List of Courses in English for Exchange/Study Abroad Student – Academic Year 2023/2024
Faculty of Computer Science
Universitas Indonesia

No	Faculty	Program Study	Degree	Course Title	Course Code	Credit	Contact Hours	Term Offered	Campus	Course Description
1	Computer Science	Bachelor of Computer Science	Undergraduate	Advanced Programming	CSCM602223	4	4	2	Depok	The course builds upon thebasic programming techniques introduced inthe introductory programming courses and offers the first introductionto the implementation of more complex real-world programs. It covers techniques for programming in the largeand discusses advanced and latest emerging topics,including the latest technology for enterprise programming. It equips the students with the experience in designing, implementing, and maintaining moderatelycomplex, realistically- sized programs using an agile software development methodology, taking intoaccount the aspects of reusability, concurrency, documentation, and continuous integration.

2	Computer Science	Bachelor of Computer Science	Undergraduate	Automata & Theory of Languages	CSCM602241	4	4	1	Depok	This course discusses theoretical models of computation and formal languages. It covers theunderlying concept of theory of computation, several abstract machines as models of computation,including Turing Machines, formal languages such as context-free languages, and the limitation of computation.
3	Computer Science	Bachelor of Computer Science	Undergraduate	Calculus 1	CSGE601012	3	3	1	Depok	This course discusses basic concepts of calculusand emphasize its importance for solvingscientific problems andproviding the basis of many computational techniques .
4	Computer Science	Bachelor of Computer Science	Undergraduate	Calculus 2	CSCM601213	3	3	2	Depok	The course covers theadvanced topics of calculus and builds uponthe basic concepts of calculus introduced in thefirst part of the course.
5	Computer Science	Bachelor of Computer Science	Undergraduate	Computer Networks	CSCM603154	4	4	2	Depok	The course discusses theprinciples of computer networks and the internet.It emphasizes on the top- down approach of the computer networks andinternet model, starting from the application layeron the top. It works its

										way down toward the transport, network, data link, and physical layers.
6	Computer Science	Bachelor of Computer Science	Undergraduate	Data Structures & Algorithms	CSGE602040	4	4	2	Depok	The course discusses basic techniques for data abstractions and manipulation of such abstract structures through appropriate algorithms. It also introduces complexity analysis of space and time allocation in implementing algorithms.
7	Computer Science	Bachelor of Computer Science	Undergraduate	Databases	CSGE602070	4	4	1	Depok	This course discusses the basic concepts of database management including the aspect of modeling and design, language and facility, implementation and the application of databases.
8	Computer Science	Bachelor of Computer Science	Undergraduate	Discrete Mathematics 1	CSGE601010	3	3	1	Depok	This course discusses various topics on Discrete Mathematics that provide theoretical foundations to support advanced study in computer science. Applications of each topic in computer science are also discussed.
9	Computer Science	Bachelor of Computer Science	Undergraduate	Discrete Mathematics 2	CSGE601011	3	3	2	Depok	This course is a continuation of Discrete Mathematics 1 that provides further theoretical foundations for Computer Science. Topics covered are: Theory of

										Integers, Relations, Graphs, and Trees.
10	Computer Science	Bachelor of Computer Science	Undergraduate	Human-Computer Interaction	CSGE602024	3	3	1	Depok	This course focuses on the interface design concepts for a software. In this course, students are taught how to apply the principles of human-computer interaction in developing an application, and offer a better alternative interaction design. Materials are delivered through active learning methods, such as: small group discussions, project-based learning, and the use of e-learning management system. The scope discussed in this course includes the historical context of human-computer interaction (HCI), interaction design, cognition, techniques in HCI, social aspects of HCI, data collection and analysis, interaction design process, prototyping, and evaluation.
11	Computer Science	Bachelor of Computer Science	Undergraduate	Introduction to Artificial Intelligence and Data Science	CSGE603130	4	4	2	Depok	This course introduces the concepts and basic techniques of artificial intelligence (AI) and data science. Participants in this course will be equipped with basic

										theoretical understanding and practical skills to solve artificial intelligence and data science problems. In addition, they will also be equipped with an understanding of how data science makes artificial intelligence as the principle for processing knowledge from data.
12	Computer Science	Bachelor of Computer Science	Undergraduate	Introduction to Computer Organization	CSCM601252	3	3	2	Depok	This course provides the foundations of sequential computer organization consisting of input, output, memory, and processor (control and datapath). The understanding of these concepts will also be supported with some programming exercises using low-level languages, e.g., assembly languages.
13	Computer Science	Bachelor of Computer Science	Undergraduate	Introduction to Digital System	CSCM601150	4	4	1	Depok	This course provides a basic understanding and practical aspects in designing digital systems using high-level programming language. such as VHDL. The students will learn basic concepts in designing digital circuits, such as binary representation, Boolean algebra, finite-state-machine and instruction-set processors. They also learn basic components for design on

										different levels of abstractions such as transistors, gates, flip flops, adders, multipliers, registers, memories and processors.
14	Computer Science	Bachelor of Computer Science	Undergraduate	Linear Algebra	CSGE602012	3	3	1	Depok	This course prepares the students to be able to solve problems about matrix algebra and vector spaces. It also discusses the application of linear algebra in computer science.
15	Computer Science	Bachelor of Computer Science	Undergraduate	Numerical Analysis	CSCM603117	3	3	1	Depok	The course provides the basic knowledge of numerical methods to solve scientific and engineering problems. The students are trained to solve problems that require numerical analysis, e.g., using Matlab as the programming environment. Practical issues in implementing numerical methods, such as software reliability and hardware performance are also discussed.
16	Computer Science	Bachelor of Computer Science	Undergraduate	Operating Systems	CSCM602055	4	4	1	Depok	This course discusses the organization, structure and concepts of computer operating systems. The trade-off between the performance and the functionality in designing and implementing an operating system is

										discussed, with the emphasis on processes management, interprocess communication, memory management, I/O management, file system management, implementation examples (GNU/Linux and MS Windows), and the support provided by operating systems for distributed systems.
17	Computer Science	Bachelor of Computer Science	Undergraduate	Platform-Based Development	CSGE602022	4	4	1	Depok	This course discusses software development process on various platforms. The material studied in this course are related to various programming concepts and rules that are applied to a platform. Examples of platforms that are relevant today are web, mobile devices, embedded devices (robotics / Artificial Intelligence platforms), etc. Each platform has different characteristics, ranging from programming patterns, processing mechanisms, interaction between components / API / hardware, and interactions with users which are applied to high-level programming.

18	Computer Science	Bachelor of Computer Science	Undergraduate	Programming Foundations 1	CSGE601020	4	4	1	Depok	This course aims to teach the fundamental concepts and techniques of computer programming by means of Python programming language. This module is taught using a combination of lectures and hands-on programming exercises.
19	Computer Science	Bachelor of Computer Science	Undergraduate	Programming Foundations 2	CSGE601021	4	4	2	Depok	This course is the second part of the two-course Programming Foundations. It is built upon the knowledge and experience from the first part of Programming Foundations to enhance the programming skill. It specifically focuses on the object-oriented programming paradigm (using Java) and emphasizes the use of this paradigm in problem solving.
20	Computer Science	Bachelor of Computer Science	Undergraduate	Scientific Writing & Research Methodology	CSGE602091	3	3	1	Depok	This course focuses on methodolgy for doing research in computer science and develops students' scientific and critical thinking. It is also intended to enrich students' comprehension of the structure and execution of the written academic papers in reporting their research results. It involves the

										understanding of the process of writing, the techniques used in writing, and the writing itself. The development of writing should be an integrated approach of human-data-information-knowledge-tool interaction which may result in a sound and readable academic writing.
21	Computer Science	Bachelor of Computer Science	Undergraduate	Software Engineering	CSCM603125	3	3	2	Depok	This course discusses software engineering methodologies and life cycles , from requirements gathering, planning, analysis, design, implementation, and testing.
22	Computer Science	Bachelor of Computer Science	Undergraduate	Statistics & Probability	CSGE602013	3	3	1	Depok	This course provides basics of statistics and probability for data interpretation in order to support problem solving and decision making.