CS PATHWAY

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CURRICULUM STRUCTURE

**Total number of credits: 132 Credits**

1. **General Education Courses (30 Credits)**
   1. **Language Courses (14 Credits)**
   2. **Humanities Course (2 Credits)**
   3. **Social Science Courses (9 Credits)**
   4. **Science and Mathematics Courses (5 Credits)**
2. **Specialized Courses (90 Credits)**
   1. **Core Courses (18 Credits)**
   2. **Major Courses (39 Credits)**
   3. **Major Elective Courses (33 Credits)**
3. **Free Elective Courses (12 Credits)**

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GENERAL EDUCATION COURSES

**Language Courses (14 credits)  
ELE 1001 Communicative English I (2-3-6)  
ELE 1002 Communicative English II (2-3-6)  
ELE 2000 Academic English (2-3-6)  
ELE 2001 Advanced Academic English (2-3-6)  
GE 1410 Thai for Professional Communication (2-0-4)  
(for Thai students)  
or GE 1411 Thai Language for Multicultural Communication (2-0-4)  
(for non-Thai students)  
or GE 1412 Introductory Thai Usage (2-0-4)  
(for Thai students from International Program)**

**Humanities Course  
GE 2110 Human Civilizations and Global Citizens (2-0-4)**

**Social Science Courses**

**BBA 1004 Essential Marketing for Entrepreneurs (2-0-4)  
BBA 1005 Essential Finance for Entrepreneurs (2-0-4)  
BBA 1006 Essential Economics for Entrepreneurs (2-0-4)  
GE 2202 Ethics (3-0-6)**

**Science and Mathematics Courses  
BBA 1007 Data Analytics for Entrepreneurs (2-2-5)  
GE 1303 Science for Sustainable Future (2-0-4)**

SPECIALIZED COURSES

**Core Courses  
CSX 2003 Principles of Statistics (3-0-6)  
CSX 2006 Mathematics and Statistics for Data Science (3-0-6)  
CSX 2008 Mathematics Foundation for Computer Science (3-0-6)  
ITX 2005 Design Thinking (3-0-6)  
ITX 2007 Data Science (3-0-6)  
ITX 3007 Software Engineering (3-0-6)**

**Major CoursesOrganization Issues and Information Systems Group  
ITX 3002 Introduction to Information Technology (3-0-6)**

**Applications Technology Group  
CSX 3010 Senior Project I (0-9-0) (\*)  
CSX 3011 Senior Project II (0-9-0) (\*)**

**Technology and Software Methods Group  
CSX 3001 Fundamentals of Computer Programming (3-0-6) (\*)  
CSX 3002 Object-Oriented Concepts and Programming (3-0-6) (\*)  
CSX 3003 Data Structures and Algorithms (3-0-6) (\*)  
CSX 3004 Programming Languages (3-0-6) (\*)  
CSX 3009 Algorithm Design (3-0-6) (\*)**

**Systems Infrastructure Group  
CSX 2009 Cloud Computing (3-0-6)  
CSX 3005 Computer Networks (3-0-6) (\*)  
CSX 3006 Database Systems (3-0-6) (\*)  
CSX 3008 Operating Systems (3-0-6) (\*)**

**Hardware and Computer Architecture Group**

**CSX 3007 Computer Architecture (3-0-6) (\*)**

**(*Remark: \* These are major required courses. At least C grades are required to pass the courses.*)**

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MAJOR ELECTIVE COURSES

**Major Elective Courses are divided into two groups:**

**Major Elective Courses Group 1  
     1(A): Software Engineering and Development (SED)  
     1(B): Informatics and Data Science (IDS)  
   Major Elective Courses Group 2  
\* Students are required to choose one concentration out of 2 concentrations and study 5 subjects (15 credits) from the chosen concentration and study 6 subjects (18 credits) from all major elective courses.**

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MAJOR ELECTIVE COURSES GROUP 1

***Group 1(A): Software Engineering and Development*  
ITX 3004 Information System Analysis and Design (3-0-6)  
ITX 4104 Software Testing (3-0-6)  
CSX 4107 Web Application Development (3-0-6)  
CSX 4109 Android Application Development (3-0-6)  
CSX 4110 Backend Application Development (3-0-6)  
CSX 4407 Enterprise Application Development (3-0-6)  
CSX 4180-4199 Selected Topic [in Software Engineering] (3-0-6)**

***Group 1(B): Informatics and Data Science*  
CSX 4201 Artificial Intelligence Concepts (3-0-6)  
CSX 4203 Machine Learning (3-0-6)  
CSX 4207 Decision Support and Recommender Systems (3-0-6)  
CSX 4210 Natural Language Processing and Social Interactions (3-0-6)  
CSX 4211 Data Engineering (3-0-6)  
CSX 4212 Data Analytics (3-0-6)  
CSX 4213 Computer Vision (3-0-6)  
CSX 4280-4299 Selected Topic [in Data Science] (3-0-6)**

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MAJOR ELECTIVE COURSE GROUP 2

**CSX 4108 iOS Application Development (3-0-6)  
CSX 4202 Data Mining (3-0-6)  
CSX 4205 Big Data Analytics (3-0-6)  
CSX 4206 Data Warehousing and Business Intelligence (3-0-6)  
CSX 4208 Deep Learning (3-0-6)  
CSX 4306 Internet of Things (3-0-6)  
CSX 4501 Theory of Computation (3-0-6)  
CSX 4510 Neural Networks (3-0-6)  
CSX 4513 AR/VR Application Development (3-0-6)  
CSX 4514 Cross-platform Application Development (3-0-6)  
CSX 4515 Game Design and Development (3-0-6)  
CSX 4516 Reusability and Design Patterns (3-0-6)  
ITX 2004 UI/UX Design and Prototyping (3-0-6)  
ITX 3003 Business Systems (3-0-6)  
ITX 4212 Predictive Analytics (3-0-6)  
ITX 4213 Artificial Intelligence for Business (3-0-6)  
ITX 4502 Tech Startup (3-0-6)  
ITX 4509 Cybersecurity (3-0-6)  
ITX 4517 Software Configuration Management (3-0-6)  
ITX 4518 Blockchain and Digital Currencies (3-0-6)  
ITX 4519 Internetworking Workshop (3-0-6)  
CSX 4600-4699 Selected Topics (3-0-6)**