

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 multidisciplinary fields, such as bioinformatics, multimedia processing, and knowledge management.

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 applications 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

Structure and Components

1. General Basic Courses	36 Credits
1.1 Part I	21 Credits
1.1.1 Humanities	3 Credits
1.1.2 Social Sciences	3 Credits
1.1.3 Languages	9 Credits
1.1.4 Science and Mathematics	6 Credits
1.2 Part II	15 Credits
2. Core Courses	108 Credits
2.1 Compulsory Courses	93 Credits
2.2 Compulsory Elective Courses	12 Credits
2.3 Technical Elective Courses	3 Credits
3. Free Elective Courses	6 Credits
Total	<u>150 Credits</u>

Details of the Curriculum

1. General Basic Courses	36 Credits
1.1 Part I	21 Credits
1.1.1 Humanities (1 course)	3 Credits
TU 110	
1.1.2 Social Sciences (1 course)	3 Credits
TU 120	
1.1.3 Languages (3 courses)	9 Credits
EL 171 EL 172 TU 140	
1.1.4 Science and Mathematics (2 courses)	6 Credits
ITS 100 TU 130	
1.2 Part II	15 Credits
EC 210 GTS101 GTS 133	
GTS 202 GTS231	
2. Core Courses	108 Credits
2.1 Compulsory Courses	93 Credits
2.1.1 Science and Mathematics (6 courses)	18 Credits
GTS 116 GTS 117 GTS 121	
GTS 122 GTS 210 GTS 211	
2.1.2 Non CS Courses (20 courses)	47 Credits
ECS 370 ECS 371 ECS 382 GTS 302	
IES 302 ITS 102 ITS 103 ITS 201	
ITS 221 ITS 227 ITS 231 ITS 322	
ITS 323 ITS 327 ITS 329 ITS 331	
ITS 332 ITS 333 ITS 336 MTS 252	
2.1.3 CS Courses (8-10 courses)	28 Credits
CSS 221 CSS 223 CSS 224 CSS 225	
CSS 321 CSS 322 CSS 323 CSS 400	
(CSS 300 and CSS 403) or	
(CSS 300, CSS 495 and CSS 496) or (CSS 499)	
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 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
Students may choose any free elective courses (not less than 6 credits in total) including general basic courses, except:	
1. General basic courses in Science and Mathematics	
2. All general basic TU courses in both part 1 and part 2	
Total Credit Requirement	<u>150 Credits</u>

CS Curriculum : 150 Credits

Course Credits (lecture-practice-self study hrs)

First Year

Semester I

EL 171	English Course II	3(3-0-6)
GTS 101	Skills Development for Technical Studies	3(3-1-5)
GTS 116	Mathematics for Technologists I	3(3-1-5)
GTS 121	General Science I	3(3-1-5)
GTS 133	Environmental Studies	3(2-2-5)
ITS 100	Introduction to Computers and Programming	3(2-3-4)
MTS 252	Materials Science	3(3-0-6)
	Sub-Total	21(19-8-36)

Semester II

EC 210	Introductory Economics	3(3-0-6)
EL 172	English Course III	3(3-0-6)
GTS 117	Mathematics for Technologists II	3(3-1-5)
GTS 122	General Science II	3(3-1-5)
ITS 102	Object-Oriented Programming	3(3-0-6)
ITS 103	Object-Oriented Programming Laboratory	1(0-3-0)
TU 130	Integrated Sciences and Technology	3(3-0-6)
	Sub-Total	19(18-5-34)

Second Year

Semester I

CSS 224	Computer Architectures	3(3-0-6)
ECS 371	Digital Circuits	3(3-0-6)
GTS 210	Mathematics for Technologists III	3(3-1-5)
GTS 211	Differential Equations and Numerical Methods	3(3-0-6)
ITS 201	Discrete Mathematics	3(3-0-6)
ITS 221	Data Structures and Algorithms	3(3-0-6)
ITS 231	Data Structures and Algorithms Laboratory	1(0-3-0)
	Sub-Total	19(18-4-35)

Semester II

CSS 221	Computer Graphics and Applications	3(2-3-4)
CSS 223	Principles of Programming Languages	3(3-0-6)
CSS 225	Operating System	3(3-0-6)
ECS 370	Digital Circuit Laboratory	1(0-3-0)
ECS 382	Microprocessors	3(3-0-6)
IES 302	Engineering Statistics	3(3-1-5)
ITS 227	Algorithm Design	3(3-1-5)
	Sub-Total	19(17-8-32)

Third Year

Semester I

CSS 321	Theory of Computation	3(3-0-6)
CSS 323	Compiler Design	3(3-0-6)
GTS 202	English Language Structures	3(3-1-5)
GTS 231	Law and Technology	3(3-1-5)
ITS 322	Database Management Systems	3(3-0-6)
ITS 323	Introduction to Data Communications	3(3-0-6)
ITS 331	Information Technology I Laboratory	1(0-3-0)
TU 110	Integrated Humanities	3(3-0-6)
	Sub-Total	22(21-5-40)

Semester II

CSS 322	Security and Cryptography	3(3-0-6)
GTS 302	Technical Writing	2(2-1-3)
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 336	Artificial Intelligence	3(3-0-6)

Course Credits (lecture-practice-self study hrs)

Option I: General CS

CSS xxx	Compulsory Elective	3(x-x-x)
CSS xxx	Compulsory Elective	3(x-x-x)
	Sub-Total	22(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	22(20-7-39)

Option III: Informatics

CSS 421	Pattern Recognition	3(3-0-6)
CSS 422	Knowledge Management and Discovery	3(3-0-6)
	Sub-Total	22(20-7-39)

Summer

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

1. Senior Project Track and Foreign Exchange Track

CSS 300	Computer Science Training	0(0-0-0)
	Sub-Total	0(0-0-0)

2. Extended Training Track

XXX xxx	Free Elective	3(x-x-x)
XXX xxx	Free Elective	3(x-x-x)
	Sub-Total	6(x-x-x)

Fourth Year

Semester I

CSS 400	Project Development	1(0-3-0)
TU 120	Integrated Social Sciences	3(3-0-6)
TU 140	Thai Studies	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	16(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	16(x-x-x)

Option III: Informatics

CSS 423	Bioinformatics	3(3-0-6)
CSS 424	Multimedia Processing	3(3-0-6)
	Sub-Total	16(x-x-x)

Semester II

1) Senior Project Track

CSS 403	Senior Project	6(0-18-0)
XXX xxx	Free Elective	3(x-x-x)
XXX xxx	Free Elective	3(x-x-x)
	Sub-Total	12(x-x-x)

2) Foreign Exchange Track

CSS 495	Special Topics in Computer Science I	3(3-0-6)
CSS 496	Special Topics in Computer Science II	3(3-0-6)
XXX xxx	Free Elective	3(x-x-x)
XXX xxx	Free Elective	3(x-x-x)
	Sub-Total	12(x-x-x)

3) Extended Training Track

CSS 499	Extended Computer Science Training	6(0-40-0)
	Sub-Total	6(0-40-0)