

Computer Science

Introduction

In the new millennium and the global era, the role of information and automation in the various domains and activities of the business industry are becoming more important. The successes of the activities are determined by its information system. Information must be up-to-date, accurate and comprehensive to allow decision makers to determine the enterprise's strategy. Furthermore, automation can facilitate human activity, accelerate the pace of work and make it more effective and efficient, while also increasing productivity in various activities. The development of communication and computer technology has made it possible to get information that is rapid, exact, and accurate, while increasing the application of automation in various fields such as Industry, business, office affairs and in the development of science and technology.

The Computer Science study program was founded in September 1987, under STMIK BINA NUSANTARA; it became one of the programs under the coordination of the Faculty of Computer Science, BINA NUSANTARA UNIVERSITY in December 1998.

The study of computer science at BINA NUSANTARA UNIVERSITY puts emphasis on the process, techniques, and tools that go into developing computer based systems, with specialities in object oriented software engineering, multimedia, web, database and computer network orientation.

Vision

Becoming a study program of choice in Computer Science which focuses in developing creative software solutions for the industry, is recognized internationally, champions innovation and delivers graduates with international qualification

Mission

The mission of Computer Science Department is to contribute to the global community through the provision of world-class education by :

1. Educate students with fundamental and advance knowledge, skill and practice in software development specialized in database technology, intelligence system, networking or multimedia and game development by providing an excellent learning environment and promoting research and collaboration with global industry
2. Providing IT professional services with emphasis in application of knowledge in terms of society development
3. Sharing application of knowledge related to computer science for Indonesian and international community quality of life improvement
4. Promoting students & lecturers to be creative and value-addings talents in computer science by creating suitable environment in order to be able to compete in international level
5. Preparing students for becoming smart and good ICT professionals, leaders and entrepreneurs in global market or for continuing in advanced studies

Program Objective

The objectives of the program are :

1. To provide students with a solid foundation of mathematical, algorithm principles, computer science knowledge and ethical that will be needed in IT practice.

2. To provide students with skills to apply design and development principles in the construction of software system applied in database technology, intelligence system, networking and multimedia development.
3. To prepare students with abilities to keep up-to-date with the latest Information Technology trends, developments and industries.
4. To prepare students with abilities in problem solving and good communication skills to be able to work as an individual or in a team in an IT environment.

Graduate Competency

At the end of the program, graduates will be able to :

1. Able to apply knowledge and understanding of mathematical concepts, principles and theories relating to computer science knowledge.
2. Able to demonstrate knowledge and understanding of algorithm concepts, principles and theories relating to computer science knowledge.
3. Able to classify problems and to apply design and development principles for specific problems.
4. Able to classify criteria and specifications appropriate to specific problems, plan strategies for their solution and construct software system development.
5. Able to construct a solution by applying current technologies.
6. Able to depict trend technologies in the future.

Prospective Career of the Graduates

After finishing the program, the graduate of Computer Science Study Program could follow a career as:

1. Software Engineer/Developer
2. System Analyst/Developer
3. Web Engineer/Developer
4. Computer Network Specialist
5. Database Specialist
6. IT Support/Consultant
7. Lecturer/Trainer

Curriculum

The present curriculum used in the Computer Science study program has been developed in line with the National Curriculum. Also, the local content has been developed in line with the Computer Science Curriculum standard of ACM (Association for Computing Machinerics), several local and foreign universities, and market trends, so that the graduates of the Computer Science study program are expected to be able to face competition at both a national and international level.

Generally, the subjects of the curriculum 2013 are divided into these following groups of subjects:

Mathematics Group (Science)

The objective of this group is to provide an understanding of mathematics as one of the principal foundations in computer science. Another objective is to give an understanding of scientific methodology (data collection, hypothesis, research, analysis) in problem solving.

Character Building Group (Professional Practices)

The objective of this group is to develop the personal strengths of the student and to provide him or her with a professional character, professionalism in their field, management skills, oral and written communication skills, understanding of business ethic, ability to work as a team, and to develop a “Binusian” Character.

Core Group

The objective of this group is to provide a grounding in Computer Science through practice as well as applied theory which are required by business both now and in the future. The subjects that are included in this group are programming, algorithm design and analysis, software engineering, databases, computer graphs, multimedia, computer and human interaction, operation system, computer architecture, and computer network.

Concentration Subject (Stream)

The objective of this group is to give students the opportunity to obtain a deep understanding of a range of disciplines in computer science. The students are expected to develop their skills and master the techniques which will allow them to conduct research for both their thesis and/or to continue their studies.

The Concentration subjects (Stream) provide:

1. Software Engineering: to explore the various methodologies and software engineering equipment
2. Intelligence Systems: to explore the various techniques of computer intelligence that can be applied for problem solving
3. Database Technology: to explore the various technologies and Database Application
4. Networking: to explore computer networking which consists of installation, administration, and computer networking management
5. Applied Networking (CISCO): to explore computer networking technology based on computer network equipment (CISCO equipment).
6. Interactive Multimedia : to explore computer interactive multimedia applications, based on computer programming, design tools, and software engine.
7. Applied Database : to explore computer specialized technology for database application development based on Oracle product

All subjects of Computer Science Curriculum 2013 are distributed in 8 semesters. The concentration subjects (stream) are opened in the fourth, fifth, sixth and seventh semester. Although it is distributed across 8 semesters, in fact, it is possible for the students to finish their studies less than 8 semesters.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CB412	CB: Self Development	2	20
	K0144	Discrete Mathematics	4	
	T0152	Programming Language Concepts	2	
	T0016	Algorithm and Programming	4/2	
	T0604	Introduction to Information Technology	4	
	G1372	English Entrant	2	
2	CB422	CB: Spiritual Development	2	20
	K0424	Calculus I	4	
	T0026	Data Structures	4/2	
	K0292	Linear Algebra	2	
	T0044	Object Oriented Programming	2/2	
	G1382	English in Focus	2	
3	K0434	Calculus II	4	21
	T0034	Algorithm Design and Analysis	4	
	T0104	Program Design Methods	4	
	T1392	Advanced Object Oriented Programming	2	
	T0593	Human and Computer Interaction	2/1	
	G1392	English Savvy	2	
	EN001	Entrepreneurship I	2	
4	CB432	CB: Interpersonal Development	2	24
	H0515	Computer Networks	4/1	
	T1414	Software Engineering*	4	
	T0206	Database Systems	4/2	
	T0264	Artificial Intelligence	4	
	T0553	Multimedia Systems	2/1	

Sem	Code	Course Name	SCU	Total	
5	CB442	CB: Professional Development	2	23/20	
	T0174	Compilation Techniques	4		
	EN002	Entrepreneurship II	2		
	T2322	Mobile Game Creative Design*	2		
	T0316	Operating System	4/2		
	Stream : Software Engineering				
	T0123	OO Software Engineering	2/1		
	T0144	Advanced Topics in Software Engineering	2/2		
	Stream : Intelligent System				
	T0293	Neuro Computing	2/1		
	T2344	Computer Vision	2/2		
	Stream : Interactive Multimedia				
	T0944	Game Design and Programming	2/2		
	T2363	Multimedia Programming Foundation	2/1		
	Stream : Database Technology				
	T0233	Data Warehouse	2/1		
	T2334	Web Database	2/2		
	Stream : Applied Database				
	M0924	Applied Database I	4		
	Stream : Network				
	H0483	Network Programming	2/1		
	T2354	Network Security	2/2		
	Stream : Applied Networking				
T0374	Applied Networking I	0/4			

Sem	Code	Course Name	SCU	Total	
6	T0194	System Analysis and Design	4	21/23	
	T0074	Computer Graph	4		
	K0572	Numerical Methods	2		
	T0053	Web Programming	2/1		
	T0324	Computer Architecture and Organization	4		
	T0432	Practical Work	2		
	Stream : Software Engineering				
	T0132	Software Project Management	2		
	Stream : Intelligent System				
	T2382	Expert Systems	2		
	Stream : Interactive Multimedia				
	T0952	Multimedia 3D Modelling and Animation	2		
	Stream : Database Technology				
	T2372	Database Design	2		
	Stream : Applied Database				
	M0934	Applied Database II	4		
	Stream : Network				
	T2392	Network Management	2		
Peminatan : Applied Networking					
T0384	Applied Networking II	4			

Sem	Code	Course Name	SCU	Total	
7	I0262	Probability and Statistics	2	11/12	
	G0012	Indonesian	2		
	I0192	Research Methodology	2		
	T0922	Guest Lecturer	2		
	Stream : Applied Networking				
	T0394	Applied Networking III	0/4		
	Stream : Intelligent System				
	T0423	Current Popular IT III	2/1		
	Stream : Interactive Multimedia				
	T2533	Current Popular IT V	2/1		
	Stream : Database Technology				
	T0413	Current Popular IT II	2/1		
	Stream : Applied Database				
	M0944	Applied Database III	4		
	Stream : Network				
	T0693	Current Popular IT IV	2/1		
	Stream : Applied Networking				
	T0394	Applied Networking III	0/4		
T0063	Visual Programming	2/1			
T0243	Geographical Information System	2/1			
8	T0446	Thesis	6	6	
	Elective Course				
	G1402	English for Business Presentation	2		
	G1412	English for Written Business Communication	2		
TOTAL CREDIT 146					

*) Entrepreneurship Embedded

***) Elective Courses: student choose 1 from 3 elective courses (2/1 SCU). Elective courses only taken by students

Student should pass all of these quality controlled examination as listed below:

No.	Code	Course Name	Minimum Grade
1	CB412	CB: Self Development	B
2	EN002	Entrepreneurship II	C
3	T0016	Algorithm and Programming*	C
4	T0026	Data Structures*	C
5	T0104	Program Design Methods*	C
6	T0114	Software Engineering*	C
Stream			
Software Engineering			
7	T0123	OO Software Engineering	C
8	T0144	Advanced Topics in Software Engineering	C
Database Technology			
7	T0233	Data Warehouse	C
8	T2334	Web Database	C
Intelligent System			
7	T0293	Neuro Computing	C
8	T2344	Computer Vision	C
Network			
7	H0483	Network Programming	C
8	T2354	Network Security	C
Applied Networking			
7	T0374	Applied Networking I	C
8	T0384	Applied Networking II	C
Interactive Multimedia			
7	T0944	Game Design and Programming	C
8	T2363	Multimedia Programming Foundation	C
Applied Database			
7	M0924	Applied Database I	C
8	M0934	Applied Database II	C

*) Tutorial & Multipaper