

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 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 ² (AOL) | 4/2 | |
| | COMP6798001 | Program Design Methods (AOL) | 2 | |
| | LANG6027001 | Indonesian | 2 | |
| | STAT6171001 | Basic Statistics | 2 | |
| | Foreign Language Courses | | | |
| 2 | CHAR6014001 | Character Building: Kewarganegaraan | 2 | 20 |
| | COMP6048001 | Data Structures ² (AOL) | 4/2 | |
| | MATH6031001 | Calculus | 4 | |

| Sem | Code | Course Name | SCU | Total |
|-----|---|---|-----|-------|
| | ENTR6510001 | Entrepreneurship: Prototyping | 2 | |
| | COMP6800001 | Human and Computer Interaction ² (AOL) | 2/1 | |
| | MATH6183001 | Scientific Computing (AOL) | 2/1 | |
| | Foreign Language Courses | | 0 | |
| 3 | CHAR6015001 | Character Building: Agama | 2 | 19 |
| | COMP6049001 | Algorithm Design and Analysis (AOL) | 4 | |
| | CPEN6247001 | Computer Networks (AOL) | 2/1 | |
| | COMP6065001 | Artificial Intelligence ² (AOL) | 4 | |
| | SCIE6063001 | Computational Physics (AOL) | 2/1 | |
| | COMP6799001 | Database Technology* (AOL) | 2/1 | |
| | Foreign Language Courses | | 0 | |
| 4 | COMP6696001 | Research Methodology in Computer Science (AOL) | 2 | 19 |
| | COMP6100001 | Software Engineering ² (AOL) | 4 | |
| | SCIE6062001 | Computational Biology | 2/1 | |
| | COMP6823001 | Multimedia Systems ² | 2 | |
| | COMP6577001 | Machine Learning | 4 | |
| | COMP6820001 | Object Oriented Programming ² | 2 | |
| | COMP6825001 | Introduction to Cloud Infrastructure | 2 | |
| | Foreign Language Courses | | 0 | |
| 5 | COMP6821001 | Web Programming | 2 | 22 |
| | COMP6062001 | Compilation Techniques | 4 | |
| | COMP6697001 | Operating System (AOL) | 2 | |
| | ENTR6511001 | Entrepreneurship: Market Validation | 2 | |
| | COMP6140001 | Data Mining | 2/2 | |
| | COMP6885001 | Natural Language Processing ² | 2/2 | |
| | 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 | |

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 | 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 |
| CSIS6001001 | Course Certification | 3 | |
| CSIS6002001 | Technical Skill Enrichment | 4 | |
| CSIS6003001 | Industrial Project | 9 | |

| Code | Course Name | SCU | Total |
|-------------|---|-----|-------|
| CSIS6004001 | Soft Skill Enrichment | 4 | |
| CSIS6005001 | Elective Course for Specific Independent Study 1 | 8 | |
| CSIS6006001 | Elective Course for Specific Independent Study 2 | 8 | |
| CSIS6007001 | Elective Course for Specific Independent Study 3 | 6 | |
| CSIS6008001 | Elective Course for Specific Independent Study 4 | 6 | |
| CSIS6009001 | Elective Course for Specific Independent Study 5 | 6 | |
| CSIS6010001 | Elective Course for Specific Independent Study 6 | 5 | |
| CSIS6011001 | Elective Course for Specific Independent Study 7 | 5 | |
| CSIS6012001 | Elective Course for Specific Independent Study 8 | 5 | |
| CSIS6013001 | Elective Course for Specific Independent Study 9 | 5 | |
| CSIS6014001 | Elective Course for Specific Independent Study 10 | 4 | |
| CSIS6015001 | Elective Course for Specific Independent Study 11 | 4 | |
| CSIS6016001 | Elective Course for Specific Independent Study 12 | 4 | |
| CSIS6017001 | Elective Course for Specific Independent Study 13 | 4 | |
| CSIS6018001 | Elective Course for Specific Independent Study 14 | 4 | |
| CSIS6019001 | Elective Course for Specific Independent Study 15 | 3 | |
| CSIS6020001 | Elective Course for Specific Independent Study 16 | 3 | |
| CSIS6021001 | Elective Course for Specific Independent Study 17 | 3 | |
| CSIS6022001 | Elective Course for Specific Independent Study 18 | 3 | |
| CSIS6023001 | Elective Course for Specific Independent Study 19 | 3 | |
| CSIS6024001 | Elective Course for Specific Independent Study 20 | 3 | |
| CSIS6025001 | Elective Course for Specific Independent Study 21 | 2 | |
| CSIS6026001 | Elective Course for Specific Independent Study 22 | 2 | |
| CSIS6027001 | Elective Course for Specific Independent Study 23 | 2 | |
| CSIS6028001 | Elective Course for Specific Independent Study 24 | 2 | |
| CSIS6029001 | Elective Course for Specific Independent Study 25 | 2 | |
| CSIS6030001 | Elective Course for Specific Independent Study 26 | 2 | |
| CSIS6031001 | Elective Course for Specific Independent Study 27 | 2 | |
| CSIS6032001 | Elective Course for Specific Independent Study 28 | 2 | |
| CSIS6033001 | Elective Course for Specific Independent Study 29 | 1 | |
| CSIS6034001 | Elective Course for Specific Independent Study 30 | 1 | |
| CSIS6035001 | Elective Course for Specific Independent Study 31 | 1 | |
| CSIS6036001 | 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

Students will receive information about Further Study Track Courses during the registration period.

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. | COMP6047001 | Algorithm and Programming* | C |
| 3. | COMP6798001 | Program Design Methods* | C |
| 4. | COMP6048001 | Data Structures* | C |
| 5. | COMP6799001 | Database Technology | C |
| 6. | COMP6100001 | Software Engineering* | C |
| 7. | COMP6697001 | Operating System | C |
| 8. | ENTR6511001 | Entrepreneurship: Market Validation | C |

*) Tutorial

