

Computer Science Global Class

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 how computer science can support in managing the information. 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. It also increases the application of automation in various fields such as industry, business, office affairs and development of science and technology.

The Computer Science 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.

Computer Science Program at Bina Nusantara University emphasizes the processes, techniques, and tools that go into developing computer-based systems, with specialities in intelligent systems, software engineering, multimedia technology, database systems and network technology.

Vision

A study program of choice in Computer Science which focuses on developing creative software solutions for industry, is recognized internationally, champions innovation and delivers graduates with international qualifications.

Mission

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

1. Educating 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.

Student Outcomes

After completing the study, graduates are:

1. Able to create software application design with the implementation of database system principal design to solve structured and semi-structured data;
2. Able to design software application solutions based on problems analysis which can be solved with structured approach in informatics area;
3. Able to assess technology trend in informatics area to deliver alternative solutions of software development;
4. Able to produce software applications which can solve the problems in informatics;
5. Able to produce database software with high complexity to solve problems;
6. Able to produce smart software using artificial intelligence algorithms to solve problems;
7. Able to apply interdisciplinary knowledge and skills in developing alternative solutions for problem-solving.

Prospective Career of the Graduates

After finishing the program, the graduate of Computer Science 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. Artificial Intelligence Specialist
7. Data Scientist
8. IT Support/Consultant
9. Researcher
10. Multimedia Programmer
11. Lecturer/Trainer

Curriculum

The curriculum of the Computer Science 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 Machinery), several local and foreign universities, and market trends, so that the graduates of the Computer Science Program are expected to be able to face competition at both a national and international level. Generally, the subjects of the curriculum 2020 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 of 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 is 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 systems, computer graphics, multimedia technology, human and computer interaction, operation systems, computer architecture, and computer network.

Entrepreneur and Employability Skill

The objective of this group of subject is to prepare students with professional experience, work ethics and to experience the working environment. The students are expected to apply and to practice their knowledge in the real working area such as industry, research lab, and also an entrepreneur startup. They are also expected to give reports as the result of the subjects.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CHAR6013	Character Building: <i>Pancasila</i>	2	20
	MATH6025	Discrete Mathematics	4	
	MATH6030	Linear Algebra	2	
	COMP6047	Algorithm and Programming**	4/2	
	COMP6056	Program Design Methods**	4	
	ENGL6132	English Access	2	
2	CHAR6014	Character Building: <i>Kewarganegaraan</i>	2	20
	COMP6048	Data Structures**	4/2	
	MATH6031	Calculus	4	
	ENTR6509	Entrepreneurship: Ideation	2	
	COMP6176	Human and Computer Interaction	2/2	
	ENGL6133	English Global	2	
3	CHAR6015001	Character Building: <i>Agama</i>	2	23
	COMP6049001	Algorithm Design and Analysis	4	
	ISYS6169001	Database Systems	4/2	
	CPEN6098001	Computer Networks	2/2	
	COMP6639001	Artificial Intelligence***	5	
	ENGL6134001	English for Academic Writing	2	
4	COMP6696001	Research Methodology in Computer Science	2	18
	COMP6640001	Software Engineering* ^g ***	5	
	STAT6171001	Basic Statistics	2	
	COMP7084001	Multimedia Systems**	2/1	
	COMP6745001	Machine Learning	2	
	COMP6708001	Object Oriented Programming**	2/2	

Sem	Code	Course Name	SCU	Total
5	COMP6681001	Web Programming**	2/1	19
	COMP6062001	Compilation Techniques	4	
	COMP6697001	Operating System	2	
	ENTR6511001	Entrepreneurship: Market Validation	2	
	COMP6746001	Data Mining	2	
	LANG6027001	Indonesian	2	
	Free Electives		4	
6	Elective courses list for study abroad			20
	GLOB6029001	Elective Course 1	4	
	GLOB6030001	Elective Course 2	4	
	GLOB6031001	Elective Course 3	4	
	GLOB6032001	Elective Course 4	4	
	GLOB6033001	Elective Course 5	2	
	GLOB6034001	Elective Course 6	2	
	GLOB6035001	Elective Course 7	2	
	GLOB6036001	Elective Course 8	2	
	GLOB6037001	Elective Course 9	2	
	GLOB6038001	Elective Course 10	2	
	GLOB6039001	Elective Course 11	2	
	GLOB6040001	Elective Course 12	2	
7	Enrichment Program		20	20
8	COMP6747001	Pre-Thesis	2	6
	COMP6748001	Thesis	4	
	COMP6861001	Thesis	6	
TOTAL CREDITS 146 Credits				

*) Global Learning System Course

**) Entrepreneurship Embedded

-) For Free Electives, students are required to choose from the list of Free Electives in Appendix.

Pre-thesis (2 SCU) & Thesis (4 SCU) can be taken in the 6th and/or 7th semester by the students who meet the requirements from the program.

Appendix: Free Electives (5th Semester)

No	Course Owner Department	Course Code	Course Name	SCU	Semester
1	Business Creation	ENTR6494005	Managing Growing Business	2	5
2	Business Management	MGMT6365005	Current Issue in Service Business and Technology	2	5
3	International Business Management	MGMT6370005	E-Business for International Business	2	5
4	Management	ISYS8175005	E-Business Strategy and Implementation	4	5
5	Management	MGMT6029005	Knowledge Management	2	5
6	Management	MGMT6063005	Strategic Management	2	5
7	Management	MGMT6297005	Operations Management	4	5
8	Management	MGMT6341005	Strategic Management	4	5
9	Accounting Bekasi	ACCT6389020	Big Data Analytics in Accounting & Finance	2	5

No	Course Owner Department	Course Code	Course Name	SCU	Semester
10	Marketing Communication	COMM6541019	Digital Corporate Communication	2/2	5
11	Marketing Communication	COMM6543019	Digital Brand Communicaton	2/2	5
12	Tourism	TRSM6208022	Tourism Innovation and Product Development	4	5
13	Architecture	ARCH6128014	Multimedia in Design Presentation	4	5
14	Architecture	ARCH6132014	Leadership Organization Behavior	4	5
15	Civil Engineering	CIVL6025013	Hydrology	2	5
16	Civil Engineering	CIVL6035013	Airport Engineering	2	5
17	Civil Engineering	CIVL6037013	Railway Engineering	2	5
18	Civil Engineering	CIVL6080013	Construction Methods & Heavy Equipment	2	5
19	Civil Engineering	COMP6046013	Computer Applications in Construction Management	2	5
20	Computer Engineering	CPEN6126010	Cross Platform Application Development	4	5
21	Computer Engineering	CPEN6225010	Telco Network & Switching System	2	5
22	Computer Engineering	CPEN6232010	Cloud Technology Practice	2	5
23	Business Law	LAWS6052028	Bankruptcy Law	2	5
24	Business Law	LAWS6167028	Legal Philosophy & Professional Ethics	2	5
25	Business Law	LAWS6176028	Tax Law	2	5
26	English Literature	SOCS6021024	Social and Digital Media Writing	2	5
27	English Literature	ENGL6244024	Social Media Broadcasting	4	5
28	International Relations	INTR6162029	Multiculturalism and Digital Society	2	5
29	Primary Teacher Education	EDUC6033030	Physical Education	2	5
30	Primary Teacher Education	EDUC6061030	ICT for Distance Learning	2	5
31	Psychology	PSYC6123027	Educational Psychology	2	5
32	Computer Science	COMP6226001	Competitive Programming	2	5
33	Computer Science	COMP7116001	Computer Vision	2/2	5
34	Computer Science	COMP6736001	Distributed Cloud Computing	2	5
35	Computer Science	COMP6586001	Embedded Systems	2	5
36	Computer Science	COMP6578001	Information Visualization	2	5
37	Computer Science	MOBI6059001	Mobile Programming	2	5
38	Cyber Security	COMP6646001	Computer Forensic	2	5
39	Statistics	STAT6158001	Data Management and Organization	2	5
40	Mobile Application & Technology	MOBI6059001	Mobile Programming	2	5
41	Statistics	RSCH6483001	Research Methodology in Data Science	2	5
42	Mobile Application & Technology	MOBI6057001	Wearable Technology	2	5
43	Business Information Technology	ISYS6579003	Knowledge-Based AI: Cognitive Systems	4	5
44	Information Systems	ISYS6196003	Business Analytics	2	5

No	Course Owner Department	Course Code	Course Name	SCU	Semester
45	Information Systems	ISYS6199003	Data & Text Mining	4	5
46	Information Systems	ISYS6202003	Social Informatics	4	5
47	Information Systems	ISYS6289003	Collaborative Computing	4	5
48	Information Systems	ISYS6402003	Business Analytics	2/2	5
49	Information Systems	ISYS8066003	Business Process Management	4	5
50	Information Systems Accounting & Auditing	ISYS6608003	IT Service & Risk Management	2	5

Elective courses list for Study Abroad (6th Semester):

-) Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.

Enrichment Program (7th Semester):

-) Student will take one of enrichment program tracks (off campus). See enrichment appendix for the tracks detail.

Enrichment Track Scheme

Track	Semester 6						Semester 7							
	IN	RS	EN	CD	SA	etc	IN	RS	EN	CD	SA	IS	FS	etc
1					v			v						
2					v						v			
3					v							v		
4					v								v	
5					v									

Note:

IN	: Certified Internship	SA	: Certified Study Abroad
RS	: Certified Research	IS	: Certified Specific Independent Study
EN	: Certified Entrepreneurship	FS	: Further Study
CD	: Certified Community Development	etc	: Study Program Special Purposes

Description:

Student will take one of enrichment program tracks

Certified Internship Track

Code	Course Name	SCU	Total
COMP6426001	Industrial Experience in Information Technology	8	20
COMP6762001	Information Technology Practice in Industrial Experience	8	
COMP6514001	EES in Information Technology Industry	4	

Certified Community Development Track

Code	Course Name	SCU	Total
CMDV6159001	Community Outreach Project Implementation	8	20
CMDV6343001	Community Outreach IT Project Design	8	
CMDV6208001	Employability and Entrepreneurial Skills in Computer Science Community	4	

Certified Study Abroad Track*

Code	Course Name	SCU	Total
GLOB6017001	Elective Course for Study Abroad 13	4	20
GLOB6018001	Elective Course for Study Abroad 14	4	
GLOB6019001	Elective Course for Study Abroad 15	4	
GLOB6020001	Elective Course for Study Abroad 16	4	
GLOB6021001	Elective Course for Study Abroad 17	2	
GLOB6022001	Elective Course for Study Abroad 18	2	
GLOB6023001	Elective Course for Study Abroad 19	2	
GLOB6024001	Elective Course for Study Abroad 20	2	
GLOB6025001	Elective Course for Study Abroad 21	2	
GLOB6026001	Elective Course for Study Abroad 22	2	
GLOB6027001	Elective Course for Study Abroad 23	2	
GLOB6028001	Elective Course for Study Abroad 24	2	
GLOB6253001	Elective Course for Study Abroad 31	4	

*) Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.

Certified Specific Independent Study

Code	Course Name	SCU	Total
Elective courses list for certified specific independent study*			20
MICR6033001	Course Certification I	3	
MICR6034001	Technical Skill Enrichment I	4	
MICR6035001	Industrial Project I	9	
MICR6036001	Soft Skill Enrichment I	4	
MICR6001001	Elective Course for Specific Independent Study 1	8	
MICR6002001	Elective Course for Specific Independent Study 2	8	
MICR6003001	Elective Course for Specific Independent Study 3	6	
MICR6004001	Elective Course for Specific Independent Study 4	6	
MICR6005001	Elective Course for Specific Independent Study 5	6	
MICR6006001	Elective Course for Specific Independent Study 6	5	
MICR6007001	Elective Course for Specific Independent Study 7	5	
MICR6008001	Elective Course for Specific Independent Study 8	5	
MICR6009001	Elective Course for Specific Independent Study 9	5	
MICR6010001	Elective Course for Specific Independent Study 10	4	
MICR6011001	Elective Course for Specific Independent Study 11	4	
MICR6012001	Elective Course for Specific Independent Study 12	4	
MICR6013001	Elective Course for Specific Independent Study 13	4	
MICR6014001	Elective Course for Specific Independent Study 14	4	
MICR6015001	Elective Course for Specific Independent Study 15	3	
MICR6016001	Elective Course for Specific Independent Study 16	3	
MICR6017001	Elective Course for Specific Independent Study 17	3	
MICR6018001	Elective Course for Specific Independent Study 18	3	
MICR6019001	Elective Course for Specific Independent Study 19	3	
MICR6020001	Elective Course for Specific Independent Study 20	3	

Code	Course Name	SCU	Total
MICR6021001	Elective Course for Specific Independent Study 21	2	
MICR6022001	Elective Course for Specific Independent Study 22	2	
MICR6023001	Elective Course for Specific Independent Study 23	2	
MICR6024001	Elective Course for Specific Independent Study 24	2	
MICR6025001	Elective Course for Specific Independent Study 25	2	
MICR6026001	Elective Course for Specific Independent Study 26	2	
MICR6027001	Elective Course for Specific Independent Study 27	2	
MICR6028001	Elective Course for Specific Independent Study 28	2	
MICR6029001	Elective Course for Specific Independent Study 29	1	
MICR6030001	Elective Course for Specific Independent Study 30	1	
MICR6031001	Elective Course for Specific Independent Study 31	1	
MICR6032001	Elective Course for Specific Independent Study 32	1	

*) For students who take BINUS certified specific independent study courses, they should take the first 4 courses on the list above (20 credits). Meanwhile, electives courses 1 to 32 are transferred courses for students who take certified specific independent study outside BINUS University. Transferred courses will be transferred based on credit transfer policies on study program with total of 20 credits.

Further Study Track

Code	Course Name	SCU	Total
COMP6815001	IT Disaster Recovery	4	20
COMP6816001	Wireless and Cloud Computing Technologies	4	
COMP6817001	Internet Tools and Services	4	
COMP6818001	Cyber Risk Management	4	
COMP6819001	Knowledge Engineering	4	

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

No.	Course Code	Course Name	Minimal Grade
1.	CHAR6013	Character Building: <i>Pancasila</i>	B
2.	ENTR6511001	Entrepreneurship: Market Validation	C
3.	COMP6047	Algorithm and Programming*	C
4.	COMP6056	Program Design Methods*	C
5.	COMP6048	Data Structures*	C
6.	COMP6640001	Software Engineering*	C
7.	COMP6746001	Data Mining	C
8.	COMP6745001	Machine Learning	C

*) Tutorial & Multipaper