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 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, Bina Nusantara University @Bandung emphasizes the processes, techniques, and tools that go into developing computer-based systems, with specialities in Internet of Things(IoT), intelligent systems, software engineering, data base system, game technology, mobile technology and computer security.

Vision

A world class study program by providing excellent educational experiences in computer science, fostering and empowering the society in building and serving the nation through digital and smart technology.

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 computer science to solve real-world problems focus on smart technology and designpreneur approach.
2. Preparing our graduates to develop exemplary soft skills & technical skills required as ICT professionals, leaders and entrepreneurs in global market.
3. Promoting high impact research that contributes to the nation in smart technology themes.
4. Fostering BINUSIAN as lifelong learners through self-enrichment.
5. Empowering BINUSIAN to continuously improve and society’s quality of life through smart technology and designpreneur approach

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 level
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:
3. Web Engineer/Developer 7. Data Scientist 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 2019 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. Internet of Things: to explore the various techniques and implementation of IoT
2. 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).
3. Intelligent Systems: to explore the various techniques of computer intelligence that can be applied to solving problem.
4. Database Technology: to explore the various techniques of database technology that can be applied to solving problem.
5. Interactive Multimedia: to explore computer interactive multimedia applications, based on computer programming, design tools, and software engine.
6. Network Technology: to explore computer networking which consists of installation, administration, and computer networking management.
7. Game Technology: to explore development of game applications, based on computer programming, design tools, and software engine.
8. Mobile Technology: to explore development of mobile applications.
9. Data Science: to explore various technology tools, statistics, and machine learning with the goal of discovering hidden patterns from the raw data. It can enhance productivity and create significant value.
10. Cyber Security: to explore specialized computer security related techniques and implementation
11. Software Engineering: to explore the various methodologies and software engineering equipment.

**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.
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Total Credits 146 SCU

*) This course is delivered in English
**) Global Learning System course
**** Will be conducted in BINUS Bandung
*****) Will be conducted in BINUS Malang
****** Will be conducted in BINUS Jakarta

Streaming/Minor/Free Electives:
Students are required to choose Streaming or Minor Program or Free Electives. For Free Electives, students are required to choose from the list of Free Electives in Appendix.

English University Courses:
- For 1st Semester: English University Courses I, students with Binus University English Proficiency Test score less than 500 will take English in Focus, and student with test score greater than or equal to 500 will take English for Business Presentation.
- For 2nd Semester: English University Courses II, students with Binus University English Proficiency Test score less than 500 will take English Savvy, and students with test score greater than or equal to 500 will take English for Written Business Communication.

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.
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1. **Minor Program: Human Capital in Digital Workplace**

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2. **Minor Program: Sustainable Development**

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<td>DSGN6835008 Engineering Material</td>
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3. **Minor Program: Cross Cultural Communication**

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4. **Minor Program: Interactive & Users Experience Design**

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6. **Minor Program: Robotic Process Automation**

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7. **Minor Program: Digital Transformation**

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<td>HTMN6048021 Western and French Cuisine</td>
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<td>HTMN6046021 Authentic Indonesian Cuisine</td>
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### 9. Minor Program: Digital Technopreneur

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<td>ENTR6529002 Market Intelligence</td>
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**Total SCU 20**

### 10. Minor Program: Designpreneur

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**Total SCU 20**

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**Enrichment Program I (6th Semester) & Enrichment Program II (7th Semester):**

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

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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

Students who failed in Enrichment Program I can retake with the same track or change into another track. As for Enrichment Program II, student who failed with Internship, Research, Community Development, and Study Abroad track on Enrichment Program II, can retake with the same track or change into another track. However students who take Entrepreneurship track on Enrichment Program II, should retake with another track

Certified Internship Track

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#### Enrichment Program II

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<td>Global EES II (Self-Management, Planning &amp; Organizing, Initiative &amp; Enterprise)</td>
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### Certified Community Development Track

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#### Enrichment Program I

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#### Enrichment Program II

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### Certified Study Abroad Track

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#### Enrichment Program I

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

**Certified Specific Independent Study Track**

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*) 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**

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

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*) Tutorial & Multipaper