DIPLOMA IN IMMERSIVE MEDIA & GAME DEVELOPMENT (T58)

Course Overview

Keen to use augmented reality, virtual reality technologies and tools to develop interactive content? Then, this course would be right up your alley!

Gain a strong understanding of how to merge virtual and physical worlds using sound game development principles. Create your own interactive experiences from conception, to development and deployment. Get the opportunity to learn from and work alongside experts who created augmented reality and virtual reality for industries, such as healthcare, hospitality, manufacturing and education. Our use of industry-leading tools from Unity will also give you a unique advantage. At the same time, earn recognised and valued immersive media and game-related professional certifications while learning with us.

Take your passion for creating interactive and immersive content to the next level though this exciting and engaging course in Immersive Media & Game Development.

Get the opportunity to attain the certifications(s) below through your course of study:

- Unity Certified Associate Programmer

AWS Cloud Practitioner Certification

Many companies are now placing their information on the cloud, as well as creating applications and services on the cloud. Due to cloud computing, we are seeing a big shift from the traditional way businesses think about IT resources. Cloud Computing professionals are in high demand in the IT industry. The AWS Certified Cloud Practitioner offers a foundational understanding of AWS Cloud concepts, services, and terminology.

The School of Informatics & IT curriculum prepares students to acquire the AWS certified cloud practitioner qualification. Industry-recognised certificates give students and prospective employers an added confidence about the cloud proficiency of graduates.

Supported by:

aws academy

Member Institution

VERSATILE SKILLSET
Be equipped with strong application development and immersive media skills that you can use in a range of industries such as education, healthcare, transportation, financial services etc.

DEVELOP IMMERSIVE EXPERIENCES
You will have classes at the App Experience Hub where you will use the latest technologies to develop awesome applications that create immersive experiences for users with the skills you acquire in this course.

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
2023 Planned Intake	**25**
Net ELR2B2 aggregate range (2023 JAE)	**8 - 13**

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 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
CIT1C21	**Application Development Project** This subject will introduce the skills required to develop a web application using the latest technologies. Project design, development and deployment will also be covered.	4
CIT1C18	**Computational Thinking** 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
CCF1C03	**Cybersecurity Fundamentals** This subject will introduce the principles of cybersecurity and their application in real world scenarios. It also covers what is required to protect and defend digital systems and applications in cyber space. Common types of cyber risks, threats and attacks, as well as the applicable controls will also be discussed.	2
CIA1C11	**Data Visualisation and Analytics** 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.	4

CIA1C06	**Database Application Development** 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.	**4**	^
CIT1C14	**Data Structures and Algorithms** 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.	**4**	^
CIA1C07	**Logic and Mathematics** 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**	^
CCF1C04	**Network and Cloud Technology** This subject covers the theoretical and practical aspects of network and cloud technology. Topics covered include how data is transmitted within an organisation and via the internet, as well as cloud computing technologies, its benefits, organisation, cloud usage, and risks.	**4**	^
CIT1C19	**User Experience and Interface Design** 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	**3**	^

interfaces, need findings, sketching and prototyping for interactive experiences, and usability testing.

YEAR 1 | YEAR 2 | YEAR 3 | TPFUN

Immersive Experience

You will be exposed to various immersive media technologies, such as AR/VR, and the game production pipeline in developing a combination of interactive content and games. You will learn to build immersive experiences and video games using a game engine.

Diploma Subjects - Core Subjects

Subject Code	Subject	Credit Units
CGE2C16	**Game Development** 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.	4
CGE2C19	**Programming with Game Engines** 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 conjuction with game engines.	4
CGE2C20	**Game Design** The subject emphasises the use of game design to improve ideas before	4

	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.		
CGE2C22	**Augmented Reality Application Development** This subject introduces the principles and components underlying augmented reality applications. It covers core building blocks, user experience (UIUX) design principles, and software tools for developing an augmented reality application.	**4**	
CGE2C23	**3D Modelling** This subject will introduce the 3D model creation workflow for games and immersive media. It also introduces Digital Content Creation (DCC) tools that can be applied 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 art assets.	**4**	
CGE2C24	**Immersive UiUx** This subject focuses on user interfaces and the user experiences of interaction within immersive media environments. It will also cover the basics of how to create effective interfaces using the appropriate tools and techniques as well as being able to understand the user perspectives and experiences of users interacting within games and immersive environments.	**4**	
CGE2C25	**Maths and Physics Programming**	**4**	

	This subject will introduce the mathematics and physics concepts, principles and formulas that are crucial to developing interactive environments that look realistic, and how to apply these concepts into immersive media. The subject includes geometry, trigonometry, vectors and matrices, and physics concepts for games and immersive media.		
CGE2C21	**Computer Graphics and Programming** The subject covers the essentials of geometry and its mathematical representations used in computer graphics. It examines concepts and algorithms for geometric modelling and then studies rendering algorithms, such as rasterization and raytracing. Additional topics include digital imaging concepts, shaders, and scene graphs, and camera representations.	**4**	^

YEAR 1 YEAR 2 **YEAR 3** TPFUN

Advanced AR/VR and Game 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 game ideas for publication. You will have the opportunity to work alongside experts and work for clients in different industries such as hospitality, healthcare, manufacturing and education.

Diploma Subjects - Core Subjects —

Subject Code	Subject	Credit Units	
CGE3C08	**Immersive Technology Development** This subject introduces the concepts and components underlying immersive technology development. It covers the building blocks, design principles, and software tools for developing virtual reality and 360-degree authoring applications.	**4**	^
CGE3E01	**Game AI** 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.	**4**	^

CMP3703	**Major Project** This subject helps you integrate and apply the knowledge and skills acquired from the various subjects in the Immersive Media & Game Development curriculum. It helps you develop a practical understanding of immersive technology, game development methodology, programming and design techniques, quality assurance, project management and presentation skills.	**10**

YEAR 1 YEAR 2 YEAR 3 **TPFUN**

You will also take this set of subjects that equips you with the crucial 21st-Century life skills you need to navigate the modern world as an agile, forward-thinking individual and team player.

TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
CSI3004	**Student Internship Programme** 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.	**16**
CTX1001	**Effective Communication** 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	**3**

	aids, tone and style. The **M**essage, **A**udience, **P**urpose and **S**trategy (MAPS) 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.		
CTX1002	**Professional Communication** 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 **M**essage, **A**udience, **P**urpose and **S**trategy (MAPS) 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.	**3**	^
GTP1301	**Current Issues & Critical Thinking** 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.	**3**	^
GTP1201	**Career Readiness** This subject focuses on personal management skills. It develops an	**1**	^

	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.		
GTP1202	**Career Management** 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.	**1**	
CGS1002	**Global Studies** 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 global citizens and leaders who can contribute to the global community through effective communication and collaboration.	**3**	
GTP1302	**Guided Learning*** 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:	**3**	

	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.		
CIN1001	**Innovation & Entrepreneurship** 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.	**2**	
GTP1101	**Leadership Fundamentals** 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.	**2**	

GTP1102	**Leadership in Action** 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 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.	**1**	^
LSW1002	**Sports & Wellness** 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.	**2**	^
TGS1001	**Sustainability & Climate Action*** This subject prepares students to be responsible global citizens and future leaders who can contribute to the global community. It introduces the topics of sustainability and explores how human societies can act to build a sustainable future. This subject focuses on the impact of climate change, potential solutions to climate change, and the future of the green	**3**	^

	economy from global and local perspectives.

** Students must choose to take either **Sustainability & Climate Action** or **Guided Learning**.*

GRADUATION REQUIREMENTS

Cumulative Grade Point Average	min 1.0
TP Fundamental Subjects	40 credit units
Diploma Subjects - Core Subjects	82 credit units
Total Credit Units Completed	min 122 credit units