Game Application & Technology

Introduction

Computer, mobile, and console games represent a multi-billion dollars global industry. Game Application and Technology (GAT) Program offers dedicated degrees in game development, providing students with the technical expertise they need to enter the industry confidently.

GAT Program is designed specifically by Computer Science of BINUS UNIVERSITY to provide students with knowledge and skills to develop and create a variety of applied technology in the field of game technology. BINUS UNIVERSITY found this Program in September 2012, and it became one of the best programs under the coordination of the School of Computer Science. In collaboration with several renowned game industries, GAT Program always makes continuous improvement in our curriculum, human resources, and facilities. The GAT Laboratory, equipped with high specification computers, cutting edge technologies (e.g. Virtual Reality, Augmented Reality, and Mixed Reality) and a dedicated audio editing studio, will facilitate the students and lecturers to collaborate and deliver high-quality games.

GAT Program is designed to adapt to the dynamically changing creative industries landscape while ensuring a solid academic foundation and aligned to industry expectations. GAT focuses on game art, game design, and game programming. Derived from Computer Science Study Program, GAT Program offers game programming and development blended with creativity and innovation in Game Technology. The program will not only focus on the game development for entertainment tools but also for other purposes (e.g. serious games for learning and training, and gamification tool to a non-game application to enhance its user's motivations and engagements). The structure of the course allows students to gain valuable practical experience in building software systems and also apply knowledge in creative game design. GAT Program has a strong base in computer science foundation subjects as well as offering the theoretical and critical thinking behind current digital technologies. Students will learn in a project-orientated environment that encourages collaboration with industries. This collaboration helps them discover creative solutions to contemporary design challenges. Students are encouraged to collaborate, work according to deadlines, maintain attendance levels and develop strong communication skills. As a result, graduates are internationally renowned for their expertise and confidence to enter the workplace as newly skilled professionals rather than technicians.

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 Game Application and Technology 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.
7. Able to create game software with the implementation of multimedia, computer network, and applicative database with use of artificial intelligence algorithm to solve real industry problems.

**Prospective Career of the Graduates**

After finishing the Program, the graduate of Game Application and Technology Program is able to follow a career in:

1. Game Engineer / Developer
2. Game Designer
3. Game Artist / Technical Artist
4. Game Audio Engineer
5. Game Director / Chief Technology Officer
6. Game Content Provider
7. Gamification & Serious Games Designer
8. Game Consultant
9. Game Publisher
10. Entrepreneur

**Curriculum**

With an international certification from The ASEAN University Network-Quality Assurance (AUN-QA) in 2018, the program ensures that the stakeholders will have an international quality in learning experiences. The current curriculum used in the GAT 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, national and international game industry and community (developer, publisher), up-to-date game technologies, and market trends. In addition, the students will have the opportunity to forge their Employability & Entrepreneurial Skills in the university’s enrichment program to ensure the students are well prepared for their future career. In the program, the students will have the opportunity to work in the internship program offered by various global industries; experience study abroad; start their own
business; involved in world-class research project; implement their skills in the community development program. With these, our graduates are expected to be able to compete at both national and international level. Generally, the subjects of the curriculum are divided into the following groups of subjects:

**Core Computer Science Group**
This group's objective is to provide a grounding in GAT Program through practice as well as the applied theory, which is required by business both now and in the future. The subjects included are Programming, Algorithm Design and Analysis, Software Engineering, Database, Computer Graphs, Artificial Intelligence, Interactive Multimedia, Human and Computer Interaction, Operation System, Game Art, Game Programming & Development, and Game Design.

**Science**
This group's objective is to provide an understanding of natural sciences, statistics, and mathematics as one of the principal foundations of computer science. Another objective is to understand scientific methodology (data collection, hypothesis, market research, analysis) in problem-solving.

**Professional Practices**
The objective of this group is to develop the personal strengths of the students and to provide them 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.

**The Field of GAT Subject**
The objective is to give the students a solid foundation of software development skills and introduce the specific skills needed to develop game applications. The students are expected to develop their skills and master the techniques which will allow them to research their thesis and to continue their studies. The field of GAT subjects are as follows:

1. Game Programming and Development: to explore the various programming techniques and algorithm in-game using industry-standard software and game engine.
2. Game Art: to explore various methodologies and techniques of game art and learn how to transform arts into assets for computer games and related industries using the latest technology and industry-standard software (2D and 3D, animation, modeling, character design).
3. Game Design: to explore the various methodologies and techniques of game story design, level design, gameplay design, human and computer interaction design.

Students of the GAT Program are required to follow these three fields to become our eligible graduates. These fields' objective is to provide the students with the knowledge and skills required by business & industry and those who want to develop their own game company.

**Course Structure**

<table>
<thead>
<tr>
<th>Sem</th>
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<td>Compilation Techniques</td>
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<td>ENTR6511001</td>
<td>Entrepreneurship: Market Validation</td>
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<td>GAME6091001</td>
<td>Advanced Game Development</td>
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<td>GAME6084001</td>
<td>Game Development Capstone Project**&lt;sup&gt;**&lt;/sup&gt; (AOL)</td>
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Total Credits 146 SCU

*) This course is delivered in English
**) Global Learning System Course
CATALOG 2023/2024
(BINUSIAN 2027)

- (AOL) - Assurance of Learning Process System

Foreign Language Courses:
Students will take foreign language courses according to BINUS University English proficiency test results. See foreign language courses appendix for the details. Students must pass with a minimum Grade of C.

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

Appendix Foreign Language Courses

<table>
<thead>
<tr>
<th>Foreign Language Courses</th>
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<tr>
<td>ENGL6253001 English for Frontrunners</td>
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<tr>
<td>ENGL6254001 English for Independent Users</td>
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<tr>
<td>ENGL6255001 English for Professionals</td>
<td>0</td>
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<tr>
<td>JAPN6190001 Basic Japanese Language</td>
<td>0</td>
</tr>
<tr>
<td>CHIN6163001 Basic Chinese Language</td>
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</table>

1. Students with Binus University English Proficiency Test score less than 437 are required to take English for Frontrunners and English for Independent Users.
2. Students with Binus University English Proficiency Test score less than 520 are required to take English for Independent Users and English for Professionals.
3. Students with Binus University English Proficiency Test score equal to or greater than 520 are required to take English for Professionals and choose Basic Japanese Language or Basic Chinese Language.
4. Students are required to pass the foreign language courses before they take enrichment.
5. Students can see the requirements to pass the foreign language courses at BINUSMAYA – Beelenga.

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.

Enrichment Track Scheme

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<tr>
<th>Track</th>
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<th>Semester 7</th>
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</table>

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

Description:
Student will take one of enrichment program tracks
1. Students will take only one track in each Enrichment Program.
2. Students who failed in Enrichment Program I can retake according to the table above.
3. As for Enrichment Program II, students who failed should retake the same track, except Certified Specific Independent Study.
4. For those who failed in the Certified Study Abroad track will retake the courses from the home campus.

### Certified Internship Track

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<td>GAME6089001</td>
<td>Game Production in Industry</td>
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<td>GAME6052001</td>
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### Certified Entrepreneurship Track

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<td>ENTR6653001</td>
<td>New Venture Initiation in Game Technology &amp; Industry</td>
<td>8</td>
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<td>ENTR6655001</td>
<td>Product Development Process in Game Technology &amp; Industry</td>
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<tr>
<td>ENTR6657001</td>
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<td>ENTR6656001</td>
<td>Business Development in Game Technology &amp; Industry</td>
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<td>Rouch6244001</td>
<td>Research Experience I</td>
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<td>Rouch6532001</td>
<td>Scientific Writing I in Game Technology</td>
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<td>Rouch6033001</td>
<td>Global EES I (Team Work, Communication, Problem Solving &amp; Decision Making)</td>
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<td><strong>Enrichment Program II</strong></td>
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<td>Rouch6259001</td>
<td>Research Experience II</td>
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<td>Scientific Writing II in Game Technology</td>
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<td>Rouch6267001</td>
<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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## Certified Study Abroad Track

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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**

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**Catalog 2023/2024**  
(BINUSIAN 2027)

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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**

<table>
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<td>COMP6816001</td>
<td>Wireless and Cloud Computing Technologies</td>
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<td>Internet Tools and Services</td>
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**Student should pass all of these quality controlled courses as listed below:**

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<td>COMP6047001</td>
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*) Tutorial & Multipaper