ENGLISH COURSES (INTERNATIONAL UNDERGRADUATE PROGRAM)

FACULTY OF COMPUTER SCIENCE – UNIVERSITAS INDONESIA

FOR EXCHANGE STUDENTS - AY 2019/2020

No	Program Study	Degree	Course Title	Course Code	Credits	Term Offered	Course Descriptions
1	Computer Science	Bachelor	Calculus 1	UIST600141	3	First Semester	This course discusses basic concepts of calculus and emphasize its importance for solving scientific problems and providing the basis of many computational techniques.
2	Computer Science	Bachelor	Physics	UIST601111	3	First Semester	
3	Computer Science	Bachelor	Discrete Mathematics 1	CSGE601010	3	First Semester	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.
4	Computer Science	Bachelor	Programming Foundations 1	CSGE601020	4	First Semester	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.
5	Computer Science	Bachelor	Introduction to Digital Systems	CSCM6011150	4	First Semester	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 f lops, adders, multipliers, registers, memories and processors.
6	Computer Science	Bachelor	English	UIGE600003	3	First Semester	
7	Computer Science	Bachelor	Calculus 2	CSCM602115	3	Second Semester	The course covers the advanced topics of calculus and builds upon the basic concepts of calculus introduced in the first part of the course.
8	Computer Science	Bachelor	Discrete Mathematics 2	CSGE601011	3	Second Semester	This course is a continuation of Discrete Mathematics 1 that provides further theoretical foundations for Computer Science.
9	Computer Science	Bachelor	Programming Foundations 2	CSGE601021	4	Second Semester	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.
10	Computer Science	Bachelor	Introduction to Computer Organization	CSCM601252	3	Second Semester	This course provides the foundations of sequential computer organization consisting of input, output, memory, and processor (control and data path). The understanding of these concepts will also be supported with some programming exercises using low-level languages, e.g. , assembly languages.
11	Computer Science	Bachelor	Linear Algebra	CSGE602012	3	Second Semester	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.

12	Computer Science	Bachelor	Religious Studies	UIGE60001*	2	Second Semester	
13	Computer Science	Bachelor	Operating Systems	CSGE602055	4	Third Semester	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, inter process 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.
14	Computer Science	Bachelor	Statistics & Probability	CSGE602013	3	Third Semester	This course provides basics of statistics and probability for data interpretation in order to support problem solving and decision making.
15	Computer Science	Bachelor	Data Structures & Algorithms	CSGE602040	4	Third Semester	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 al location in implementing algorithms.
16	Computer Science	Bachelor	Web Design & Programming	CSGE602022	3	Third Semester	This course starts with HTML and CSS (Cascading Style Sheet) as the basic components in a web page. It subsequently discusses the development dynamic web pages (using Java script) and Ajax programming. The course also touches upon server-side programming and web security.
17	Computer Science	Bachelor	Automata & Theory of Languages	CSCM602241	4	Third Semester	This course discusses theoretical models of computation and formal languages. It covers the underlying 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.
18	Computer Science	Bachelor	Arts & Sports	UIGE6000**	1	Third Semester	
19	Computer Science	Bachelor	Databases	CSGE602070	4	Fourth Semester	This course discusses the basic concept s of database management including the aspect of modeling and design, language and facility, implementation and the application of databases.
20	Computer Science	Bachelor	Advanced Programming	CSCM602023	4	Fourth Semester	The course builds upon the basic programming techniques introduced in the introductory programming courses and offers the first introduction to the implementation of more complex real -world programs. It covers techniques for programming in the large and 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 moderately complex, realistically-sized programs using an agile software development methodology, taking into account the aspects of reusability, concurrency, documentation, and continuous integration.
21	Computer Science	Bachelor	Intelligent Systems	CSCM603130	4	Fourth Semester	This course introduces basic concepts of artificial intelligence (AI) as well as a variety of approaches, techniques and methods in AI. The participants will be equipped with theoretical foundations and practical skills related to the development of intelligent (software) agents for solving a given problem.

22	Computer Science	Bachelor	Computer Networks	CSCM603154	4	Fourth Semester	The course discusses the principles of computer networks and the internet. It emphasizes on the top-down approach of the computer networks and internet model, starting from the application layer on the top. It works its way down toward the transport, network, data link, and physical layers.
23	Computer Science	Bachelor	Software Engineering	CSCM603125	3	Fourth Semester	This course discusses software engineering methodologies and life cycles , from requirements gathering, planning, analysis, design, implementation, and testing.
24	Computer Science	Bachelor	Systems Programming	CSCM603127	3	Fifth Semester	This course further discusses the concepts of operating systems, especially GNU/Linux, with an emphasize on the practical aspects. The students will be introduced to the different layers of implementation on operating systems, such as process management, file systems, IPC, socket network, and kernel structures. Practical exercises are realized on C/C++ language and some scripting tools for files manipulation.
25	Computer Science	Bachelor	Scientific Writing & Research Methodology	CSGE603291	3	Fifth Semester	This course focuses on methodology 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.

26	Computer Science	Bachelor	Numerical Analysis	CSCM603217	3	Fifth Semester	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 Mat lab as the programming environment. Practical issues in implementing numerical methods , such as software reliability and hardware performance are also discussed.
27	Computer Science	Bachelor	Software Engineering Projects	CSCM603228	6	Fifth Semester	The course provides the students with the experience to be actively involved in one semester software engineering project by running a complete software development lifecycle, from ideation until deployment. Practical issues related to development methodology and technology used will be discussed.
28	Computer Science	Bachelor	Computer and Society	CSGE614093	3	Fifth Semester	This course aims to raise the students' awareness and sensibility to various social and economic problems regarding the implementation of computer technologies in daily lives. The students will be exposed to some issues related to IT and are required to analyze the issues and to recommend some solutions from their point of view as a student of computer science.