

A group of students in a VR lab. One student is wearing a VR headset, while others are looking at a large monitor displaying a game scene. A code editor is visible on the right side of the monitor.

# DIPLOMA IN GAME DESIGN & DEVELOPMENT (T58)

## Course Overview

If you're excited about the world of gaming and are familiar with terms such as BR (Battle Royale), FPS (First Person Shooter) and RPG (Role-Playing Game), then this course is right up your alley!

Gain a strong understanding of the game production pipeline where you will learn to design and create impactful games from conception to design and production.

Get the opportunity to learn from and work alongside experts who've created some of the world's best-selling video game titles. Our use of industry-leading tools from Unity will also give you a unique advantage. At the same time, earn recognised and valued game industry certifications while pursuing this course.

Take your passion for gaming to the next level with our Game Design & Development diploma course.

GGWP (good game, well-played)



### VERSATILE SKILLSET

Be equipped with skills not only to thrive in the entertainment and gaming industry, but in sectors such as healthcare and media too!



### DEVELOP YOUR OWN GAME

Try your hand at developing your own games at the Serious Games Hub. By embarking on an entire game production from conception to game design and production, you'll be able to gain valuable real-world experience, giving you an edge over others.



### REAL-WORLD EXPERIENCE

Gain valuable experience working with clients like MINDEF, NTUC, Indie Game Companies to hone your skills.

# Entry Requirements

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

Subject	Grade
English Language (EL1)*	1-7
Mathematics (E or A)	1-6
Any two other subjects	1-6
<b>2022 Planned Intake</b>	<b>50</b>
<b>Net ELR2B2 aggregate range (2021 JAE)</b>	<b>6 - 13</b>

To be eligible for selection, applicants must also have sat for one of the following subjects: Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3-D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants with complete colour vision deficiency are not eligible to apply for this course.

## What You'll Learn

YEAR 1

YEAR 2

YEAR 3

TPFUN

### Strong Foundation Skills

Learn to develop your own mobile and web applications with the coding and user interface skills you acquire. Also, learn the fundamentals of networking, and discover how to create your own analytics dashboard.

### Diploma Subjects - Core Subjects

Subject Code	Subject	Credit Units
CIA1C07	<b>Logic and Mathematics</b> This subject covers logic, sets, functions, recursion and graphs. It covers mathematical processes for developing algorithms in computing and other real-life applications. Topics covered include the fundamental mathematical concepts needed for computing.	3
CIT1C19	<b>User Experience and Interface Design</b> This subject introduces the concept of Human-Centered Design, and its practice to create useful digital products and interfaces that offer an enriching user experience (UX). The topics covered include designing interfaces, need findings, sketching and prototyping for interactive experiences, and usability testing.	3
CIT1C18	<b>Computational Thinking</b> This subject introduces students to the fundamentals of computational thinking and their application in developing programming solutions for problems. Topics covered include programming concepts, simple data structures and programming techniques.	4
CIT1C20	<b>Coding and Development Project</b> This subject introduces students to coding principles and practices using an object-oriented approach. The subject also introduces the development of an IT application using the latest technologies. Topics covered include object and classes, composition, simple data structures, application architecture, design and development.	4

<b>CIA1C11</b>	<b>Data Visualisation and Analytics</b> This subject covers the data analytics lifecycle, including gathering, cleaning, processing and visualising of data. Exploratory data analysis methods, descriptive and predictive analytics and the presentation of insights will also be covered.	<b>4</b>	^
<b>CIA1C06</b>	<b>Database Application Development</b> This subject introduces the fundamental concepts of relational database systems, the design methods specific to relational database, database manipulation using a database query language, and the techniques of implementing relational databases. It will also cover implementation of simple applications to access relational database.	<b>4</b>	^
<b>CIT1C14</b>	<b>Data Structures and Algorithms</b> This subject introduces students to the fundamentals of recursion and data structures in solving problems using a programming language. Topics covered include stacks, queues, linked lists and trees. Searching techniques and sorting algorithms will also be covered.	<b>4</b>	^
<b>CCF1C02</b>	<b>IT Systems Security Essentials</b> This subject introduces students to the key principles of information security namely confidentiality, integrity and availability and their application in various real world scenarios. Topics covered include IT law, international standards, security policies, procedures, processes to protect IT systems against cyber-attacks and information breaches and the architecture and organisation of the digital components of a computer system.	<b>4</b>	^
<b>CMC1C08</b>	<b>Network Technology</b> This subject covers the theoretical and practical aspects of networking and its related technologies. Topics covered include network protocols and communications, Ethernet networks, TCP/IP networking model, IP addressing, virtual local area networks (VLANs), routing and switching concepts and static and dynamic routing.	<b>4</b>	^

YEAR 1

**YEAR 2**

YEAR 3

TPFUN

**Immersive Game Experience**

You will be exposed to various aspects of the game production pipeline, with an emphasis on the technical aspects of developing games. You will learn how to build serious and video games using a game engine and code games in languages such as C++.

**Diploma Subjects - Core Subjects**

<b>Subject Code</b>	<b>Subject</b>	<b>Credit Units</b>	
<b>CGE1C10</b>	<b>Game UiUx</b> This subject focuses on user interfaces and the user experiences of interaction within the game. Students will learn the basics of how to create effective game interfaces using the appropriate tools and techniques as well as being able to understand the user perspectives and experiences of users interacting with game interfaces.	<b>4</b>	^
<b>CGE2C12</b>	<b>Game Modelling</b> This subject will introduce you to the 3D model creation workflow specifically for the game production pipeline. You will learn to use Polygon Mesh construction methods and texturing concepts for 3D game production. This subject also introduces Digital Content Creation (DCC) tools that you will apply to 3D modelling techniques such as low-poly meshing and digital texturing practices such as using coordinate mapping function and photographic texture creation for crafting 3D in-game art assets.	<b>4</b>	^
<b>CGE2C15</b>	<b>Game Math &amp; Physics</b> This subject will teach you the mathematics and physics concepts, principles and formulas that are crucial to developing games that look realistic, and how to apply these concepts into game situations such as simulating rigid-body collisions using momentum and energy. The subject includes geometry, trigonometry, vectors and matrices, and physics concepts, such as Newton's Laws of Motion and Forces and Energy, which will enable you to simulate realistic motion in games.	<b>4</b>	^



<b>CGE2C16</b>	<b>Game Development</b> This subject provides you with the knowledge and skills to develop graphical interactive games through the use of existing game libraries and to create the component parts of a game, both assets and programming code, and then bring them together to produce a complete game. The subject covers game development techniques such as sprite creation, rendering and animation; collision detection; the main game loop; event handling and control of the frame rate. The in-game usage of sound effects will also be taught, as well as key programming concepts required in game development such as memory management, programming standards and debugging.	<b>4</b>	^
<b>CGE2C17</b>	<b>Game Development Project</b> You will cover topics such as the key processes in the pre-game production, game production and post-game production stages. Topics on game industry roles and responsibilities, game development methodology, programming, design techniques and game-testing and quality assurance will also be covered.	<b>4</b>	^
<b>CGE2C19</b>	<b>Programming with Game Engines</b> This subject introduces programming of games using Game Engine. The subject will cover different game programming techniques and design pattern. Students will be able to employ the techniques and used in conjunction with game engines.	<b>4</b>	^
<b>CGE2C20</b>	<b>Game Design</b> The subject emphasises the use of game design to improve ideas before and during implementation. It covers various aspects of game design, from initial target audience, player behaviour and attitude to aspects affecting implementation within the actual video game. By examining various successful video games within different genres, you will learn to include a variety of attributes in your video games such as motivation for the player and being able to generate re-playability.	<b>4</b>	^

YEAR 1

YEAR 2

**YEAR 3**

TPFUN

**Advanced Game Design & Development Skills**

You will work on real world projects that include the latest immersive media, including AR/VR and also get a chance to polish your own game ideas for publication. You will have the chance to work alongside experts and work for clients in local or overseas companies to hone your skills to develop serious games.

<b>Diploma Subjects - Core Subjects</b>			
<b>Subject Code</b>	<b>Subject</b>	<b>Credit Units</b>	
<b>CGE3E01</b>	<b>Game AI</b> The subject introduces the concept of AI within a game engine. Students will learn the basic theories behind AI and explore techniques to apply AI using a game engine for various game types.	<b>4</b>	^
<b>CGE3C07</b>	<b>Mixed Reality Application Development</b> This subject introduces the techniques for designing and developing immersive experiences using mixed reality, such as augmented reality and virtual reality.	<b>4</b>	^
<b>CMP3702</b>	<b>Major Project</b> This subject helps you integrate and apply the knowledge and skills acquired from the various subjects in the Game Design & Development curriculum. It helps you develop a practical understanding of game development methodology, programming and design techniques, quality assurance, project management and presentation skills.	<b>10</b>	^

YEAR 1

YEAR 2

YEAR 3

**TPFUN**

You will also undergo TP Fundamentals (TPFun) – a set of subjects that equips you with the crucial life skills you need to navigate the modern world as an agile and forward-thinking individual, and team player.

**TP Fundamentals (TPFun) Subjects**

Subject Code	Subject	Credit Units	
GTP1301	<p><b>Current Issues &amp; Critical Thinking</b></p> <p>This subject covers current issues, including diverse local and global concerns, that will impact lives and may have critical implications for Singapore. There will be opportunities to build competence through self-directed learning, communicate and collaborate in active discussions and objectively analyse issues using digital and information literacy skills and critical thinking scaffolds.</p> <p>This subject aims to provide students with the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• apply critical thinking tools to examine current issues.</li> <li>• effectively search for relevant information from a variety of sources.</li> <li>• evaluate research information.</li> <li>• cite sources to support their views.</li> <li>• articulate an informed opinion about current issues.</li> </ul>	3	^
CTX1001	<p><b>Effective Communication</b></p> <p>This subject introduces the fundamentals of effective communication. It also covers how to communicate with and convince an audience through writing and speaking tasks. The skills in this subject will include the application of strategies for communication, appropriate vocabulary, language features, visual aids, tone and style. The <b>Message, Audience, Purpose and Strategy (MAPS)</b> framework will also be applied when planning and engaging in written and verbal communication. There will be opportunities to communicate and collaborate through active learning activities, apply digital and information literacy skills and build competence through self-directed learning.</p> <p>This subject aims to equip students with the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• apply the factors that influence effective communication.</li> <li>• structure a compelling point of view through a writing task.</li> <li>• express their ideas convincingly to an audience in an oral presentation.</li> </ul>	3	^
CTX1002	<p><b>Professional Communication</b></p> <p>This subject covers professional communication skills for the workplace and employability skills in the areas of career preparation. It covers communication and interpersonal skills, including effective virtual communication etiquette, and conducting oneself professionally in the workplace. In addition, essential career preparation skills such as resume writing and interview skills, needed to seek and secure work would be included. The <b>Message, Audience, Purpose and Strategy (MAPS)</b> framework would also be applied when engaging in written and verbal communication. There will be opportunities to communicate and collaborate through active learning activities, apply digital and information literacy skills and build competence through self-directed learning.</p> <p>The subject aims to equip students with the knowledge and skills to:</p> <ul style="list-style-type: none"> <li>• communicate effectively in the workplace using principles of effective written communication and interpersonal skills.</li> <li>• apply effective job search and interview skills in their career preparation.</li> </ul>	3	^
GTP1101	<p><b>Leadership Fundamentals</b></p> <p>This subject focuses on self-leadership based on the values of integrity, respect, and responsibility. Increasing awareness of self and others will lay the foundations for personal and relationship effectiveness. Consequential thinking, clear articulation of personal values and visions, emphatic listening, and collaboration in serving others are some of the essential skills covered in this leadership journey. There will be opportunities to build and to apply the concepts of being a values-centred leader.</p> <p>The aim of this subject is to guide students to:</p> <ul style="list-style-type: none"> <li>• design a personal growth plan based on strengths, values and purpose.</li> <li>• apply the attributes of logical and emotional intelligence to improve team effectiveness.</li> <li>• identify the key messages of respect in relationships.</li> <li>• apply the principles of effective personal financial management.</li> </ul>	2	^
GTP1102	<p><b>Leadership in Action</b></p> <p>This subject focuses on Service Learning as an experiential platform to apply the tenets of Self and Team Leadership. Service Learning will be the capstone project for this subject, which will require an analysis of the diverse needs of the community, collaboration with community</p>	1	^

partners and demonstration of learning, including key elements of empathy. There will be opportunities to build and to apply the concepts of being a values-centred leader.

This subject aims to equip students with the knowledge and skills to:

- plan and carry out a project to demonstrate empathy towards people in a diverse community.
- apply diploma core knowledge and skills through the Service Learning platform to address community needs.
- reflect on the Service Learning experience when working in teams and with community partners.

**GTP1201**

**Career Readiness CARE1**

**1**



This subject focuses on personal management skills. It develops an understanding of one's career interests, values, personality and skills for career success. It covers the necessary knowledge, skills and attitudes needed to succeed in the workplace and achieve professional goals. There will be exposure to apply digital and information literacy skills, build competence through self-directed learning methods and acquire the skills of being a lifelong learner.

This subject aims to equip students with the knowledge and skills to:

- analyse personal characteristics that can contribute positively to achieving personal, educational and career goals.
- make career decisions that are aligned with their interests, skills and values.

**GTP1202**

**Career Readiness CARE2**

**1**



This subject focuses on career management skills. It covers the importance of workplace readiness skills to adapt and respond to the changing job market environment. Career ownership and continuous learning for lifelong employability will be emphasised. There will be exposure to apply digital and information literacy skills, build competence through self-directed learning, and acquire the skills of being a lifelong learner.

This subject aims to equip students with the knowledge and skills to:

- identify their work profiles to help them in their career choices in a changing job market environment.
- take career ownership for continuous learning and lifelong employability.

**LSW1002**

**Sports & Wellness**

**2**



The subject enables students to build a good foundation for healthy living. Students will have the opportunity to participate in hands-on practical sessions where they will experience and develop both physical and technical skills in their chosen sports or fitness activities. Through a structured curriculum that facilitates group participation, practice sessions and mini competitions, students will be able to build lifelong skills such as resilience, leadership, communication and teamwork. Physical activity sessions will also be supplemented by health-related topics that span the dimensions of health, such as diet, nutrition, stress and weight management, to provide students with a holistic approach to healthy living. This subject also prepares students to be self-directed and accountable for lifelong learning for good health.

**CIN1001**

**Innovation & Entrepreneurship**

**2**



The subject is designed for learners from all disciplines to embrace innovation in either their specialised field or beyond. Learners will be taught to apply the Design Thinking framework to develop problem statements, ideate and identify feasible solutions. Learners will be exposed to several tools for prototyping. In addition, commercial awareness will be imbued in learners through various innovation and entrepreneurship concepts or tools. This subject also prepares students to be self-directed lifelong learners who are digital and information literate. It nurtures communicative and collaborative citizens who can use objective analysis in problem-solving.

**CGS1002**

**Global Studies**

**3**



This subject provides essential skills and knowledge to prepare students for an overseas experience. They will examine the elements of culture and learn the key principles of cross-cultural communication. In addition, they will gain an appreciation and awareness of the political, economic, technological and social landscape to function effectively in a global environment. The subject prepares students to be responsible citizens and leaders who can contribute to the global community through effective communication and collaboration.

**CGS1003**

**Managing Diversity at Work\***





**3**



This subject explores the concepts of identity, diversity and inclusion at the workplace. It examines the relationship between identity and diversity, the benefits and challenges of diversity and the strategies that promote inclusion and inspire collaboration in a diverse workplace.



Examples of the elements of diversity covered in this subject include nationality, generation, ethnicity and gender. The subject prepares students to be responsible citizens and leaders who can contribute to the global community through effective communication and collaboration.

<b>CGS1004</b>	<b>Global Citizenship &amp; Community Development*</b>	<b>3</b>	
	Students will examine the meaning and responsibilities of being a Global Citizen, in order to contribute towards a more equitable and sustainable world. In addition, students will learn how sustainable solutions can support community development, and, execute and critique a community action plan that addresses the needs of a specific community/cause. The subject prepares students to be responsible citizens and leaders who can contribute to the global community through effective communication and collaboration.		
<b>CGS1005</b>	<b>Expressions of Culture*</b>	<b>3</b>	
	This subject provides a platform for an understanding of culture and heritage through modes of expression. Students will be introduced to global and local cultures via everyday objects, places and human behaviour seen through time and space. Students will explore issues and challenges in culture and heritage sustainability in community, national and global contexts. The subject prepares students to be responsible citizens and leaders who can contribute to the global community through effective communication and collaboration.		
<b>GTP1302</b>	<b>Guided Learning</b>	<b>3</b>	
	The subject introduces students to the concepts and process of self-directed learning in a chosen area of inquiry. The process focusses on four stages: planning, performing, monitoring and reflecting. Students get to plan their individual learning project, refine and execute the learning plan, as well as monitor and reflect on their learning progress and project. The learning will be captured and showcased through a curated portfolio. The self-directed learning project will broaden and/or deepen a student's knowledge and skills. Students will enhance their problem solving and digital literacy skills through this subject.		
<b>CSI3004</b>	<b>Student Internship Programme</b>	<b>16</b>	
	This structured programme is designed to link your learning with the real work environment. You will be placed in organisation(s) with opportunities to apply the concepts and skills acquired in the course of your study. Besides reinforcing technical concepts and mastering of skills in areas that you have been trained, the practical training will enable you to build important skills such as problem-solving, communication, teamwork, and to cultivate good attitude and a strong work ethic.		

\*Students must choose one of these three electives under the 'Global Studies 2' subject, or take 'Guided Learning'

## GRADUATION REQUIREMENTS

Cumulative Grade Point Average	min 1.0
TP Fundamental Subjects	40 credit units
Diploma Subjects - Core Subjects	72 credit units
Diploma Subjects - Elective Subjects	min 8 credit units
<b>Total Credit Units Completed</b>	min 120 credit units