

Computer Science (CS)

Curriculum Outline

The Computer Science curriculum is designed to prepare students for new trends in software development and frontier informatics. Students will be exposed to a wide range of subjects covering all aspects of Computer Science and its applications. Emphasis is put on large-scaled software development methodology and computer applications in multi-disciplinary fields, such as bioinformatics, multimedia processing and knowledge management.

Structure and Components

1. General Basic Courses and Basic Courses in Science and Mathematics	51 Credits
1.1 Humanities	6 Credits
1.2 Social Sciences	9 Credits
1.3 English Language	9 Credits
1.4 Science and Mathematics	27 Credits
2. Core Courses	92 Credits
2.1 Compulsory Courses	77 Credits
2.2 Compulsory Elective Courses	12 Credits
2.3 Practical Training	(No) Credit
2.4 Technical Elective Courses	3 Credits
3. Free Elective Courses	6 Credits
 Total	 <u>149</u> Credits

The compulsory core courses help students to

- (1) gain fundamental concepts related to computers and information technology that lead to high performance digital processing,
- (2) know the essence of software development methodology that leads to the effective and efficient development of large-scaled software, and
- (3) understand application of fundamental knowledge to frontier multi-disciplinary fields.

After gaining enough background through the compulsory core courses, the students are allowed to tailor their courses according to their personal interest. Twelve credits of compulsory elective courses which are required for graduation can be selected from one of these:

- (1) Major in General CS
- (2) Major in Software Engineering
- (3) Major in Informatics

Details of the Curriculum

1. General Basic Courses and Basic Courses in Science and Mathematics	51 Credits
1.1 Humanities (2 courses) TU 110 TU 140	6 Credits
1.2 Social Sciences (3 courses) EC 210 GTS 231 TU 120	9 Credits
1.3 English Language (3 courses) EL 171 EL 172 EL 210	9 Credits
1.4 Science and Mathematics (9 courses) EVS 150 GTS 121 GTS 122 GTS 131 GTS 211 MAS 116 MAS 117 MAS 210 TU 130	27 Credits
2. Core Courses	92 Credits
2.1 Compulsory Courses	77 Credits
2.1.1 Non CS Courses (24 courses)	59 Credits
GTS 302 IES 302 ITS 033 ITS 050 ITS 221 ITS 222 ITS 223 ITS 225 ITS 226 ITS 321 ITS 322 ITS 323 ITS 325 ITS 326 ITS 327 ITS 329 ITS 331 ITS 332 ITS 333 ITS 451 MTS 252 TCS 370 TCS 371 TCS 382	
2.1.2 CS Courses (5-6 courses)	18 Credits
CSS 221 CSS 222 CSS 321 CSS 322 CSS 403 or (CSS 495 and CSS 496)	
2.2 Compulsory Elective Courses	12 Credits
2.2.1 Option I: General CS	
Select 4 courses (12 credits) from the following courses: CSS 411 CSS 412 CSS 413 CSS 414 CSS 421 CSS 422 CSS 423 CSS 424 ITS 481 ITS 482 ITS 483 ITS 484 ITS 485 ITS 486 ITS 487 ITS 488 ITS 489	
2.2.2 Option II: Software Engineering	
(4 courses) CSS 411 CSS 412 CSS 413 CSS 414	
2.2.3 Option III: Informatics	
(4 courses) CSS 421 CSS 422 CSS 423 CSS 424	
2.3 Practical Training	(No) Credit
CSS 300	
2.4 Technical Elective Courses	3 Credits
Select 3 credits from the list of courses offered by SIIT, except basic courses. XXS xxx	
3. Free Elective Courses	6 Credits
Select any courses offered by the university, except basic courses. XXX xxx	
 Total Credit Requirement	 <u>149</u> Credits

CS Curriculum : 149 Credits

First Year

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

EC 210	Introductory Economics	3(3-1-5)
EL 171	English Course II	3(3-1-5)
GTS 121	General Science I	3(3-0-6)
ITS 050	Intro. to Computers and Programming	3(2-3-4)
MAS 116	Mathematics I	3(3-1-5)
MTS 252	Materials Science	3(3-0-6)
TU 130	Integrated Sciences and Technology	3(3-0-6)
Sub-Total		21(20-6-37)

Semester II

EL 172	English Course III	3(3-1-5)
EVS 150	Environmental Studies	3(3-0-6)
GTS 122	General Science II	3(3-0-6)
GTS 131	Integrated Life Science	3(3-1-5)
ITS 033	Programming and Algorithms	3(3-0-6)
MAS 117	Mathematics II	3(3-1-5)
Sub-Total		18(18-3-33)

Third Year

Semester I

CSS 321	Theory of Computation	3(3-0-6)
EL 210	English for Engineers I	3(3-1-5)
GTS 231	Law and Technology	3(3-1-5)
ITS 222	Principles of Programming Languages	3(3-0-6)
ITS 322	Database Management Systems	3(3-0-6)
ITS 323	Introduction to Data Communications	3(3-0-6)
ITS 326	Compiler Design	3(3-0-6)
ITS 331	Information Technology I Laboratory	1(0-3-0)
Sub-Total		22(21-5-40)

Semester II

CSS 322	Security and Cryptography	3(3-0-6)
ITS 327	Computer Network Architectures and Protocols	3(3-0-6)
ITS 329	System Analysis and Design	3(3-0-6)
ITS 332	Information Technology II Laboratory	1(0-3-0)
ITS 333	Information Technology III Laboratory	1(0-3-0)
ITS 451	Artificial Intelligence	3(3-0-6)

Option I: General CS

CSS xxx	Compulsory Elective	3(x-x-x)
CSS xxx	Compulsory Elective	3(x-x-x)
Sub-Total		20(x-x-x)

Option II: Software Engineering

CSS 411	Software Process and Quality Assurance	3(3-0-6)
CSS 412	Software Architecture	3(3-0-6)
Sub-Total		20(x-x-x)

Option III: Informatics

CSS 421	Pattern Recognition	3(3-0-6)
CSS 422	Knowledge Management and Discovery	3(3-0-6)
Sub-Total		20(x-x-x)

Summer

CSS 300	Computer Science Training	0(0-0-0)
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Second Year

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

GTS 211	Differential Equations and Numerical Methods	3(3-0-6)
ITS 221	Data Structures and Algorithms	3(3-0-6)
ITS 223	Programming Laboratory I	1(0-3-0)
ITS 321	Discrete Mathematics	3(3-0-6)
ITS 325	Computer Architecture	3(3-0-6)
MAS 210	Mathematics III	3(3-1-5)
TCS 370	Digital Circuit Laboratory	1(0-3-0)
TCS 371	Digital Circuits	3(3-0-6)
Sub-Total		20(18-7-35)

Semester II

CSS 221	Computer Graphics and Multimedia	3(2-3-4)
CSS 222	Object-Oriented Programming in JAVA	3(3-0-6)
IES 302	Engineering Statistics	3(3-1-5)
ITS 225	Operating System	3(3-0-6)
ITS 226	Programming Laboratory II	1(0-3-0)
TCS 382	Microprocessors	3(3-0-6)
TU 140	Thai Studies	3(3-0-6)
Sub-Total		19(17-7-33)

Fourth Year

Semester I

GTS 302	Technical Writing	2(2-1-3)
TU 110	Integrated Humanities	3(3-0-6)
TU 120	Integrated Social Sciences	3(3-0-6)
XXS xxx	Technical Elective	3(x-x-x)

Option I: General CS

CSS xxx	Compulsory Elective	3(x-x-x)
CSS xxx	Compulsory Elective	3(x-x-x)
Sub-Total		17(x-x-x)

Option II: Software Engineering

CSS 413	Software Verification and Validation	3(3-0-6)
CSS 414	Software Project Management	3(3-0-6)
Sub-Total		17(x-x-x)

Option III: Informatics

CSS 423	Bioinformatics	3(3-0-6)
CSS 424	Multimedia Processing	3(3-0-6)
Sub-Total		17(x-x-x)

Semester II

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

CSS 495	Special Topic in Computer Science I	3(3-0-6)
CSS 496	Special Topic in Computer Science II	3(3-0-6)

or		
CSS 403	Senior Project	6(0-18-0)

Sub-Total		12(x-x-x)
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If students wish to participate in the extended industrial training in their 4th year's second semester, the students are advised to take 6 credits of Free Elective Courses in the 3rd year's summer term and choose to take Senior Project.