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 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 world class study program by providing excellent educational experiences in Computer Science, which focuses on developing creative technology solutions, fostering and empowering the society in building and serving the nation.

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 to effectively apply their educational experiences in developing creative solutions in computer science, to solve real-world problems.
2. Preparing graduates to develop exemplary soft skills & technical skills required as computer science professionals, leaders, and entrepreneurs in global market.
3. Promoting high impact computer science research that contributes to the nation.
4. Fostering BINUSIAN as computer science lifelong learners through self-enrichment.
5. Empowering BINUSIAN to continuously improve society's quality of life through knowledge in computer science.

Program Objective

The objectives of the program are:

1. Graduates will become successful professionals in ICT fields;
2. Graduates will obtain employment in global companies or become entrepreneurs;
3. Graduates will obtain professional certification or continue their study to the postgraduate.

Student Outcomes

After completing the study, graduates are:

1. Able to analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions;
2. Able to design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of computer science;
3. Able to communicate effectively in a variety of professional contexts;
4. Able to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles;
5. Able to function effectively as a member or leader of a team engaged in activities appropriate to computer science;
6. Able to apply computer science theory and software development fundamentals to produce computing-based solutions.

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.

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 research 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. Intelligent Systems: to explore the various techniques of computer intelligence that can be applied to solving problem.
3. Database Technology: to explore the various technologies and database application.
4. Network Technology: to explore computer networking which consists of installation, administration, and computer networking management.
5. Interactive Multimedia: to explore computer interactive multimedia applications, based on computer programming, design tools, and software engine.
6. Internet of Things: focus on interconnection via computer devices with the internet that is programmed in everyday objects that allows sending and receiving data.
7. Digital Creative Technology: focuses on competencies' development in smart software application development field based on big data analytics to support business innovation through digital transformation in Industry 4.0 era (Digital Business Innovation and Transformation).

Entrepreneur and Employability Skill (Internship)

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	CHAR6013001	Character Building: Pancasila	2	20
	MATH6025001	Discrete Mathematics	4	
	MATH6030001	Linear Algebra	2	
	COMP6047001	Algorithm and Programming*	4/2	
	COMP6798001	Program Design Methods	2	
	LANG6027001	Indonesian	2	
	STAT6171001	Basic Statistics	2	
2	CHAR6014001	Character Building: Kewarganegaraan	2	20
	COMP6048001	Data Structures*	4/2	
	MATH6031001	Calculus	4	
	ENTR6509001	Entrepreneurship: Ideation	2	

Sem	Code	Course Name	SCU	Total
	COMP6800001	Human and Computer Interaction*	2/1	
	MATH6183001	Scientific Computing	2/1	
3	CHAR6015001	Character Building: Agama	2	21
	COMP6049001	Algorithm Design and Analysis	4	
	CPEN6247001	Computer Networks	2/1	
	COMP6065001	Artificial Intelligence*	4	
	SCIE6063001	Computational Physics	2/1	
	COMP6799001	Database Technology*	2/1	
	ENGL6134001	English for Academic Writing	2	
4	COMP6696001	Research Methodology in Computer Science	2	19
	COMP6100001	Software Engineering*	4	
	SCIE6062001	Computational Biology	2/1	
	COMP6823001	Multimedia Systems*	2	
	COMP6577001	Machine Learning	4	
	COMP6820001	Object Oriented Programming*	2	
	COMP6825001	Introduction to Cloud Infrastructure	2	
5	COMP6821001	Web Programming	2	20
	COMP6062001	Compilation Techniques	4	
	COMP6697001	Operating System	2	
	ENTR6511001	Entrepreneurship: Market Validation	2	
	COMP6140001	Data Mining	2/2	
	COMP6576001	Natural Language Processing*	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 SCU	

*) Global Learning System Course

Free Electives:

-) 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 Study Program/Program*

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.

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
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	Civil Engineering	CIVL6025013	Hydrology	2	5
14	Civil Engineering	CIVL6035013	Airport Engineering	2	5
15	Civil Engineering	CIVL6037013	Railway Engineering	2	5
16	Civil Engineering	CIVL6080013	Construction Methods & Heavy Equipment	2	5
17	Civil Engineering	COMP6046013	Computer Applications in Construction Management	2	5
18	Computer Engineering	CPEN6126010	Cross Platform Application Development	4	5
19	Computer Engineering	CPEN6225010	Telco Network & Switching System	2	5
20	Computer Engineering	CPEN6232010	Cloud Technology Practice	2	5
21	Computer Science	COMP6586001	Embedded Systems	2	5
22	Computer Science	COMP6226001	Competitive Programming	2	5
23	Computer Science	MOBI6059001	Mobile Programming	2	5
24	Computer Science	COMP7116001	Computer Vision	2/2	5
25	Computer Science	COMP6821001	Web Programming	2	5
26	Computer Science	COMP6590001	Geographical Information System	2/2	5
27	Game Application and Technology	GAME6085001	Object Oriented Game Programming	2	5
28	Animation	DSGN6689007	Concept Art & Production Design	2	5

No	Course Owner Department	Course Code	Course Name	SCU	Semester
29	Business Information Technology	ISYS6579003	Knowledge-Based AI: Cognitive Systems	4	5
30	Information Systems	ISYS6196003	Business Analytics	2	5
31	Information Systems	ISYS6199003	Data & Text Mining	4	5
32	Information Systems	ISYS6202003	Social Informatics	4	5
33	Information Systems	ISYS6289003	Collaborative Computing	4	5
34	Information Systems	ISYS6402003	Business Analytics	2/2	5
35	Information Systems	ISYS8066003	Business Process Management	4	5
36	Information Systems Accounting & Auditing	ISYS6608003	IT Service & Risk Management	2	5
37	Data Science	DTSC6008001	Text Mining	2	5
38	Cyber Security	COMP6646001	Computer Forensic	2	5
39	Mobile Application & Technology	MOBI6068001	Web Design	2	5
40	International Relations	INTR6162029	Multiculturalism and Digital Society	2	5
41	Business Law	LAWS6052028	Bankruptcy Law	2	5
42	Business Law	LAWS6167028	Legal Philosophy & Professional Ethics	2	5
43	Business Law	LAWS6176028	Tax Law	2	5
44	Chinese Literature	CHIN6157026	Chinese Business for Etiquette (Beginner)	4	5
45	English Literature	ENGL6244024	Social Media Broadcasting	4	5
46	Primary Teacher Education	EDUC6033030	Physical Education	2	5
47	Primary Teacher Education	EDUC6061030	ICT for Distance Learning	2	5

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

Note:

IN	: Internship	SA	: Study Abroad
RS	: Research	FS	: Further Study
EN	: Entrepreneurship	IS	: Certified Specific Independent Study
CD	: 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	
COMP6427001	Information Technology Practice in Industrial Experience	8	20
COMP6514001	EES in Information Technology Industry	4	

Certified Community Development Track

Code	Course Name	SCU	Total
CMDV6159001	Community Outreach Project Implementation	8	
CMDV6343001	Community Outreach IT Project Design	8	20
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	
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	20
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	

Code	Course Name	SCU	Total
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*			
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	20
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	
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	

Code	Course Name	SCU	Total
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
Enrichment Program II (Master of Management Information Systems: Information Systems Strategic Management Stream)			
ISYS6829001	Digital Technology and Transformation	4	
ISYS6830001	Data Analytics for Business	6	
ISYS6831001	Applied Technology in Information Systems*	4	
ISYS6806001	Strategic Planning for Information Systems	6	20
Enrichment Program II (Master of Management Information Systems: Digitalpreneurship Stream)			
ISYS6829001	Digital Technology and Transformation	4	
ISYS6830001	Data Analytics for Business	6	
ISYS6831001	Applied Technology in Information Systems*	4	
ISYS6848001	New Media Ventures and Innovation	6	
Enrichment Program II (Master of Computer Science: Data Science Stream)			
COMP6816001	Wireless and Cloud Computing Technologies	4	
COMP6997001	IT Disaster Recovery	6	
COMP6981001	Applied Technology in Computer Science*	4	
COMP6998001	Knowledge Engineering	6	
Enrichment Program II (Master of Computer Science: Information Security Management)			20
COMP6816001	Wireless and Cloud Computing Technologies	4	
COMP6997001	IT Disaster Recovery	6	
COMP6981001	Applied Technology in Computer Science*	4	
COMP6980001	Networking and Security Concepts	6	

) Students are required to obtain certification no later than the end of the first semester of the master's (S2) program, as outlined in the university's official guidelines. This certification will be transferred as an undergraduate (S1) course and reported in the seventh semester of the undergraduate program.

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

No.	Course Code	Course Name	Minimal Grade
1.	CHAR6013001	Character Building: Pancasila	B
2.	ENTR6511001	Entrepreneurship: Market Validation	C
3.	COMP6047001	Algorithm and Programming*	C
4.	COMP6048001	Data Structures*	C
5.	COMP6798001	Program Design Methods*	C
6.	COMP6100001	Software Engineering*	C
7.	COMP6799001	Database Technology	C

No.	Course Code	Course Name	Minimal Grade
8.	COMP6697001	Operating System	C

*) Tutorial & Multipaper