

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, four main areas of study are provided for selection. They are 1) general civil engineering, 2) infrastructure engineering, 3) construction management, and 4) building facilities 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 other three options, though still concentrating on the above major fields, put more emphasis on knowledge related to infrastructure, construction management and building facilities.

The total credits for major engineering subjects in all 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, construction management, and building facilities engineering options, a few major courses provided in the general civil engineering option are replaced by courses related to their respective fields. The differences between the four options of study start during the second year of the curriculum.

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 Humanities	6 Credits
1.2 Social Sciences	3 Credits
1.3 English Language	9 Credits
1.4 Science and Mathematics	12 Credits
2. Core Courses	114 Credits
2.1 Compulsory Courses	90 Credits
2.2 Compulsory Elective Courses	21 Credits
2.3 Technical Elective Courses	3 Credits
3. Free Elective Courses	6 Credits
Total	<u>150</u> Credits

Details of the Curriculum

1. General Basic Courses	30 Credits
1.1 Humanities (2 courses)	6 Credits
TU 110 TU 140	
1.2 Social Sciences (1 course)	3 Credits
TU 120	
1.3 English Language (3 courses)	9 Credits
EL 171 EL 172 EL 210	
1.4 Science and Mathematics (4 courses)	12 Credits
GTS 132 GTS 133 ITS 050 TU 130	
2. Core Courses	114 Credits
2.1 Compulsory Courses (34-36 courses)	90 Credits
BFS 307 BFS 309 CES 215 CES 311 CES 312	
CES 321 CES 322 CES 331 CES 333 CES 343	
CES 351 CES 352 CES 353 CES 361 CES 371	
CES 381 CES 382 CES 403 [(CES 303 & CES 407) or	
(CES 303 & CES 405 & CES 406) or (CES 408)] CES 414	
ECS 303 EMS 211 GTS 302 MAS 116 MAS 117	
MAS 210 MES 231 MES 300 SCS 126 SCS 138	
SCS 139 SCS 176 SCS 183 SCS 184	
2.2 Compulsory Elective Courses	21 Credits
2.2.1 Option I: General Civil Engineering	
(7 courses)	
CES 302 CES 304 CES 315 CES 323	
CES 332 CES 341 CES 444	
2.2.2 Option II: Infrastructure Engineering	
(7 courses)	
CES 302 CES 332 CES 341 CES 424	
CES 425 CES 444 CES 450	
2.2.3 Option III: Construction Management	
(7 courses)	
CES 304 CES 315 CES 341 CES 354	
CES 355 CES 424 CES 425	
2.2.4 Option IV: Building Facilities Engineering	
(7 courses)	
BFS 302 BFS 305 BFS 308 BFS 406	
CES 323 CES 332 EPS 301	
2.3 Technical Elective Courses	3 Credits
Select 3 credits from the list of courses	
offered by Civil Engineering Program,	
except basic courses.	
CES xxx	
3. Free Elective Courses	6 Credits
Select any courses offered by the university,	
except basic courses.	
XXX xxx, XXX xxx	
Total Credit Requirement	<u>150</u> Credits

CE Curriculum : 150 Credits

First Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
EL 171 English Course II	3(3-1-5)
ITS 050 Intro. to Computers and Programming	3(2-3-4)
MAS 116 Mathematics I	3(3-1-5)
SCS 126 Chemistry for Engineers	3(3-1-5)
SCS 138 Applied Physics I	3(3-1-5)
SCS 176 Chemistry Laboratory	1(0-3-0)
SCS 183 Physics Laboratory I	1(0-3-0)
TU 130 Integrated Science and Technology	3(3-0-6)
Sub-Total	20(17-13-30)

Semester II

EL 172 English Course III	3(3-1-5)
GTS 132 Introduction to Life Sciences	3(3-1-5)
GTS 133 Environmental Studies	3(2-2-5)
MAS 117 Mathematics II	3(3-1-5)
SCS 139 Applied Physics II	3(3-1-5)
SCS 184 Physics Laboratory II	1(0-3-0)
TU 140 Thai Studies	3(3-0-6)
Sub-Total	19(17-9-31)

Second Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
BFS 307 Engineering Materials	3(3-1-5)
CES 215 Applied Mathematics in Civil Engineering	3(3-0-6)
CES 361 Surveying	3(2-3-4)
EL 210 English for Engineering I	3(3-1-5)
MAS 210 Mathematics III	3(3-1-5)
MES 231 Engineering Mechanics	3(3-1-5)
MES 300 Engineering Drawing	3(2-3-4)
Sub-Total	21(19-10-34)

Semester II

CES 371 Mechanics of Solids I	3(3-1-5)
ECS 303 Basic Electrical Engineering	3(3-1-5)
EMS 211 Thermofluids	3(3-1-5)
GTS 302 Technical Writing	2(2-1-3)
TU 110 Integrated Humanities	3(3-0-6)

Option I: General Civil Engineering

CES 302 Engineering Hydrology	3(3-0-6)
CES 304 Engineering Geology	3(3-0-6)
Sub-Total	20(20-4-36)

Option II: Infrastructure Engineering

CES 302 Engineering Hydrology	3(3-0-6)
TU 120 Integrated Social Science	3(3-0-6)
Sub-Total	20(20-4-36)

Option III: Construction Management

CES 304 Engineering Geology	3(3-0-6)
TU 120 Integrated Social Science	3(3-0-6)
Sub-Total	20(20-4-36)

Option IV: Building Facilities Engineering

BFS 302 Computer Networking for Buildings	3(3-0-6)
TU 120 Integrated Social Science	3(3-0-6)
Sub-Total	20(20-4-36)

CE Curriculum : 150 Credits

Third Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
CES 311 Theory of Structures	3(3-0-6)
CES 331 Soil Mechanics	3(3-0-6)
CES 333 Soil Mechanics Laboratory	1(0-3-0)
CES 351 Concrete Technology	3(3-0-6)
CES 381 Hydraulics	3(3-0-6)
CES 382 Hydraulics Laboratory	1(0-3-0)
<i>Option I: General Civil Engineering</i>	
CES 315 Computational Methods in Civil Engineering	3(3-0-6)
CES 341 Transportation Engineering and Planning	3(3-0-6)
Sub-Total	20(18-6-36)
<i>Option II: Infrastructure Engineering</i>	
CES 341 Transportation Engineering and Planning	3(3-0-6)
CES 450 Urban Engineering	3(3-0-6)
Sub-Total	20(18-6-36)
<i>Option III: Construction Management</i>	
CES 315 Computational Methods in Civil Engineering	3(3-0-6)
CES 341 Transportation Engineering and Planning	3(3-0-6)
Sub-Total	20(18-6-36)
<i>Option IV: Building Facilities Engineering</i>	
BFS 308 Air Conditioning Systems for Buildings	3(3-0-6)
EPS 301 Basic Electromechanical Energy Conversion	3(3-1-5)
Sub-Total	20(18-7-35)

Semester II

CES 312 Structural Analysis	3(3-0-6)
CES 322 Reinforced Concrete Design	3(3-1-5)
CES 343 Highway Engineering	3(3-0-6)
CES 352 Material Testing	1(0-3-0)
CES 353 Construction Engineering and Management	3(3-0-6)
<i>Option I: General Civil Engineering</i>	
CES 332 Foundation Engineering	3(3-0-6)
CES 444 Hydraulic Engineering	3(3-0-6)
Sub-Total	19(18-4-35)
<i>Option II: Infrastructure Engineering</i>	
CES 332 Foundation Engineering	3(3-0-6)
CES 444 Hydraulic Engineering	3(3-0-6)
Sub-Total	19(18-4-35)
<i>Option III: Construction Management</i>	
CES 354 Civil Engineering Project Appraisal	3(3-0-6)
CES 425 Construction Methods and Technologies	3(3-0-6)
Sub-Total	19(18-4-35)
<i>Option IV: Building Facilities Engineering</i>	
BFS 305 Fluid Machines for Buildings	3(3-0-6)
CES 332 Foundation Engineering	3(3-0-6)
Sub-Total	19(18-4-35)

Summer

CES 303 Civil Engineering Training	0(0-0-0)
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(Except for students who will select to take CES 408)

Fourth Year

<i>Semester I</i>	<i>Credits (lecture-practice-self study hrs)</i>
BFS 309 Durability of Construction Materials	3(3-0-6)
CES 321 Timber and Steel Design	3(3-1-5)
CES 403 Seminar	1(0-3-0)
CES 414 Finite Element Methods in Engineering	3(3-0-6)
CES xxx Technical Elective	3(x-x-x)
<i>Option I: General Civil Engineering</i>	
CES 323 Advanced Structural Concrete Design	3(3-0-6)
TU 120 Integrated Social Science	3(3-0-6)
Sub-Total	19(x-x-x)
<i>Option II: Infrastructure Engineering</i>	
CES 424 Bridge Engineering	3(3-0-6)
CES 425 Construction Methods and Technologies	3(3-0-6)
Sub-Total	19(x-x-x)
<i>Option III: Construction Management</i>	
CES 355 Construction Estimating and Tendering	3(3-0-6)
CES 424 Bridge Engineering	3(3-0-6)
Sub-Total	19(x-x-x)
<i>Option IV: Building Facilities Engineering</i>	
BFS 406 Building Protection, Repair and Maintenance	3(3-0-6)
CES 323 Advanced Structural Concrete Design	3(3-0-6)
Sub-Total	19(x-x-x)

Semester II

XXX xxx Free Elective	3(x-x-x)
XXX xxx Free Elective	3(x-x-x)

and one of the following 3 tracks:

1) Senior Project Track	
CES 407 Senior Project	6(0-18-0)
2) Foreign Exchange Track	
(CES 405 Special Study in Civil Engineering I	3(3-0-6)
(CES 406 Special Study in Civil Engineering II	3(3-0-6)
3) Extended Training Track	
CES 408 Extended Civil Engineering Training	6(0-40-0)
Sub-Total	12(x-x-x)

Note: Students who plan to take the Extended Civil Engineering Training are advised to take the two free elective courses in the summer session of the 3rd year.