

DIPLOMA IN APPLIED ARTIFICIAL INTELLIGENCE (T69)

Course Overview

Artificial Intelligence (AI) is one of the fastest growing areas in the world today. This is because businesses are rushing to leverage AI to do things differently, faster, and more efficiently. Because of AI, we are seeing a rise in the use of autonomous vehicles. Because of AI, we are able to develop healthcare solutions that help frontliners in the fight against COVID-19. In this course you will learn to develop chatbots, leverage on natural language processing technologies to translate information from one language to another, undertake object recognition projects that enable you to identify objects such as car plate numbers, and learn to use machine learning and deep learning algorithms to develop creative new solutions for businesses and industry.

In your senior year, you will apply your knowledge and skills in domain areas such as *Advanced Manufacturing* and *Cybersecurity*. This will give you an edge when you graduate as you will be acquiring practical skills in areas that have a huge demand for skilled AI professionals.

Entry Requirements

The minimum entry requirements for the course are as follows:

Subject	Grade
English Language (EL1)*	1-7
Mathematics (E or A)	1-6
Any two other subjects, excluding CCA	1-6
2021 Planned Intake	45
Net ELR2B2 aggregate range (2021 JAE)	5 - 11

To be eligible for selection, applicants must also have sat for one of the following subjects listed under ELR2B2-C:









Additional Combined Science, Additional Science, Biology, Biotechnology, Chemistry, Combined Science, Computing/Computer Studies, Creative 3-D Animation, Design & Technology, Food & Nutrition, Electronics/Fundamentals of Electronics, General Science, Human & Social Biology, Integrated Science, Physics/Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry)/Physical Science, Science (Physics, Chemistry, Biology).

* Sijil Pelajaran Malaysia (SPM)/ Unified Examination Chinese (UEC) holders must have a minimum of grade 6 for the relevant English Language subject (e.g. Bahasa Inggeris).

What You'll Learn

YEAR 1











TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
 LEA1011	Leadership: Essential Attributes & Practice 1 LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.	1 
 MCR1001	Career Readiness 1 This Career Readiness programme comprises three core subjects - Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.	1 
 CCS1006	Communication & Information Literacy In this subject, you will learn how to conduct research for relevant information and validate information sources.. You will also learn to recognise and avoid plagiarism, and follow standard citation and referencing guidelines when presenting information. In the course of learning, you will be required to plan, prepare and present information appropriately in written and oral form. You will also be taught to consider the M essage, A udience, P urpose and S trategy (MAPS) when writing and delivering oral presentations.	2 
 LSW1002	Sports & Wellness This subject will help you develop both the physical and technical skills in your chosen sports or fitness activities. Through a structured curriculum that facilitates group participation, practice sessions and mini competitions, you will learn to build lifelong skills such as resilience, leadership, communication and teamwork. Physical activity sessions will be supplemented by health-related topics to provide you with a holistic approach to healthy living.	2 

^	CCS1008	Persuasive Communication <p>In this subject, you will be taught how to use persuasive language in written documents. You will be required to use information to your advantage to verbally communicate and convince an audience about your idea, product or service. Skills such as persuasive vocabulary, language features, graphical illustrations, tone and style would also be covered. The Message, Audience, Purpose and Strategy (MAPS) will also be applied when engaging in verbal and written communication.</p>	2	^
^	GCC1001	Current Issues & Critical Thinking <p>This subject presents you with a panoramic view of current local and global issues, which may have long term implications for Singapore. You will learn to apply critical thinking tools to examine current issues, support your views with relevant research and up-to-date data, articulate an informed opinion and mature as civic-minded individuals.</p>	2	^
^	CGS1002	Global Studies <p>This subject provides essential skills and knowledge to prepare you for an overseas experience. You will examine the elements of culture and learn the key principles of cross-cultural communication. In addition, you will gain an appreciation and awareness of the political, economic, technological and social landscape to function effectively in a global environment.</p>	3	^
Diploma Subjects - Core Subjects				
	Subject Code	Subject	Credit Units	
^	CIA1C07	Logic and Mathematics <p>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.</p>	3	^
^	CIT1C19	User Experience and Interface Design <p>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 deisgning interfaces, need findings, sketching and prototyping for interactive experiences, and usability testing.</p>	3	^
^	CIT1C18	Computational Thinking <p>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.</p>	4	^













^	CIT1C20	Coding and Development Project 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	^
^	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	^
^	CCF1C02	IT Systems Security Essentials 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.	4	^
^	CMC1C08	Network Technology 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.	4	^

TP Fundamentals (TPFun) Subjects

Subject Code	Subject	Credit Units
 MCR1002	Career Readiness 2 <p>This Career Readiness programme comprises three core subjects – Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.</p>	1 
 LEA1012	Leadership: Essential Attributes & Practice 2 <p>LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.</p>	1 
 LEA1013	Leadership: Essential Attributes & Practice 3 <p>LEAP 1, 2 and 3 are three fundamental subjects that seek to cultivate in you, the attitude, skills and knowledge for the development of your leadership competencies. This character-based leadership programme enables you to develop your life-skills through establishing personal core values, which will become the foundation for your leadership credibility and influence.</p>	1 
 CCS1007	Workplace Communication <p>In this subject, you will be taught how to conduct effective meetings while applying team communication strategies and the skills for documenting meeting notes. You will be required to write clear emails, using the appropriate format, language, tone and style for an audience. You will also be taught to communicate appropriately in and for an organisation while using various platforms. In all aspects, the principles of applying Message, Audience, Purpose and Strategy (MAPS) will be covered.</p>	2 
 CGS1003	Managing Diversity at Work* <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. A one week residential stay is mandatory for this subject.</p>	3 

^	CGS1004	Global Citizenship & Community Development* <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.</p>	3	^
^	CGS1005	Expressions of Culture* <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.</p>	3	^
^	TGL1001	Guided Learning <p>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.</p>	3Credit Units	^
^	CIN1001	Innovation & Entrepreneurship <p>The Innovation & Entrepreneurship subject is designed for learners from all disciplines to embrace innovation in either their specialised fields or beyond. You will first learn the Design Thinking framework, where you will develop problem statements and ideate solutions. Next, you will discover the tools for prototyping and innovation, such as 3D printing and laser cutting, at TP's Makerspace+ facility. Finally, you will acquire commercial awareness through the LEAN Startup framework of idea crystallisation, prototype building, customer testing and validation, refinement of business model canvas, and crowdfunding or crowdsourcing avenues.</p>	2	^

** Students must choose to take either one of these subjects or TGL1001 Guided Learning*

Subject Code	Subject	Credit Units
 CAI2C01	Robotic Process Automation This subject introduces students to the techniques of using an automation tool to automate tasks within a business process. It touches on the various use cases of robotic process automation (RPA) and provides a platform for students to creatively apply the concepts to different scenarios. It also discusses the challenges and limitations of RPA such as integration with unsupported third-party tools, security and governance, etc.	4 
 CMC2C16	IoT Application Development This subject covers the concepts of Distributed System Architecture like Service-Oriented Architecture, Representational State Transfer (REST) and Web Services, identification of technology and design principles for connected devices as well as prototyping techniques for developing web services.	4 
 CIA2C14	Data Science Essentials This subject equips students with knowledge and skills in the emerging field of data science. It covers the data science life-cycle, history and context, as well as its landscape. Topics covered include data exploration and analysis techniques to discover new knowledge from data to aid data-driven decisions in an intelligent and informed way.	4 
 CAI2C02	AI and Ethics This subject provides students with insights on the usage and implications of AI in daily life. It touches on the risks of applying AI without a certain set of moral and ethical principles, and discusses issues brought about by machine learning, such as the four types of bias: sample bias, prejudice bias, measurement bias, and algorithm bias.	4 
 CAI2C03	Deep Learning and Object Recognition This subject introduces students to the fundamental principles of deep learning and how it is applied to a collection of computer vision tasks to implement object recognition. It covers the concepts and architecture of convolutional neural networks such as the various layers within, and the hyperparameters involved, using available tools and libraries.	4 
 CAI2C04	Cloud Technologies This subject equips students with the skillsets for developing and deploying machine learning applications to a cloud platform maintained by cloud computing providers such as Amazon, Google, etc. It covers the storage of data and the use of application programme interfaces (APIs) and tools provided by the cloud platform.	4 

^	CAI2C05	Natural Language Processing This subject introduces students to the concepts and application of natural language processing (NLP). It covers the standard NLP workflow through various aspects such as text scraping, text wrangling and pre-processing, etc. using available libraries. It also explores the application of NLP to chatbot development using available tools and libraries.	4	^
^	CIT3C15	Machine Learning for Developers This subject introduces the fundamentals of machine learning principles and practices. It covers the concepts of supervised and unsupervised learning, and how the training model can be deployed in an application.	4	^

YEAR 3

TP Fundamentals (TPFun) Subjects				
	Subject Code	Subject	Credit Units	
^	MCR1003	Career Readiness 3 This Career Readiness programme comprises three core subjects – Personal Management, Career Preparation and Career Management. It seeks to help you understand your career interests, values, personality and skills for career success. It also equips you with the necessary skills for seeking and securing jobs, and to develop professional work ethics.	1	^
^	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	^

Diploma Subjects - Core Subjects				
	Subject Code	Subject	Credit Units	
^	CAI2C06	AI for Advanced Manufacturing This subject provides students with the knowledge and skills to explore and apply AI to various challenges in advanced manufacturing such as monitoring of equipment failures, inventory management, quality improvement, etc.	4	^

^	CAI2C07	AI for Cybersecurity This subject provides students with the knowledge and skills to explore and apply AI to various challenges in cybersecurity such as fraud detection, malware detection, intrusion detection, user/machine behavioral analysis, etc.	4	^
^	CMP3101	Major Project This subject involves the integration of knowledge and skills acquired from the various subjects in the course. It helps students develop a practical understanding of the products, methodologies, processes, systems, project management and presentation skills needed for AI related application projects. Students will develop, present and demonstrate solutions to a problem.	10	^

GRADUATION REQUIREMENT

Cumulative Grade Point Average	min 1.0
TP Fundamental Subjects	40 credit units
Diploma Subjects - Core Subjects	84 credit units
Total Credit Units Completed	min 124 credit units