hrs)

#### First Year

##### Semester I

EL171	English Course II	3(3-0-6)
GTS132	Introduction to Biological Science	3(3-0-6)
MAS116	Mathematics I	3(3-0-6)
SCS126	Chemistry for Engineers	3(3-0-6)
SCS138	Applied Physics I	3(3-0-6)
SCS176	Chemistry Laboratory	1(0-3-0)
SCS183	Physics Laboratory I	1(0-3-0)
TU100	Civic Education	3(3-0-6)
TU130	Integrated Sciences and Technology	2(2-0-4)
	<b>Sub-Total</b>	<b>22(20-6-40)</b>

##### Semester II

EL172	English Course III	3(3-0-6)
GTS133	Environmental Studies	3(2-2-5)
ITS100	Introduction to Computers and Programming	3(2-3-4)
MAS117	Mathematics II	3(3-0-6)
SCS139	Applied Physics II	3(3-0-6)
SCS184	Physics Laboratory II	1(0-3-0)
TU140	Thai Studies	3(3-0-6)
	<b>Sub-Total</b>	<b>19(16-8-33)</b>

#### Second Year

##### Semester I

CES201	Engineering Materials	3(3-0-6)
CES215	Applied Mathematics in Civil Engineering	3(3-0-6)
CES361	Surveying	3(2-3-4)
GTS202	English Language Structures	3(3-0-6)
MAS210	Mathematics III	3(3-0-6)
MES300	Engineering Drawing	3(2-3-4)
MES350	Engineering Statics	3(3-0-6)
	<b>Sub-Total</b>	<b>21(19-6-38)</b>

##### Semester II

CES202	Introduction to Building Facilities	3(3-0-6)
CES371	Mechanics of Solids I	3(3-0-6)
GTS302	Technical Writing	2(2-1-3)
IES371	Engineering Management	3(3-0-6)
TU110	Integrated Humanities	2(2-0-4)

##### **Option I: General Civil Engineering**

CES302	Engineering Hydrology	3(3-0-6)
	<b>Sub-Total</b>	<b>16(16-1-31)</b>

##### **Option II: Infrastructure Engineering**

CES305	Urban Hydrology	3(3-0-6)
	<b>Sub-Total</b>	<b>16(16-1-31)</b>

##### Summer

CES362	Field Surveying Camp	1(0-80-0)
	<b>Sub-Total</b>	<b>1(0-80-0)</b>

#### Third Year

##### Semester I

CES311	Theory of Structures	3(3-0-6)
CES331	Soil Mechanics	3(3-0-6)
CES333	Soil Mechanics Laboratory	1(0-3-0)
CES351	Concrete Technology	3(2-3-4)
CES381	Hydraulics	3(3-0-6)
CES382	Hydraulics Laboratory	1(0-3-0)

##### **Option I: General Civil Engineering**

CES315	Computational Methods in Civil Engineering	3(3-0-6)
CES341	Transportation Engineering and Planning	3(3-0-6)
	<b>Sub-Total</b>	<b>20(18-6-36)</b>

### Course

Credits (lecture-practice-self study hrs)

##### **Option II: Infrastructure Engineering**

CES344	Logistics System Engineering	3(3-0-6)
CES450	Urban Engineering	3(3-0-6)
	<b>Sub-Total</b>	<b>20(18-6-36)</b>

##### Semester II

CES312	Structural Analysis	3(3-0-6)
CES322	Reinforced Concrete Design	4(3-3-6)
CES332	Foundation Engineering	3(3-0-6)
CES343	Highway Engineering	3(3-0-6)
CES352	Material Testing	1(0-3-0)
CES426	Durability of Concrete Structures	3(3-0-6)
CES444	Hydraulic Engineering	3(3-0-6)
	<b>Sub-Total</b>	<b>20(18-6-36)</b>

##### Summer

Select either Senior Project Track, Foreign Exchange Track, or Extended Training Track.

##### **1. Senior Project Track and Foreign Exchange Track**

CES303	Civil Engineering Training	0(0-0-0)
	<b>Sub-Total</b>	<b>0(0-0-0)</b>

##### **2. Extended Training Track**

XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	<b>Sub-Total</b>	<b>6(x-x-x)</b>

#### Fourth Year

##### Semester I

CES321	Timber and Steel Design	4(3-3-6)
CES353	Construction Engineering and Management	3(3-0-6)
CES403	Seminar	1(0-3-0)
CES414	Finite Element Methods in Engineering	3(3-0-6)
CESxxx	Technical Elective	3(x-x-x)
TU120	Integrated Social Sciences	2(2-0-4)

##### **Option I: General Civil Engineering**

CES423	Building Design	3(3-0-6)
	<b>Sub-Total</b>	<b>19(x-x-x)</b>

##### **Option II: Infrastructure Engineering**

CES424	Bridge Engineering	3(3-0-6)
	<b>Sub-Total</b>	<b>19(x-x-x)</b>

##### Semester II

##### **1) Senior Project Track**

CES407	Senior Project	6(0-18-0)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	<b>Sub-Total</b>	<b>12(x-x-x)</b>

##### **2) Foreign Exchange Track**

CES405	Special Study in Civil Engineering I	3(3-0-6)
CES406	Special Study in Civil Engineering II	3(3-0-6)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	<b>Sub-Total</b>	<b>12(x-x-x)</b>

##### **3) Extended Training Track**

CES408	Extended Civil Engineering Training	6(0-40-0)
	<b>Sub-Total</b>	<b>6(0-40-0)</b>