

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 the 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 different groups of civil engineering works 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 will be replaced by courses related to their respective fields. The differences between the four options of study will be from the second years 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 experience 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 and Basic Courses in Science and Mathematics	48 Credits
1.1 Humanities	6 Credits
1.2 Social Sciences	3 Credits
1.3 English Language	9 Credits
1.4 Science and Mathematics	30 Credits
2. Core Courses	96 Credits
2.1 Compulsory Courses	69 Credits
2.2 Compulsory Elective Courses	24 Credits
2.3 Practical Training	(No) Credit
2.4 Technical Elective Course	3 Credits
3. Free Elective Courses	6 Credits
Total	150 Credits

Details of the Curriculum

1. General Basic Courses and Basic Courses in Science and Mathematics	48 Credits
1.1 Humanities (2 courses) TU 110 TU 140	6 Credits
1.2 Social Sciences (1 course) TU 120	3 Credits
1.3 English Language (3 courses) EL 171 EL 172 EL 210	9 Credits
1.4 Science and Mathematics (12 courses) EVS 150 GTS 131 MAS 116 MAS 117 MAS 210 SCS 126 SCS 138 SCS 139 SCS 176 SCS 183 SCS 184 TU 130	30 Credits
2. Core Courses	96 Credits
2.1 Compulsory Courses (26 courses)	69 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 404 or CES 405) CES 414 EMS 211 GTS 302 ITS 050 MES 231 MES 300 TCS 303	
2.2 Compulsory Elective Courses	24 Credits
2.2.1 <i>Option I: General Civil Engineering</i> (8 courses) CES 302 CES 304 CES 315 CES 323 CES 332 CES 341 CES 444 CES 446	
2.2.2 <i>Option II: Infrastructure Engineering</i> (8 courses) CES 302 CES 332 CES 341 CES 424 CES 425 CES 444 CES 446 CES 450	
2.2.3 <i>Option III: Construction Management</i> (8 courses) CES 304 CES 315 CES 341 CES 354 CES 355 CES 424 CES 425 CES 446	
2.2.4 <i>Option IV: Building Facilities Engineering</i> (8 courses) BFS 302 BFS 305 BFS 308 BFS 406 CES 323 CES 332 CES 425 EPS 301	
2.3 Practical Training CES 303	(No) Credit
2.4 Technical Elective Courses Select 3 credits from the list of courses offered by Civil Engineering Program, except basic courses. CES xxx	3 Credits
3. Free Elective Courses	6 Credits
Select any courses offered by the university, except basic courses. XXX xxx	
Total Credit Requirement	150 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)
EVS 150 Environmental Studies	3(3-0-6)
GTS 131 Integrated Life Science	3(3-1-5)
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(18-7-32)

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)
EMS 211 Thermofluids	3(3-1-5)
GTS 302 Technical Writing	2(2-1-3)
TCS 303 Basic Electrical Engineering	3(3-1-5)
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

Semester I Credits (lecture-practice-self study hrs)

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)

Option I: General Civil Engineering

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)

Option II: Infrastructure Engineering

CES 341	Transportation Engineering and Planning	3(3-0-6)
CES 450	Urban Engineering	3(3-0-6)
Sub-Total		20(18-6-36)

Option III: Construction Management

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)

Option IV: Building Facilities Engineering

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)

Option I: General Civil Engineering

CES 332	Foundation Engineering	3(3-0-6)
CES 444	Hydraulic Engineering	3(3-0-6)
CES 446	Port and Airport Engineering	3(3-0-6)
Sub-Total		22(21-4-41)

Option II: Infrastructure Engineering

CES 332	Foundation Engineering	3(3-0-6)
CES 444	Hydraulic Engineering	3(3-0-6)
CES 446	Port and Airport Engineering	3(3-0-6)
Sub-Total		22(21-4-41)

Option III: Construction Management

CES 354	Civil Engineering Project Appraisal	3(3-0-6)
CES 446	Port and Airport Engineering	3(3-0-6)
Sub-Total		19(18-4-35)

Option IV: Building Facilities Engineering

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)
---------	----------------------------	----------

Fourth Year

Semester I Credits (lecture-practice-self study hrs)

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)

Option I: General Civil Engineering

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)

Option II: Infrastructure Engineering

CES 424	Bridge Engineering	3(3-0-6)
CES 425	Construction Methods and Technologies	3(3-0-6)

Sub-Total

19(x-x-x)

Option III: Construction Management

CES 355	Construction Estimating and Tendering	3(3-0-6)
---------	---------------------------------------	----------

CES 424	Bridge Engineering	3(3-0-6)
CES 425	Construction Methods and Technologies	3(3-0-6)

Sub-Total

22(x-x-x)

Option IV: Building Facilities Engineering

BFS 406	Building Protection, Repair and Maintenance	3(3-0-6)
---------	---------------------------------------------	----------

CES 323	Advanced Structural Concrete Design	3(3-0-6)
CES 425	Construction Methods and Technologies	3(3-0-6)

Sub-Total

22(x-x-x)

Semester II

CES 404	Civil Engineering Project	3(0-9-0)
or		
CES 405	Special Study in Civil Engineering I	3(3-0-6)

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

Sub-Total

9(x-x-x)