Computer Science

Introduction

The Computer Science Program teaches basic knowledge of computer science include algorithms, methods of application development and database technology with knowledge and understanding of mathematical concepts. Curriculum designed based on international curricula ACM (Association for Computing Machinery) and input from business and industry. The graduate expected from this program can compete internationally and provide creative and innovative solutions in place of work.

Vision

A world-class online learning study program by providing excellent educational relevant experiences and updatable to trend in computer science, fostering and empowering the society in building and serving the nation

Mission

The mission of Computer Science Study Program 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 computer science to solve real-world problems.
2. Preparing our graduates to develop exemplary soft skills & technical skills required as ICT professionals, leaders and entrepreneurs in the global market.
3. Promoting practical application or high impact research in computer science that contributes to the nation.
4. Fostering BINUSIAN as lifelong learners through self-enrichment in information technology.
5. Empowering BINUSIAN using current ICT technology to continuously improve society's quality of life

Program Objective

The objectives of the program:

1. Graduates will become successful professionals in ICT fields by either obtaining an advanced technical or management position
2. Graduates will obtain employment in ICT global companies or become entrepreneurs
3. Graduates will continue their formal education or pursue professional international certifications

Student Outcomes

After completing the study, graduates are:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of computer science
3. Communicate effectively in a variety of professional contexts
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. 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

7. Produce software to solve information technology problems using the latest information technology approaches and cybersecurity

8. Produce software to solve problems that occur with cloud computing approaches, and web and mobile based applications

9. Solve problems through the multidisciplinary approach.

Prospective Career of the Graduates

1. System Developer
2. System Engineer
3. Database Architect
4. Network Administrator/Specialist
5. Cloud Computing Specialist
6. Web Developer/Designer
7. Mobile Application Developer
8. Data Scientist
9. Business Data Architect
10. Data Analyst and Visualisation Specialist
11. Digital Forensic Specialist
12. Cyber Security Analyst
13. Cyber Security Forensic
14. Information Technology Technopreneur

Curriculum

The curriculum 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 Machineries), local and foreign universities, and market trend. Therefore, the graduates are expected to be able to face the competition at both national and international level.

Course Structure

Sem	Code	Course Name	SCU	Total
1	CHAR6019036	Character Building: Pancasila	2	20
	COMP6112036	Algorithm and Programming	4/2	
	MATH6184036	Discrete Mathematics and Linear Algebra	6	
	COMP6742036	Algorithm Design and Analysis	4	
	COMP6802036	Program Design Methods	2	
2	CHAR6020036	Character Building: Kewarganegaraan	2	20
	COMP6118036	Data Structures	4/2	
	CPEN6248036	Computer Networks	2/1	

	COMP6718036	Operating System	2	
	COMP6803036	Database Technology	2/1	
	COMP6275036	Artificial Intelligence	4	
3	MATH6185036	Calculus and Scientific Computing	6/1	20
	COMP6805036	Human and Computer Interaction	2/1	
	COMP6276036	Compilation Techniques	4	
	STAT6192036	Basic Statistics	2	
	ENGL6163036	English Professional	4	
4	CHAR6021036	Character Building: Agama	2	20
	COMP6804036	Software Engineering	4	
	SCIE6064036	Computational Physics & Biology	4/2	
	COMP6801036	Research Methodology in Computer Science	2	
	ENTR6081036	Entrepreneurship	4	
	LANG6031036	Indonesian	2	
5	**Stream: Artificial Intelligences**			20
	COMP6866036	Data Science	4/2	
	COMP6960036	Data Engineering Programming	2/2	
	COMP6962036	Natural Language Processing	4/2	
	COMP6724036	Internet of Things	4	
	Stream: Computer Networks			
	COMP6868036	Computer Security	4/2	
	COMP6961036	Computer Infrastructure and Forensic	4	
	COMP6963036	Network Communication	4/2	
	COMP6964036	System Administration	3/1	
6	**Minor Program/ Free Elective/ Enrichment Program I**		20	
7	**Free Electives/ Individual Development Project/ Enrichment Program II**		20	20
8	COMP6954036	Pre Thesis	0	6
	COMP6328036	Thesis	0	
	COMP6952036	Pre Thesis	2	
	COMP6953036	Thesis	4	
	COMP6288036	Thesis	6	
			Total Credit 146 SCU	

Student will take one of enrichment program tracks. See enrichment appendix for the tracks detail.

Pre thesis (0 SCU) can be taken in the first period of the 6ᵗʰ semester, meanwhile **pre thesis (2 SCU)** can be taken in the second period of the 6ᵗʰ semester by the students who meet the requirements from the Study Program/Program. Then, **thesis (0 SCU)** can be taken in the first period of the 7ᵗʰ semester, meanwhile **thesis (4 SCU)** can be taken in the second period of the 7ᵗʰ semester by the students who meet the requirements from the Study Program/Program

Enrichment appendix: Track Scheme

Track scheme for semester 6 and 7. Student will take one of tracks

Track	Semester 6			Semester 7								
	MP	FE	IS	IN	EN	RS	CD	SA	IS	FS	IDP	FE
1	v			v								
2	v				v							
3	v					v						
4	v						v					
5	v							v				
6	v								v			
7	v									v		
8	v										v	
9	v											v
10		v		v								
11		v			v							
12		v				v						
13		v					v					
14		v						v				
15		v							v			
16		v								v		
17		v									v	
18		v										v
19			v	v								
20			v		v							
21			v			v						
22			v				v					
23			v					v				
24			v						v			
25			v							v		
26			v								v	
27			v									v

Note:

MP	: Minor Program	SA	: Certified Study Abroad
FE	: Free Electives	IDP	: Certified Individual Development Project
IS	: Certified Specific Independent Study	FS	: Further Study
IN	: Certified Internship		
EN	: Certified Entrepreneurship		
RS	: Certified Research		
CD	: Certified Community Development		

Minor Scheme

Minor Program	Semester 6	
	1st Period	2nd Period
Minor @ Binus Online Learning		
Technopreneurship	v	v
Artificial Intelligence in Business	v	v

1. Minor Program: Technopreneurship

Code	Course Name	SCU
ACCT6384039	Accounting for Small Medium Enterprise	4
MKTG6296038	Digital Marketing for Manager	4
ISYS6619035	UX for Digital Business	4
COMP6725036	Big Data Technologies	4
ISYE6196037	Industrial Feasibility Analysis	4
	Total SCU	**20**

2. Minor Program: Artificial Intelligence in Business

Code	Course Name	SCU
ISYS6776035	Managerial Support Systems	4
ACCT6473039	Artificial Intelligence for Audit, Forensic Accounting, and Valuation	4
COMP6936036	Machine Learning	4
MGMT6483038	AI Marketing and Predicting Consumer Experiences	4
ISYE6284037	Cognitive Ergonomics	4
	Total SCU	**20**

Free Elective
Enrichment Program I
For students who take free electives track in the 6th semester, the following is a list of courses that students can take for 20 credits

No	Study Program	Course Code	Course	SCU	Semester
1	Management PJJ	ECON6095038	Business Economics	4	6
2	Management PJJ	MGMT6448038	Operations Management	4	6
3	Accounting PJJ	FINC6205039	Financial Management	4	6
4	Information Systems PJJ	ISYS6305035	Enterprise System	4	6
5	Industrial Engineering PJJ	ISYE6187037	Engineering Economy and System Analysis	4	6
6	Industrial Engineering PJJ	ISYE6190037	Facility Planning and Safety Engineering	4	6

No	Study Program	Course Code	Course	SCU	Semester
7	Accounting PJJ	ACCT6384039	Accounting for Small Medium Enterprise	4	6
8	Management PJJ	MKTG6296038	Digital Marketing for Manager	4	6
9	Computer Science PJJ	COMP6725036	Big Data Technologies	4	6
10	Industrial Engineering PJJ	ISYE6196037	Industrial Feasibility Analysis	4	6
11	Computer Science PJJ	COMP6936036	Machine Learning	4	6
12	Management PJJ	COMM6092038	Business Communication	4	6
13	Industrial Engineering PJJ	ISYE6239037	Dynamic Service Facility Design	4	6
14	Computer Science PJJ	COMP6938036	Computer Vision Application	2/2	6
15	Computer Science PJJ	COMP6939036	Intelligent Multimedia Systems	2/2	6
16	Accounting PJJ	ACCT6481039	Corporate Strategy and Risk Management	4	6

Enrichment Program II
For students who take free electives track in the 7th semester, the following is a list of courses that students can take for 20 credits

No	Study Program	Course Code	Course	SCU	Semester
1	Management PJJ	ENTR6100038	Managing Entrepreneurial Organization and Leadership	6	7
2	Management PJJ	MGMT6162038	Change Management	4	7
3	Management PJJ	BUSS6049038	Managing Innovation	4	7
4	Information Systems PJJ	ISYS6784035	IS Audit and Governance	6	7
5	Information Systems PJJ	ISYS6312035	IS Strategy, Management and Acquisition	4	7
6	Accounting PJJ	ACCT6475039	Management Control System	6	7
7	Accounting PJJ	FINC6216039	Money and Capital Market	4	7
8	Industrial Engineering PJJ	ISYE6287037	Industry 4.0 and Implementation	4	7
9	Industrial Engineering PJJ	ISYE6288037	Smart Manufacturing	4	7
10	Industrial Engineering PJJ	ISYE6290037	Digital Simulation and Manufacturing System	6	7
11	Computer Science PJJ	COMP6940036	Deep Learning Application	4/2	7
12	Computer Science PJJ	COMP6277036	Geographic Information System	2/2	7

Certified Specific Independent Study Track
Enrichment Program I

Code	Course Name	SCU
CSIS6037036	Course Certification	3
CSIS6038036	Technical Skill Enrichment	4

Code	Course Name	SCU
CSIS6039036	Industrial Project	9
CSIS6040036	Soft Skill Enrichment	4
CSIS6041036	Elective Course for Specific Independent Study 1	4
CSIS6042036	Elective Course for Specific Independent Study 2	4
CSIS6043036	Elective Course for Specific Independent Study 3	3
CSIS6044036	Elective Course for Specific Independent Study 4	3
CSIS6045036	Elective Course for Specific Independent Study 5	3
CSIS6046036	Elective Course for Specific Independent Study 6	2
CSIS6047036	Elective Course for Specific Independent Study 7	2
CSIS6048036	Elective Course for Specific Independent Study 8	2
CSIS6049036	Elective Course for Specific Independent Study 9	1
CSIS6050036	Elective Course for Specific Independent Study 10	1
CSIS6051036	Elective Course for Specific Independent Study 11	4
CSIS6052036	Elective Course for Specific Independent Study 12	4
CSIS6053036	Elective Course for Specific Independent Study 13	3
CSIS6054036	Elective Course for Specific Independent Study 14	3
CSIS6055036	Elective Course for Specific Independent Study 15	3
CSIS6056036	Elective Course for Specific Independent Study 16	2
CSIS6057036	Elective Course for Specific Independent Study 17	2
CSIS6058036	Elective Course for Specific Independent Study 18	2
CSIS6059036	Elective Course for Specific Independent Study 19	1
CSIS6060036	Elective Course for Specific Independent Study 20	1
CSIS6097036	Elective Course for Specific Independent Study 21	6
CSIS6098036	Elective Course for Specific Independent Study 22	6
CSIS6099036	Elective Course for Specific Independent Study 23	6
	Total SCU	**20**

*) 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 23 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.

Enrichment Program II

For students who take Specific Independent Study track in the 7th semester, they should take these courses:

Code	Course Name	SCU
CSIS6037036	Course Certification	3
CSIS6038036	Technical Skill Enrichment	4
CSIS6039036	Industrial Project	9
CSIS6040036	Soft Skill Enrichment	4
CSIS6100036	Elective Course for Specific Independent Study 24	4
CSIS6101036	Elective Course for Specific Independent Study 25	4
CSIS6102036	Elective Course for Specific Independent Study 26	3
CSIS6103036	Elective Course for Specific Independent Study 27	3
CSIS6104036	Elective Course for Specific Independent Study 28	3

Code	Course Name	SCU
CSIS6105036	Elective Course for Specific Independent Study 29	2
CSIS6106036	Elective Course for Specific Independent Study 30	2
CSIS6107036	Elective Course for Specific Independent Study 31	2
CSIS6108036	Elective Course for Specific Independent Study 32	1
CSIS6109036	Elective Course for Specific Independent Study 33	1
CSIS6110036	Elective Course for Specific Independent Study 34	4
CSIS6111036	Elective Course for Specific Independent Study 35	4
CSIS6112036	Elective Course for Specific Independent Study 36	3
CSIS6113036	Elective Course for Specific Independent Study 37	3
CSIS6114036	Elective Course for Specific Independent Study 38	3
CSIS6115036	Elective Course for Specific Independent Study 39	2
CSIS6116036	Elective Course for Specific Independent Study 40	2
CSIS6117036	Elective Course for Specific Independent Study 41	2
CSIS6118036	Elective Course for Specific Independent Study 42	1
CSIS6119036	Elective Course for Specific Independent Study 43	1
CSIS6120036	Elective Course for Specific Independent Study 44	6
CSIS6121036	Elective Course for Specific Independent Study 45	6
CSIS6122036	Elective Course for Specific Independent Study 46	6
	Total SCU	**20**

) 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 24 to 46 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.

Certified Internship Track

Code	Course Name	SCU	Total SCU
COMP6810036	Working Experiences in Information Technology	6	
COMP6811036	Information Technology in Practice	4	
COMP6813036	Industrial Experience in Information Technology	6	20
COMP6812036	Employability and Entrepreneurial Skills in Information Technology Industry	4	

Certified Entrepreneurship Track

Code	Course Name	SCU	Total SCU
ENPR6009036	Business Start Up in Information Technology	6	
ENPR6010036	Business Model & Validation in Information Technology	4	20
ENPR6011036	Launching New Venture in Information Technology	6	

| ENPR6012036 | Entrepreneurship and Managing New Business in Information Technology | 4 | |

Certified Research Track

Code	Course Name	SCU	Total SCU
RSCH6679036	Information Technology Research Experience	6	
RSCH6680036	Scientific Writing in Information Technology Research	4	
RSCH6681036	Academic Writing for Information Technology Research	6	20
RSCH6682036	Global Employability and Entrepreneurial Skills in Information Technology Research	4	

Certified Community Development Track

Code	Course Name	SCU	Total SCU
CMDV6446036	Community Development Project Implementation in Information Technology	6	
CMDV6447036	Community Development Project Design in Information Technology	4	
CMDV6448036	Information Technology Program Execution for Community	6	20
CMDV6449036	Employability and Entrepreneurial Skills in Information Technology Community	4	

Certified Study Abroad Track

Code	Course Name	SCU	Total SCU
GLOB6415036	Elective Course for Study Abroad 1	4	
GLOB6416036	Elective Course for Study Abroad 2	4	
GLOB6417036	Elective Course for Study Abroad 3	3	
GLOB6418036	Elective Course for Study Abroad 4	3	
GLOB6419036	Elective Course for Study Abroad 5	3	
GLOB6420036	Elective Course for Study Abroad 6	2	
GLOB6421036	Elective Course for Study Abroad 7	2	
GLOB6422036	Elective Course for Study Abroad 8	2	
GLOB6423036	Elective Course for Study Abroad 9	1	
GLOB6424036	Elective Course for Study Abroad 10	1	20
GLOB6425036	Elective Course for Study Abroad 11	4	
GLOB6426036	Elective Course for Study Abroad 12	4	
GLOB6427036	Elective Course for Study Abroad 13	3	
GLOB6428036	Elective Course for Study Abroad 14	3	
GLOB6429036	Elective Course for Study Abroad 15	3	
GLOB6430036	Elective Course for Study Abroad 16	2	
GLOB6431036	Elective Course for Study Abroad 17	2	
GLOB6432036	Elective Course for Study Abroad 18	2	
GLOB6433036	Elective Course for Study Abroad 19	1	

Code	Course Name	SCU	Total SCU
GLOB6434036	Elective Course for Study Abroad 20	1	

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

Certified Individual Development Project Track

Code	Course Name	SCU	Total SCU
COMP6944036	Industrial Project Planning in Information Technology	6	
COMP6945036	Industrial Project Implementation in Information Technology	4	20
COMP6946036	Industrial Project Evaluation and Reporting in Information Technology	6	
COMP6947036	Business Ethics in Information Technology Industry	4	

Further Study Track

Code	Course Name	SCU	Total SCU
COMP6948036	Wireless and Cloud Computing Technologies	6	
COMP6949036	IT Disaster Recovery	4	20
COMP6950036	Writing Scientific Article	4	
COMP6951036	Knowledge Engineering	6	

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

No.	Course Code	Course	Minimal Grade	Semester	Period
1	CHAR6019036	Character Building: Pancasila	B	1	2
2	ENTR6081036	Entrepreneurship	C	4	1
3	COMP6802036	Program Design Methods	C	1	2
4	COMP6118036	Data Structures	C	2	2
5	COMP6804036	Software Engineering	C	4	2
6	COMP6112036	Algorithm and Programming	C	1	1
7	COMP6718036	Operating System	C	2	2
8	COMP6803036	Database Technology	C	2	1