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

1.	**General Basic Courses**		**30**	**Credits**
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
2.	**Major Courses**		**114**	**Credits**
2.1	Basic Courses		52	Credits
	2.1.1	Basic Mathematics and Sciences Courses	21	Credits
	2.1.2	Basic Engineering Courses	31	Credits
2.2	Specialized Courses		62	Credits
	2.2.1	Compulsory Engineering Courses	40	Credits
	2.2.2	Elective Engineering Courses	22	Credits
3.	**Free Elective Courses**		**6**	**Credits**
	Total		**150**	**Credits**

Details of the Curriculum

1. General Basic Courses **30 Credits**

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

2. Major Courses **114 Credits**

2.1 Basic Courses 52 Credits

2.1.1 Basic Mathematics and Sciences Courses 21 Credits
MAS116 MAS117 MAS210 SCS126
SCS138 SCS139 SCS176 SCS183
SCS184

2.1.2 Basic Engineering Courses 31 Credits
CES201 CES202 CES215 CES361
CES362 CES371 CES381 CES382
GTS302 IES371 MES300 MES350

2.2 Specialized Courses 62 Credits

2.2.1 Compulsory Engineering Courses 40 Credits

2.2.1.1 Structural Engineering & Materials
CES311 CES312 CES321 CES322
CES351 CES352 CES414 CES426

2.2.1.2 Soil & Hydraulics Engineering
CES331 CES332 CES333 CES444

2.2.1.3 Surveying & Engineering Management
CES343 CES353

2.2.2 Elective Engineering Courses 22 Credits

2.2.2.1 Group (select 1 group)

2.2.2.1.1 General Civil Engineering 13 Credits
CES302 CES315 CES341 CES423
CES403
or

2.2.2.1.2 Infrastructure Engineering 13 Credits
CES305 CES344 CES424 CES450
CES 403
and

2.2.2.2 Special Study (select 1 group)

2.2.2.2.1 Training and Senior Project 6 Credits
CES303 CES407
or

2.2.2.2.2 Training and Special Study 6 Credits
CES303 CES405 CES406
or

2.2.2.2.3 Extended Training 6 Credits
CES 408
and

2.2.2.3 Technical Elective Courses 3 Credits
Select 3 credits from the list of courses offered by the Civil Engineering Program, except basic courses.
CESxxx

3. Free Elective Courses **6 Credits**
Select any courses offered by the university, except basic courses.
XXXxxx, XXXxxx

Total Credit Requirement **150 Credits**

CE Curriculum : 150 Credits

Course		Credits (lecture-practice-self study hours)

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)
	Sub-Total	**22(20-6-40)**

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)
	Sub-Total	**19(16-8-33)**

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)
	Sub-Total	**21(19-6-38)**

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)
	Sub-Total	**16(16-1-31)**
	Option II: Infrastructure Engineering	
CES305	Urban Hydrology	3(3-0-6)
	Sub-Total	**16(16-1-31)**

Summer

CES362	Field Surveying Camp	1(0-80-0)
	Sub-Total	**1(0-80-0)**

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)

Course		Credits (lecture-practice-self study hours)

	Option I: General Civil Engineering	
CES315	Computational Methods in Civil Engineering	3(3-0-6)
CES341	Transportation Engineering and Planning	3(3-0-6)
	Sub-Total	**20(17-9-34)**
	Option II: Infrastructure Engineering	
CES344	Logistics System Engineering	3(3-0-6)
CES450	Urban Engineering	3(3-0-6)
	Sub-Total	**20(17-9-34)**

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)
	Sub-Total	**20(18-6-36)**

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)
	Sub-Total	**0(0-0-0)**

2. Extended Training Track

XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
	Sub-Total	**6(x-x-x)**

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)
	Sub-Total	**19(x-x-x)**
	Option II: Infrastructure Engineering	
CES424	Bridge Engineering	3(3-0-6)
	Sub-Total	**19(x-x-x)**

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)
	Sub-Total	**12(x-x-x)**

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)
	Sub-Total	**12(x-x-x)**

3) Extended Training Track

CES408	Extended Civil Engineering Training	6(0-40-0)
	Sub-Total	**6(0-40-0)**