

# DIPLOMA IN PRODUCT & INDUSTRIAL DESIGN (T35)

## Course Overview

Good product design has the power to improve lives. Get ready to break down conventional thinking and seek fresh and bold ideas, prototyping them with the latest 3D printing technology and traditional workshop tools. Learn from different materials, human-centred design and the newest technologies and trends to keep up with emerging lifestyles and innovations.

You will hone your sense of craft, critical thinking, technical and reasoning skills, expanding your capacity to communicate and make compelling 'live' industrial project pitches through purposeful product design, rational design research and analytical processes. Your creation could transform the mundane into nifty, intelligently-designed gadgets that can add value to lives and businesses.

[Download the Design EAE Interview and Portfolio Guide](#)



### FIRST OF ITS KIND

With more than 30 years in the business as the first product design course in a polytechnic, we are recognised for producing some of Singapore's top award-winners and entrepreneurs in the product design scene.



### ADVANCED TECHNOLOGY

Students work with industry-grade equipment and the latest 3D printers to prototype their ideas in one of Singapore's largest fully-equipped fabrication workshops.



### INNOVATIVE TOOLS

With equipment such as MS HoloLens 2 and Magic Leap, students can use virtual reality, mixed reality and augmented reality to collaborate and accelerate their design iteration process through interactive real-world digital visualisation.

# 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)	1-7
Any three other subjects, excluding CCA	1-6
<b>2022 Planned Intake</b>	<b>50</b>
<b>Net ELR2B2 aggregate range (2021 JAE)</b>	<b>10 - 17</b>

Applicants must also have sat for at least one of the following subjects: Additional Combined Science, Additional Science, Art/ Art & Design, Biology, Biotechnology, Chemistry, Combined Science, Computer Studies, Creative 3D Animation, Design & Technology, Engineering Science, Food & Nutrition, Fundamentals of Electronics, General Science, Higher Art, Human & Social Biology, Integrated Science, Media Studies (English), Media Studies (Chinese), Physics, Physical Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry), Science (Physics, Chemistry, Biology).

Note: Applicants who have partial or complete colour appreciation deficiency should not apply for this course. Applicants who do not satisfy the pre-requisite may not be accepted into the course. For safety reasons, applicants must ensure that they do not suffer from medical conditions such as epilepsy or hearing deficiency.

## What You'll Learn

**YEAR 1**

YEAR 2

YEAR 3

TPFUN

In Year 1, you will acquire basic skills of visual presentation and get an introduction to design research. For example, you will find out how to manipulate shapes and forms to communicate an idea, as well as 3D printing and other prototyping tools.

### Diploma Subjects - Core Subjects

Subject Code	Subject	Credit Units
DPD1438	<b>Object Visualisation</b> This subject covers the skillsets used in communicating product ideas through sketches and 3-dimensional visualisation using basic prototyping materials such as foam and cardboard. The subject also provides an understanding of perspective drawing and proportions in three-dimensional form development.	2
DPD1439	<b>Design Research Methodologies</b> This subject introduces the basics in the fact-finding and user research process, conducted through research tools and frameworks. The subject will cover how to conduct interviews and surveys in order to elicit quantitative and qualitative information.	4
DPD2442	<b>Prototyping Essentials</b> This subject covers the skillsets of creating prototypes by hand and through rapid prototyping. The subject provides opportunities to manipulate and work with various materials and processes in order to create scale prototypes that communicate design intent.	2
DPD2443	<b>Human-Centred Design</b> This subject introduces the basics in the product development process through prototyping with the end-user in mind. Students will learn about the research tools and frameworks that will help define design opportunities with the intent to focus on product interaction and usability through communication with the end-users.	4

<b>DPD2444</b>	<b>Studio Project 1</b> This subject introduces you to basic design vocabulary and the visual language of three-dimensional forms. Emphasis is placed on the realisation of sculptural forms as opposed to a utilitarian one. The core focus lies on the semantics of form and structure and the communication of ideas juxtaposed with issues of historical, social, cultural, functional and practical concern.	<b>6</b>	^
<b>DCF1038</b>	<b>Aesthetics for Design</b> This subject introduces the aesthetic and communicative aspects of design. Key topics include the elements of visual art, principles of design, basic drawing techniques and fundamental applied typography, and will explore integrating different sensorial qualities to expand the aesthetic experience for effective design communication.	<b>4</b>	^
<b>DCF1037</b>	<b>Design in Context</b> This subject explores the context, influence and motivations in creative practices led by global art, design and film movements across various periods. It will cover the study of design trends and socio-political climates to translate design inspirations using the appropriate terminology and language in both writing and oral presentations.	<b>2</b>	^
<b>DCF1036</b>	<b>Discovering Design</b> This subject will cover the essential ideas, tools, processes and techniques of the various disciplines within design. It provides the framework to develop creative confidence towards learning in design by acquiring fundamental knowledge, attitudes, and mindsets necessary to build design conversance.	<b>2</b>	^
<b>DCF1039</b>	<b>Form &amp; Materiality</b> This subject will introduce prototyping and tactile manipulation in relation to form and function. The subject provides the framework for exploring form, proportion and hierarchy, with a focus on 2D and 3D drawings, interacting with both hard and soft materials, and journaling.	<b>4</b>	^
<b>DCF1040</b>	<b>Visual Narratives: Photography</b> This subject provides an overview of the power of visual narratives through a variety of photographic directions. It includes the fundamentals of camera skills such as shutter speed control, depth of field, sensor sensitivity, exposure and angle of lenses, basic principles of photography, and the narration of a story through a series of photographic images.	<b>2</b>	^
<b>DCF1041</b>	<b>Visual Narratives: Videography</b> This subject will cover the use of electronic cinematography techniques to tell a story. Key topics include mobile videography, visual composition, shutter speed control, depth of field, sensor sensitivity, exposure and angle of lenses, lighting concepts, audio and post-production, and video sequencing in creating visual narratives.	<b>2</b>	^

YEAR 1

**YEAR 2**

YEAR 3

TPFUN

Year 2 is where you go deeper into understanding the design research process. You will also learn the technical tools of visualisation in order to help you develop better product usability and create delightful user experiences. This is the year for study trips! You will have the opportunity to go on study trips to gain exposure to different lifestyles, cultures and social platforms to better enrich your design concepts.

### Diploma Subjects - Core Subjects

Subject Code	Subject	Credit Units	
<b>DPD2440</b>	<b>Studio Project 2</b> This project emphasises the application and use of industrial processes to meet user needs so that manipulative and workshop skills are developed into an understanding of production processes. You will learn entrepreneurship, leadership, batch production, marketing and sale of your designs.	<b>6</b>	^
<b>DPD2445</b>	<b>Digital Prototyping</b> This subject covers 3D surface modelling to create virtual objects. The construction of high-	<b>4</b>	^

	quality 3D modelling and visualisation through 2D computer rendering will be explored by using appropriate CAD (Computer-aided Design) software.		
<b>DPD2446</b>	<b>User Experience Design</b> This subject covers affective psychology, qualitative and quantitative data gathering methods to design and develop product experiences that address the user's needs while influencing the user's emotions. The collected data is synthesized to support the design solutions.	<b>4</b>	^
<b>DPD2447</b>	<b>Rapid Prototyping</b> This subject covers advanced physical prototyping methods such as additive and subtractive manufacturing for validation and communication purposes. Various equipment such as 3D printers, CNC and laser cutting tools will be introduced.	<b>2</b>	^
<b>DPD2448</b>	<b>User Interface Design</b> This subject covers the basics of crafting interactive touchpoints in physical product with graphic interface, mobile devices and digital products using software and basic prototyping methods. It will cover the creation of interactive screen design with applied usability interaction principles, interface design elements, wireframes and graphic interface flow for prototyping.	<b>2</b>	^
<b>DPD3436</b>	<b>Studio Project 3</b> Layering skills learned in early studio project modules, this subject takes a deeper look at design methodology, including research and analysis, problem identification and problem solving. The focus rests on identifying new opportunities for a product ecosystem and product innovation. This includes the technical skillsets to translate sketches into digital rendering and general assembly drawings with the aid of maquettes and mock ups. There is emphasis on human-centric design approaches, including the consideration of ergonomic and user interaction. Technical constraints, functionality, practicality and product semantics and aesthetics are emphasised and explored which ends in the production of highly finished three-dimensional presentation models to communicate design intent.	<b>6</b>	^
<b>DPD3437</b>	<b>Service Design Principles</b> This subject covers a series of business frameworks that will enhance services and processes and to formulate new products through the design of new business eco-systems. It includes key topics such as Business Service Blueprint, Value Proposition Mapping and Customer Experience Mapping Techniques that are core competencies for businesses.	<b>4</b>	^
<b>DPD3438</b>	<b>Innovation &amp; Technology</b> The subject highlights the influence that science, technology and data connection has on modern product design as well as the importance and value of product innovation processes. The topics include fundamentals of computational thinking, programming concepts and how to integrate smart technology to create proof of concept for product development.	<b>2</b>	^
<b>DPS1035</b>	<b>Collaborative Transformation</b> The subject focuses on collaborative design principles to help students to work in teams in addressing social issues. A group design brief serves to organize and drive activities, and encourage application, analysis, and synthesis of collaborative strategies.	<b>2</b>	^
<b>DIA2244</b>	<b>Sustainable Space Planning *</b> The subject focuses on the understanding of human behaviour through the sustainable planning of spaces that set the stage for an effective user experience. The subject addresses issues pertaining to ergonomics, anthropometry, human behaviour, universal design and design programming that provides a platform for exploring various techniques to creatively resolve challenges related to the function and quality of human environments.	<b>4</b>	^
<b>DPD2449</b>	<b>Design &amp; Form Development *</b> This subject covers the different methods and theories used to produce aesthetically pleasing products. It focuses on various methods to convey the desired message by applying appropriate forms to product design models. The forms will be constructed using advanced surface modelling techniques into 3D virtual objects through CAD (Computer-aided Design) software established in the design industry.	<b>4</b>	^

\*Students must choose ONE of these electives

Industry exposure takes centre stage in your final year. Work on 'live' industry projects and be exposed to current industry practices. Some industry partners our students have worked with include Ikea, Singapore Technologies and Lam Soon Group. Coupled with internship and preparation for the Major Project, year 3 will prepare you for life after graduation as young and innovative designers with fresh ideas.

### Diploma Subjects - Core Subjects

Subject Code	Subject	Credit Units
DPD3434	<p><b>Industry Studio Project</b></p> <p>This project provides you with a deeper engagement with industry through 'live' industry briefs. You are expected to utilise skills layered in earlier project modules to explore complex design challenges and offer appropriate solutions. Through this project-driven module, you will delve deeper into design research methodology, to practice and hone your skills in service design blueprint techniques, problem identification/ opportunity analysis and problem solving.</p>	6
DPD3439	<p><b>Data Visualisation Essentials</b></p> <p>The subject focuses on essential skillset used to develop animation, Interactive Augmented Reality (AR) and Mixed Reality (MR) using industry-standard tools for accelerated and comprehensive product visualisation and communication.</p>	2
DPD3450	<p><b>Design Pitch &amp; Communication</b></p> <p>This subject covers resource planning and video communication to deliver a visually persuasive and captivating business video pitch presentation.</p>	2
DPD3029	<p><b>Major Project: PID</b></p> <p>This self-initiated project gives you the latitude to put your critical thinking skills to the test as you create and propose design solutions that address new opportunities that stem from anthropological, social, cultural and technological change. The scope is wide and you will be encouraged to identify new niches in product design or propose new user experiences while taking into consideration, insight into human behaviour and new emerging trends.</p>	8

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
DTX1001	<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</p>	3

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.

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

- apply the factors that influence effective communication.
- structure a compelling point of view through a writing task.
- express their ideas convincingly to an audience in an oral presentation.

**DTX1002**

**Professional Communication**

**3**



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 **Message, Audience, Purpose** and **Strategy (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.

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

- communicate effectively in the workplace using principles of effective written communication and interpersonal skills.
- apply effective job search and interview skills in their career preparation.

**GTP1101**

**Leadership Fundamentals**

**2**



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.

The aim of this subject is to guide students to:

- design a personal growth plan based on strengths, values and purpose.
- apply the attributes of logical and emotional intelligence to improve team effectiveness.
- identify the key messages of respect in relationships.
- apply the principles of effective personal financial management.

**GTP1102**

**Leadership in Action**

**1**



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.

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.

<b>LSW1002</b>	<b>Sports &amp; Wellness</b>	<b>2</b>	
<p>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.</p>			
<b>DIN1001</b>	<b>Innovation &amp; Entrepreneurship</b>	<b>2</b>	
<p>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.</p>			
<b>DGS1002</b>	<b>Global Studies</b>	<b>3</b>	
<p>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.</p>			
<b>DGS1003</b>	<b>Managing Diversity at Work*</b>	<b>3</b>	
<p>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.</p>			
<b>DGS1004</b>	<b>Global Citizenship &amp; Community Development*</b>	<b>3</b>	
<p>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.</p>			
<b>DGS1005</b>	<b>Expressions of Culture*</b>	<b>3</b>	
<p>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.</p>			
<b>GTP1302</b>	<b>Guided Learning</b>	<b>3</b>	
<p>The subject introduces students to the concepts and process of self-directed learning in a</p>			

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.

**DSI3029**

**Student Internship Programme**

**12**



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 Fundamentals Subjects	36 credit units
Diploma Core Subjects	87 credit units
<b>Total Credit Units Completed</b>	<b>min 123 credit units</b>