

# SUMMER PROGRAMME INFORMATION SHEET 2023

Updated as of Jan 2023

Dear Prospective Summer Students,

We welcome you to join us at one of the world's most beautiful campus for our exciting **GEM Trailblazer Summer programme** at NTU starting from June to July 2023.

Five tracks will be offered this summer:

**Track 1:** Language & Cultural Studies

**Track 2:** Entrepreneurship & Innovation

**Track 3:** Creative Design and Media

**Track 4:** Success in the Globalised Marketplace

**Track 5:** New Technologies, New World



Make friends from all around the world!

Ranked among the top 1% of universities worldwide, NTU places you in an academically stimulating environment that is both culturally and socially enriching. Our comprehensive and innovative approach towards education and research will help contribute to your future success and inspire you to realise your full potential as an entrepreneurial and technologically-savvy leader.

Located in Singapore, NTU is the perfect spot in the heart of a booming Asia-Pacific region to learn and explore the many cultures, languages and races that can be found on this cosmopolitan island.

While you soak up a summer of fascinating Asian cultural experiences as a student, you would have the opportunity to equip yourself with key entrepreneurial skills to venture into Asia, where more than 4.6 billion of the world's population lives.

Application for the summer programme is open to all full-time university students. We welcome you to join some of the brightest minds and talents from around the world in Singapore this summer.

**Welcome to the start of a wonderful journey of learning and self-discovery!**

Priscilla Phang  
Assistant Director  
Office of Global Education and Mobility  
Nanyang Technological University

# CONTENTS

S/N	Description	Page
1	<a href="#">Programme Dates at a Glance</a>	3
2	<a href="#">Application &amp; Nomination</a>	4 – 7
3	<a href="#">Programme Syllabus:</a> Track 1 – Language and Cultural Studies	8 – 9
4	<a href="#">Programme Syllabus:</a> Track 2 – Entrepreneurship & Innovation	10-11
5	<a href="#">Programme Syllabus:</a> Track 3 – Creative Design and Media	12 – 13
6	<a href="#">Programme Syllabus:</a> Track 4 – Success in the Globalised Marketplace	14 – 20
7	<a href="#">Programme Syllabus:</a> Track 5 – New Technologies, New World	21 – 23
8	<a href="#">Programme Fees</a>	24
9	<a href="#">Programme Fees Information</a>	25
10	<a href="#">On-Campus Accommodation</a>	26 – 27
11	<a href="#">NTU Academic Information</a>	28
12	<a href="#">Entry Requirements</a>	29
13	<a href="#">Other Useful Information</a>	30 – 31
14	<a href="#">Withdrawal Policy</a>	32 – 33
15	<a href="#">About Singapore</a>	34
16	<a href="#">About NTU</a>	35
17	<a href="#">Contact Details</a>	36

## PROGRAMME DATES AT A GLANCE

<b>Summer Academic Calendar</b>	<p><b>2-week programme:</b> Wed 28 Jun 2023 to Sat 15 Jul 2023; Wed 14 Jul 2023 to Sat 29 Jul 2023</p> <p><b>4-week programme:</b> Wed 28 Jun 2023 to Sat 29 Jul 2023</p>
<b>Summer Programme Tracks</b>	<p><b>Track 1:</b> Language &amp; Cultural Studies</p> <p><b>Track 2:</b> Entrepreneurship &amp; Innovation</p> <p><b>Track 3:</b> Creative Design &amp; Media</p> <p><b>Track 4:</b> Success in the Globalised Marketplace</p> <p><b>Track 5:</b> New Technologies, New World</p> <p>For further information on Summer tracks information: <a href="#">NTU summer brochure</a> or email: <a href="mailto:summerntu@ntu.edu.sg">summerntu@ntu.edu.sg</a></p>

## APPLICATION & NOMINATION

<b>Partner Nomination &amp; Student Application Deadlines</b>	<p><b>Partner Nomination by 15 March 2023</b></p> <p><b>Student Application by 31 March 2023</b></p>
<b>Eligibility</b>	<p>Students may apply under an Exchange or Fee-paying scheme</p> <p><b>Exchange</b></p> <p>Students from any one of NTU's Exchange Partner Universities who have been nominated by their home university under an Exchange scheme, on a fee-waiver basis.</p> <p><b>Fee-paying</b></p> <p>Students from any of NTU's Exchange Partner Universities who have <b>not</b> been nominated as an Exchange students <b>OR</b> Students from non-partner universities will pay the rate as published in the website.</p>
<b>Language</b>	All courses are taught in English
<b>Study Level</b>	Undergraduate level
<b>Summer Course Load</b>	<p>Minimum: 1 course (3 or 4 Academic Units)</p> <p>Maximum: 2 courses (up to 8 Academic Units)</p>
<b>Credit Transfer</b>	<p>All summer courses are credit bearing.</p> <p>All summer courses (including language courses) carry 3 or 4 Academic Units each and the equivalent of 39 or 52 contact hours respectively.</p>

## APPLICATION & NOMINATION

English Proficiency	<p>Students nominated from their home universities are deemed to be able to cope with the curriculum conducted in English at NTU.</p> <p>Proof of English proficiency from students is required for some of the summer courses (refer to the course description on the requirement for English proficiency).</p> <p>Based on our requirements, please refer to the following acceptable qualifications for English proficiency:</p> <ul style="list-style-type: none"> <li>• <b>General Paper of the Singapore Cambridge GCE 'A' Level Examination (sat in 2007 onwards):</b> A, B, C, D, E</li> <li>• <b>General Paper of the Singapore Cambridge GCE 'A' Level Examination (sat in 2006 or earlier):</b> A1, A2, B3, B4, C5, C6</li> <li>• <b>IELTS:</b> A minimum of 6 for the Writing sub-test</li> <li>• <b>TOEFL:</b> A minimum of 570 (paper) or 90 (internet) or 237 (computer)</li> <li>• <b>SAT1:</b> A minimum of 600 for the Verbal section; or 7 for the Essay section</li> <li>• <b>IB:</b> A minimum of four (4) for Higher Level English or four (4) for Standard Level English</li> <li>• <b>MUET:</b> Band 6 and a minimum of 50 for writing</li> <li>• <b>GEPT:</b> High intermediate Stage 2 consisting of writing and speaking modules (applies to Taiwan universities only)</li> </ul>
Study Exchange Spots ( <i>for Partners' information</i> )	<p>One student who attend the Summer Programme would be considered as <b>0.5 spot of exchange</b>. Some exceptions may apply.</p>
Auditing Courses	<p>Students are not allowed to audit lectures.</p>
Nomination by Partner Universities	<ol style="list-style-type: none"> <li>1. Exchange coordinator(s) of partner institutions are only required to email the completed nomination form to <a href="mailto:summerNTU@ntu.edu.sg">summerNTU@ntu.edu.sg</a>. Please indicate your mailing address in the form for the delivery of transcripts after summer ends.</li> </ol>

## APPLICATION & NOMINATION

	<p>2. You can include both Exchange and Fee-paying students in the nomination form.</p> <p>3. This programme is open to all nationalities.</p>
<b>Student Online Application Process</b>	<p>Nominated / Fee-paying students will receive the application link via email from NTU GEM Trailblazer Summer Team upon receiving the nominations from your home university.</p> <p>1. Mailing of original documents is <b><u>NOT</u></b> required.</p> <p><b><u>Supporting Documents Needed for Online Application</u></b></p> <ul style="list-style-type: none"> <li>a. Latest official transcript in English (signed by the Registrar and should include the university's seal), reflecting all courses taken during the study period in your home university in PDF format (&lt;600 kb)</li> <li>b. Clear, coloured passport-sized photo in JPEG format (&lt;60kb; 400(W) x 514(H) pixels)</li> <li>c. Clear &amp; coloured, scanned copy of passport information page (valid for at least 6 months from the date you are leaving for Singapore when applying in JPEG format (&lt;200 kb))</li> <li>d. Upon successful submission of online application, students will receive an email acknowledgement of their submission.</li> <li>e. The result of your application will be made known to applicants via email by May or earlier. Successful applicants will be directed to the NTU Study Abroad Portal for registration. Students should verify that the courses stated in their Offer of Admission (available online) is correct before they accept the offer.</li> <li>f. Payment of programme fees is made online via Flywire (preferred) or Credit Card on the same Study Abroad Portal.</li> </ul>

## APPLICATION & NOMINATION

<p><b>Change of Courses upon Acceptance of Enrolment</b></p>	<p>Students are advised to select their summer courses very carefully before putting in their online application. They are to refer to the <a href="#">summer course information</a> on our website or email to <a href="mailto:summerNTU@ntu.edu.sg">summerNTU@ntu.edu.sg</a> for clarification prior to submitting their online application.</p> <p>The summer courses listed in Offer of Admission would be the final courses that you will read at NTU for the Summer Programme.</p> <p><b>NOTE:</b> Please note that <b>NO ADD-DROP</b> of courses are allowed once student has accepted the online Offer of Admission.</p>
<p><b>Course Cancellation</b></p>	<p>A course may be cancelled if there are less than 10 students for the course. You will be notified by May.</p> <p>In the event of cancellation, you will be offered other courses to consider before the commencement of the programme. If you decide not to register for other available courses, you may be granted a refund of tuition fees paid for the course being cancelled.</p>

## PROGRAMME SYLLABUS

### Track 1: Language & Cultural Studies

This track will introduce students to basic Chinese and Malay language skills, letting students discover the fascinating and intriguing lifestyles in Asia.

#### [1.1]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>LM5001 Malay Language</b>	3 July to 29 July 2023	3	Ms Hani Mustafa
<b>Description</b>			
<p>This course aims to provide students with competence in understanding and using basic Malay. In order to familiarize students with the target language, the requisite skills of listening, speaking, reading and writing will be taught, along with the rudiments of grammar. These are achieved through thematic and scenario-based learning which will equip students with the necessary vocabulary based on the prescribed themes.</p> <p>The course presents an introduction to Malay language through the learning of basic.</p>			



## PROGRAMME SYLLABUS

[1.2]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>CF5001</b> <b>Chinese Language and Cultural Studies</b>	3 July to 29 July 2023	3	Ms Joanne Yi
<b>Description</b>			
<p>The Chinese Language and Cultural Studies course is ideal for non-native speakers who are interested to pick up basic Chinese language skills as well as gain insights into the Chinese culture, focusing more on the Overseas Chinese, highlighting the uniqueness of learning about the Chinese history and culture in Singapore as compared to learning in China.</p> <p>The Chinese Language and Cultural Studies course consists of two parts:</p> <ul style="list-style-type: none"> <li>• Part 1: Chinese Language Study</li> <li>• Part 2: Chinese Cultural Studies</li> </ul> <p><b>Part 1: Chinese Language Study (Beginners)</b></p> <p>This course is suitable for non-native speakers who wish to gain an insight into the Chinese Language. The course contents are designed to help students accumulate Chinese vocabulary and basic conversational skills for daily usage. At the beginners level, students will learn writing skills like basic strokes, character components and single-component characters. They can also expect to learn up to 260 Chinese characters, 40 grammatical points and 30 commonly-used sentences.</p> <p><b>Part 2: Chinese Cultural Studies</b></p> <p>The Chinese cultural studies course aims to expose students to the history and culture Overseas Chinese, arranging a mass lecture “The Chinese Communities in Southeast Asia” that includes a visit to the Chinese Heritage Centre, NTU, and also an excursion to the Peranakan Museum and Asian Civilizations Museum.</p>			

## PROGRAMME SYLLABUS

### Track 2: Entrepreneurship and Innovation

Offered by the Nanyang Technopreneurship Centre (NTC), this track is designed to equip students with fundamental entrepreneurship competencies, business acumen and stamina to build and grow businesses. Consisting of two courses, it will cover topics such as entrepreneurship; creativity; writing business plans; business accounting; intellectual property; marketing strategy; risk evaluation; financial projection; securing finances; and managing team members.

#### [2.1]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>ET5131</b> <b>Venturing Into Entrepreneurship</b>	3 July to 15 July 2023	3	Mr Jason Ho
<b>Description</b>			
<p>This course aims to provide you with a fundamental understanding of the entrepreneurial process, of how entrepreneurs start and implement their business ideas and to instill in them an entrepreneurial mindset posture for the future. By immersing in activities relevant to entrepreneurship and value creation, you will discover and acquire one's entrepreneurial passion, motivation and mindset. You will be introduced to the concepts of entrepreneurship, innovation and new venture creation process. You individually and collectively as a team, will learn to generate ideas, identify opportunities and investigate whether an idea can be turned into a viable business through a feasibility analysis.</p> <p>Student will learn about creativity, innovation and new venture creature in the field of entrepreneurship. Also, be also exposed to entrepreneurship marketing where you will learn how to select, develop and evaluate new products, set prices and make the most efficient use of public relations and publicity.</p>			

## PROGRAMME SYLLABUS

[2.2]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>ET5132</b> <b>New Venture Financing</b>	17 July to 29 July 2023	3	Mr Kenneth Chiam
<b>Description</b>			
<p>This course aims to help you to better appreciate the startup formation process, in particular, in securing proper venture financing to ringfence intellectual property intangibles, undertake product developments, talent acquisitions, market expansion and ultimately leading to a viable exit strategy for all stakeholders. You will be able to understand the entrepreneurship development from a funding / financing viewpoint. At the same time, You will gain insights on the investment perspectives from both the entrepreneurs and Venture Capital firms with respect to the funding cycles and expectations. This course will clarify key financial concepts, accounting principles and market practices that will better equip aspiring entrepreneurs to secure funding for their new ventures.</p> <p>This course is suitable for those who are planning and currently involved in startup creation and would like to gain suitable skillsets on how to secure funding from different channels and sources.</p> <p>Student will learn basic accounting concepts, followed by financial concepts and tools relevant to entrepreneurs.</p>			

# PROGRAMME SYLLABUS

## Track 3: Creative Design and Media

The courses in the Creative Design and Media track will be conducted over four weeks in July at the NTU campus. Through this series, it encourages students to come up with original creative works and design. Students will be able to explore various genres and find their voice through various writing, editing, painting and new media productions.

Proof of [English proficiency](#) is required for students taking any of the courses in this track. However this is not applicable for students under exchange scheme and fee-paying students whose home universities' medium of instruction is in English

### [3.1]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AAA18J</b> <b>Painting with Watercolors</b>	3 July to 29 July 2023	3	Mr David Chan
<b>Description</b>			
This course aims to highlight the beauty and ephemeral qualities of watercolour painting. Students will be progressively taught various techniques to achieve different results. There will be an emphasis on hands-on practice as well as keynotes on how to appreciate the visual qualities of watercolour paintings. Students will first be taught basic drawing and paintings skills, after which students are encouraged to take a more experimental and gestural approach to watercolour painting.			

### [3.2]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AAA28C</b> <b>Digital Media and Visual Arts: Still Imaging</b>	3 July to 29 July 2023	3	Mr Lee Siew Weng
<b>Description</b>			
This studio course introduces contemporary digital photography through the experience of technical, expressive and conceptual methods of digital image making. You will be exposed to camera handling techniques, composition skills, studio photography and experimental imaging. You will acquire working methods, visual research skills and knowledge necessary for the successful implementation of meaningful and aesthetic lens-based artwork.			

## PROGRAMME SYLLABUS

### [3.3]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AAA18E Drawing</b>	3 July to 29 July 2023	3	Ms Tricia Goh
<b>Description</b>			
Drawing investigates the nature of drawing from the perceptual domain, using drawing as a vehicle for visual inquiry to record from observation. The course is for anyone who cannot draw but would like to learn to. At the end of the course, students will be able to draw anything they see.			

### [3.4]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AAA18K Communication Design</b>	3 July to 29 July 2023	3	Mr Ng Yong Yi
<b>Description</b>			
This studio course introduces students to learn about communicating ideas and information through arrangement of visual elements in 2D through the use of space, type and image. Through new assignments every class, they will acquire basic graphic design skills and realise impactful and meaningful 2D design works.			

## PROGRAMME SYLLABUS

### Track 4 – Success in the Globalised Marketplace

To compete in today's marketplace, one has to possess many traits and skills from cultural intelligence to negotiation skills, strategic management and marketing communications. Students will have a range of business and humanities courses to choose from this track.

This track will be offered over 4 weeks. Proof of English proficiency is required for students taking Business and Management Summer courses.

#### [4.1]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>BU5641</b> <b>Cultural Intelligence: How to be an Explorer of the World</b>	3 July to 29 July 2023	3	Hoo Hui Teng (Dr)
<b>Description</b>			
<p>Cultural Intelligence is the capability to function effectively across national, ethnic and organisational cultures. IQ and EQ are no longer enough. Culture intelligence is becoming a critical predator for success in the borderless world of the 21st century.</p> <p>This course is designed to equip you with a critical set of skills to work with people from different cultures.</p> <p>Cultural intelligence (CQ) – the ability to deal effectively with people from different cultural backgrounds (Ang &amp; Van Dyne) – is a critical attribute in the borderless world of the 21st century. General cognitive intelligence and emotional intelligence are no longer enough to lead successful global careers. The good news is that CQ is a skill that can be developed and learnt by almost anyone through practice and constant application in intercultural situations.</p> <p>This course uses experiential learning to improve CQ through authentic intercultural experiences. These include a fieldtrip to the Singapore chapter of “Dialogue in the Dark,” working on a project with a multicultural team, and engaging in daily curiosity conversations with people in Singapore.</p>			

## PROGRAMME SYLLABUS

### [4.2]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>BU8642</b> <b>Leadership in the 21st Century</b>	3 July to 29 July 2023	3	Stewart L. Arnold (Dr)

#### Description

Leadership has always been a topic that many have been interested in from the past until the present. In the 21st century, as organizations operate in an environment that is volatile, uncertain, complex and ambiguous (VUCA), leadership skill becomes more important than ever before for global organizations to succeed. For leaders to lead a department, business unit and / or the entire organization successfully, leaders now need to develop a whole new repertoire of leadership skills.

This course aims to educate students on the leadership domain and unmask the essential skills a leader would require to be competent especially in the 21st century. A mixture of lectures, case studies, class activities, experiential exercises and assessment tools will be used in this course to facilitate students' understanding of the leadership domain and prepare them to embark on their leadership journey in the 21st century.

### [4.3]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>CS2400</b> <b>Foundation of Information Analytics</b>	3 July to 29 July 2023	3	Lee Chu Keong (Dr)

#### Description

Today, many organisations generate and collect unimaginable quantities of data of all types. However, merely collecting lots of data is pointless. The critical step is to analyse the data so that it can be transformed into information and action.

An important tool that enables this transformation to take place is statistics. This is the subject matter of this course. Statistics will be presented in a mathematically friendly and non-threatening manner. The course emphasizes conceptual understanding and practical application of the material, and not on exact keystrokes needed to accomplish specific statistical tests.

## PROGRAMME SYLLABUS

[4.4]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>BC2406</b> <b>Analytics I: Visual &amp; Predictive Analytics</b>	3 July to 29 July 2023	4	Mr Neumann Chew
<b>Description</b>			
<p>Most organizations are data rich and information poor. The large volumes of data in an organization are “oilfields” rich in information content that are pending extraction with the right tools and models. Analytics involves the art of data exploration, visualization, communication and the science of analyzing large quantities of data in order to discover meaningful patterns and useful insights to support decision-making. The primary objective of this course is to introduce students to various techniques available to extract useful insights from the large volumes of data.</p> <p>At the end of the course, students will not only see the substantial opportunities that exist in real world, but also learn techniques that allow them to exploit these opportunities. This course focus on the use of open source R software, which is one of the key analytics software used in various industries and a critical skillset required in the job market for analytics and data science professionals</p>			



## PROGRAMME SYLLABUS

[4.5]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AB0602</b> <b>Communication Management Strategies</b>	3 July to 29 July 2023	4	Ms Lin Ai-Leen
<b>Description</b>			
<p>The purpose of this course is to prepare you for the communication challenges that you are likely to meet in rapidly evolving global business environments. This course will help you to present yourself confidently and professionally in the way you speak, write and participate in your chosen profession.</p> <p>The course provides a conceptual framework that guides strategy and skills. Strategy allows communicators to make intelligent choices about content, organisation, style, tone, delivery, and timing of messages. Skills are needed to craft effective written documents, give constructive feedback, and create as well as deliver persuasive business presentations.</p> <p>The course is interactive and practical, and offers a variety of learning activities – case analyses, individual and group writing tasks, individual and team presentations, tutor and peer feedback, and off-the-cuff speaking.</p> <p>The learning outcomes for this course are skills which are practical in nature and will enhance both your oral and written communication.</p>			

## PROGRAMME SYLLABUS

[4.6]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>AB3601 Strategic Management</b>	3 July to 29 July 2023	4	Li Yan (Dr)
<b>Description</b>			
<p>The Strategic Management course focuses on identifying and understanding the sources of superior firm performance through a process of analyses and syntheses. This entails an understanding of theoretical concepts and frameworks that would be taught in the course. You will learn to analyse the external and internal environments of the firm, formulate and execute different types of strategies with the considerations of ethics and good corporate governance.</p> <p>Strategic issues are examined from the perspective of a chief executive or general manager who should focus on how s/he can formulate effective strategies and develop the necessary resources and capabilities to achieve sustainable competitive advantage in a highly volatile and competitive global environment.</p> <p><b><u>Pre-requisite:</u></b> Organisational Behaviour / Marketing</p>			

## PROGRAMME SYLLABUS

[4.7]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>HP3901</b> <b>Cultural Psychology</b> <b>(To be conducted 100% online)</b>	3 July to 29 July 2023	3	Albert Lee Kai Chung (Asst Prof)
<b>Description</b> <p>Humans are social animals with a lot in common, but there are also remarkable differences across cultures whereby people do not think, feel, or behave in the same way. Why is it that people in some cultures have their first name listed before their last, while others do the reverse? Is the wisdom of “practice makes perfect” equally emphasized in different parts of the world? Some parents discipline their kids by threatening to disown them while others resort to grounding, why? You will find insight into these and other observations of culture and psychology in this course. Finally, you will receive progressive training on theoretical thinking, critical reasoning, and methodological designs</p>			

## PROGRAMME SYLLABUS

[4.8]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>HS0301 Environmental Sustainability</b>	3 July to 29 July 2023	3	Md Saidul Islam (Assoc Prof)
<b>Description</b>			
<p>Our planet is undergoing radical environmental and social changes. Environmental sustainability has now been put into question by, for example, our consumption patterns, loss of biodiversity, depletion of resources, and exploitative power relations. With apparent ecological and social limits to globalization and development, the current levels of consumption are unsustainable, inequitable, and inaccessible to the majority of humans. Understanding the environmental sustainability is a crucial matter at a time when our planet is in peril - both environmentally and socially. This course will show possible pathways for a sustainable earth.</p>			

## PROGRAMME SYLLABUS

### Track 5: New Technologies, New World

Get tech-savvy with this track; students will be able to dip into the world of 3D printing, bioprinting and their applications in the real world; with exciting courses on artificial intelligence and data mining being added recently.

[5.1]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>CZ2004</b> <b>Human Computer Interaction</b>	3 July to 29 July 2023	3	Owen Noel Newton Fernando (Dr)
<b>Description</b>			
<p>This course aims to provide an introduction to human-computer interaction, with an overarching goal of inculcating into you the habit of adopting a user-centric perspective on usability when designing, evaluating and innovating new user interfaces. More specifically, the objectives are to get you to:</p> <ul style="list-style-type: none"> <li>(a) appreciate and understand the significance of considering usability issues in interface development, including user requirements, measurements and various usability tests;</li> <li>(b) acquire vocabulary to frame and articulate HCI issues and considerations for different computing applications;</li> <li>(c) learn first principles in user interface design and develop basic ability to apply design considerations to both current and future interface modalities;</li> <li>(d) obtain a perspective of how HCI needs to be aligned with human thought processes and physical abilities, and</li> <li>(e) be aware of the large range of user interfaces in society today, and appreciate how HCI design is applied in various sectors of the computing industry.</li> </ul>			

## PROGRAMME SYLLABUS

### [5.2]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>EE4483</b> <b>Artificial Intelligence and Data Mining</b>	3 July to 29 July 2023	3	Wen Bihan (Asst Prof), Tan Yap Peng (Prof)

#### Description

The course is designed to introduce both:

1. The traditional approach to machine learning using symbolic representations and manipulations, i.e., knowledge representations and problem solving techniques, and
2. Techniques and application of machine learning techniques to data mining.

Upon completion of this course, students will be familiar with several powerful search techniques for automatically solving complex problems. Student will also have sufficient expertise in both the theory of machine learning and its application to data mining, so as to use these powerful techniques in a wide range of industrial contexts, for example, bioinformatics, electronic commerce, and finance.

#### Pre-requisites:

1. Background on calculus and linear algebra
2. Basics on optimization (e.g., argmin, variable, norms)
3. Students are encouraged to learn at least one programming language, e.g., Python, C / C++, etc.

### [5.3]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>EE5084</b> <b>Cyber Security</b>	3 July to 29 July 2023	3	Mohammed Yakoob Siyal (Assoc Prof)

#### Description

The objective of this course is to provide students with basic appreciation and understanding of the underlying security issues and implications of the use of various networked systems and electronic devices in the modern cyber-society from both user and management perspectives. Topics to be covered include overview of information systems and devices in a global network environment, threats to information systems and devices, security models, and concepts for secrecy, integrity and availability. Other topics of security concerns will also be explored: security tools and devices, cryptology, hard ware security concerns, personnel security standards and legal implications.

## PROGRAMME SYLLABUS

[5.4]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>MA5030</b> <b>Bioprinting: Principles and Applications</b>	3 July to 29 July 2023	3	Yeong Wai Yee (Prof)
<b>Description</b>			
<p>This course aims to provide a general understanding of Bioprinting - a multidisciplinary technology that merges the field of cell culture, biomaterials science and mechanical engineering. This is a new manufacturing paradigm that has huge potential impact in the development of advanced biological tissue models and medical therapeutic products. The topics covered are tissue engineering, prototyping of scaffolds, cell sources, biomaterials and applications.</p> <p>The course starts with introduction to tissue engineering and scaffolds for tissue engineering. Various bioprinting processes will be explained and the materials for bioprinting will be introduced. The students will also learn about cell sources and 3D cell culture techniques. Other topics include computational design and simulation in bioprinting. The students will attend a workshop on bioprinting to be exposed to the operation of a bioprinter. There will be also a group discussion session for the students to critically analyze the research field of bioprinting from their point of view.</p>			

[5.5]

Course	Teaching Dates	No. of Academic Units	Name of Instructor
<b>MA5031</b> <b>3D Printing and Additive Manufacturing</b>	3 July to 29 July 2023	3	Yeong Wai Yee (Prof)
<b>Description</b>			
<p>This course aims to provide a general understanding of Additive Manufacturing or 3D Printing as it is more commonly known. It starts with an introduction and the importance of 3D Printing and describes the process chain. The course will equip the students with all the 3D printing systems and technologies, their pros and cons. It will also cover the file format used in 3D printers. More importantly, a comprehensive range of applications and case studies will be covered. Finally, benchmarking, growth and trends will be described.</p>			

## PROGRAMME FEES

Below is a schedule of programme fees.

Breakdown of Fees Payable	Exchange Students from partner universities	Fee-paying students from partner/non partner universities
<b>Tuition Fee</b> (3 or 4 AU course)	Waived for up to 2 courses (3 or 4 AU course)	SGD 1,726 (~ USD 1300)
<b>Registration Fee</b> (one-time charge)	SGD 151 (~ USD 110)	SGD 151 (~ USD 110)
<b>Administrative Fee</b> (one-time charge)	SGD 908 (~ USD 680)	SGD 908 (~ USD 680)

### Total Programme Fees

<b>Total programme fee for One course</b> (3 or 4 AU each)	SGD 1,059 (~ USD 790)	SGD 2,785 (~ USD 2,090)
<b>Total programme fee for Two courses</b> (3 or 4 AU each)	SGD 1,059 (~ USD 790)	SGD 4,511 (~ USD 3,390)

- Fees are charged in SGD but translated to USD for the purpose of comparison only
- On-campus accommodation for a 4-week programme is approximately SGD930 (~ USD 690)



## PROGRAMME FEES INFORMATION

### Fees & Other Expenses \*

1. Programme fees include tuition, registration and administrative fees only. It **does not include** airfare and airport taxes, local transportation costs, travel insurance, visas, meals, personal expenses, and on-campus accommodation costs.
2. Students from NTU partner universities who are nominated under an Exchange scheme are only required to pay tuition fees to their home institutions. They are still required to pay for registration and administrative fees to NTU.
3. Administrative fees include the use of non-academic or non-obligatory facilities, services and functions at NTU. It also covers campus orientation, cultural & social activities, miscellaneous university fees, and mandatory Group Hospitalization and Surgical Insurance (GHSI) for international students.
4. **Programme fees must be paid within 5 days upon acceptance of the Letter of Enrolment from NTU.** The programme fee is payable online via Flywire (preferred) or Credit Card.

\* All fees quoted are inclusive of 8% GST, and is applicable with effect from 1 Jan 2023.

## ON-CAMPUS ACCOMMODATION

On-Campus Accommodation	Twin-sharing accommodation on campus is guaranteed for all incoming GEM Trailblazer Summer students in one of our 24 <a href="#">Halls of Residence</a> in NTU. Students will share a room with a roommate of the same gender, which will be allocated randomly. Students are required to stay on-campus throughout the duration of your programme.	
	While there are no meal plans and no fully equipped kitchen at the hall for students to cook their meals, students can purchase meals at any of the Hall of Residence canteens, convenience stores or at the food outlets located within NTU. Refer to this <a href="#">listing</a> for places to eat around campus.	
Accommodation Cost	Duration of Summer Programme	
	Twin-Sharing (SGD)	
	4 weeks	\$ 930
	2 weeks	\$ 510
Room Amenities	<p>Rooms are furnished with a bed, mattress, study table, chair, wardrobe, bookshelf and soft board (to pin notes, etc). Each room is fitted with window coverings such as venetian blinds or curtains, lighting and a fan.</p> <p>There are phone jacks and Ethernet connections in each room. You have to bring or buy your own LAN cable for wired LAN connection in the rooms. WIFI is available at the common areas in the halls of residence. Other fittings may be provided and these vary from hall to hall.</p> <p><b>NOTE:</b> Bed-linen, blankets and pillows will NOT be provided. Students have to purchase their own bed-linen, pillows and blankets when they arrive in NTU. Refer to this suggested <a href="#">packing list</a>.</p>	
Suggested personal items to bring or buy	<ul style="list-style-type: none"><li>• Shower tote bucket</li><li>• Toiletries, shower shoes</li><li>• Towels, washcloths, detergent</li></ul>	<ul style="list-style-type: none"><li>• Laptop, internet Cable</li><li>• Single-size bed sheets/linen, blanket, pillow, pillow cases</li></ul>

## ON-CAMPUS INFORMATION

<b>Check-in and Check-out dates at NTU’s Halls of Residence</b>	<b>Check-in date</b>		<b>Check-out date</b>	
	2-week programme: 28 Jun / 12 July 2023		2-week programme: 15 July / 29 July 2023	
	4-week programme: 28 Jun 2023		4-week programme: 29 July 2023	
<b>Operating Hours of the Halls of Residence Administrative Office</b>	Mondays - Thursdays: 9:00 am - 1:00 pm, 1:45 pm -4:00 pm Fridays: 9:00 am - 1:00 pm, 1:45 pm - 4:00pm Saturdays, Sundays & Public Holidays: Closed Students arriving after operating office hours are to seek alternative accommodation on the night of their arrival until the Hall office opens the next day.			
<b>Period of stay for on-campus accommodation</b>	Period of stay in the hostel is determined by the approved period of programme as stipulated on the Letter of Enrolment and Acceptance issued by NTU.			



NTU Hall of Residence



Hall Surroundings



Hall of Residence Canteen



Twin-sharing rooms

## NTU ACADEMIC INFORMATION

<b>NTU Academic Unit System</b>	<p>NTU's courses are assigned credits based on the Academic Unit (AU) system.</p> <p>For more information on the university AU system, please refer to the <a href="#">link</a>.</p> <p>For the GEM Trailblazer Summer Programme, the number of academic units are as follows:</p> <p><b>Track 1: Language &amp; Cultural Studies</b> (3 AUs per course)</p> <p><b>Track 2: Entrepreneurship and Innovation</b> (3 AUs per course)</p> <p><b>Track 3: Creative Media and Design</b> (3 AUs per course)</p> <p><b>Track 4: Success in the Globalised Marketplace</b> (3 or 4 AUs per course)</p> <p><b>Track 5: New World, New Technologies</b> (3 AUs per course)</p>										
<b>Grading System</b>	<p>NTU uses the Grade Point Average (GPA) system in awarding grades.</p> <table border="1"> <tbody> <tr> <td><b>A</b></td><td>5.0</td></tr> <tr> <td><b>B+</b></td><td>4.0</td></tr> <tr> <td><b>B-</b></td><td>3.0</td></tr> <tr> <td><b>C</b></td><td>2.0</td></tr> <tr> <td><b>D</b></td><td>1.0</td></tr> </tbody> </table>	<b>A</b>	5.0	<b>B+</b>	4.0	<b>B-</b>	3.0	<b>C</b>	2.0	<b>D</b>	1.0
<b>A</b>	5.0										
<b>B+</b>	4.0										
<b>B-</b>	3.0										
<b>C</b>	2.0										
<b>D</b>	1.0										
<b>Academic Transcripts Delivery</b>	<p>The original copy of the GEM Trailblazer Summer student's academic transcript will be mailed directly to the Home University after the completion of the summer programme <b>within two (2) months from the date of release of examination results by NTU.</b></p>										

## ENTRY REQUIREMENTS

<p><b>Student Pass</b></p>	<p>All international students admitted in the summer programme are required to apply for a Student's Pass, unless they have selected the 2-week programme (which has only 3 Academic Units). Instructions for applying a Student Pass will be provided in the Offer of Admission once the applicant has been successful.</p> <p>Upon acceptance of the offer of admission, students will be directed to apply for the In-Principle Approval (IPA) letter that will enable all international students to enter Singapore and obtain their student pass once they are in Singapore.</p>
<p><b>Entry Visa</b></p>	<p>Students registered for the 2-week programme may require an entry visa to enter Singapore. They can check against this link on <a href="#">Singapore's Immigration and Checkpoints Authority (ICA)</a> for the list of countries that require an Entry Visa. If required, students should start applying at the above website at least 2-4 weeks before their arrival.</p>

**NOTE:** To ensure that students have the required visa entry requirements, students are advised to arrange for their flights only after the approval of student pass application.

## OTHER USEFUL INFORMATION

<b>Approximate Living Costs</b>	<p>The cost of living will depend on your lifestyle.</p> <p>On average, students should budget for an estimated amount of SGD 1,000 - 1,500 per summer course for basic needs such as food, transportation and some personal expenses. This amount does not include personal holiday travels, entertainment and other incidentals.</p>
<b>Group Hospitalisation &amp; Surgical Insurance</b>	<p>Falling ill or being hospitalized in Singapore can place an unexpected financial burden on international students, who are not entitled to medical subsidies that Singapore citizens enjoy. Therefore, a compulsory NTU Group Hospitalization &amp; Surgical Insurance (GHSI) cover is included in the summer programme fees for your peace of mind while studying in Singapore.</p> <p>Besides providing island-wide outpatient medical coverage, the GHSI allows you to obtain a Letter of Guarantee to waive the requirement to put up any monetary deposits should you be admitted to a government/restructured hospital in Singapore.</p>
<b>On-Campus Health Care</b>	<p>Medical and counselling services are available on campus to cater to your health and wellness needs.</p> <p>There are also clinics near campus should you feel unwell after office hours. You may refer to the <a href="#">Group Hospitalisation and Surgical Insurance</a> to find out what is covered under the scheme.</p>
<b>Medical Declaration</b>	<p>It is mandatory for all incoming students to highlight any past or present medical conditions in their online application.</p> <p>This information is for the purpose of the student's well-being, such that relevant support may be rendered to ensure a positive immersion experience at NTU and that your living needs are met adequately.</p>

## OTHER USEFUL INFORMATION

<b>Facilities / services available to students on campus</b>	<ul style="list-style-type: none"> <li>• Library</li> <li>• Wide range of sports and recreation facilities</li> <li>• Medical Services</li> <li>• Campus-wide Wi-Fi</li> <li>• High-speed LAN access in-room</li> <li>• Bank and ATMs</li> <li>• Hairdresser</li> <li>• Supermarkets</li> </ul>	<ul style="list-style-type: none"> <li>• Student's Global Lounge</li> <li>• Restaurants, fast food chains and other food outlets around campus (click <a href="#">here</a> for more information)</li> <li>• Canteens located at most Halls of Residence or within walking distance</li> </ul>
<b>Any bank on NTU campus?</b>	<p>There is an Overseas Chinese Banking Corporation – OCBC Bank with 24-hour ATM on campus.</p> <p>Alternatively, students may also visit the Jurong Point Shopping Centre (<a href="http://www.jurongpoint.com.sg">www.jurongpoint.com.sg</a>), which is located 10 minutes car drive from NTU campus, for their banking needs.</p>	
<b>Can I open a bank account while studying at NTU?</b>	<p>The local banks (including OCBC) require the student's exchange period to be at least 6 months in order to be eligible to open an account in Singapore.</p>	
<b>Acceptable credit cards/bank cards in Singapore</b>	<ul style="list-style-type: none"> <li>• Visa</li> <li>• Mastercard</li> <li>• American Express</li> <li>• Diners Club</li> <li>• Maestro</li> <li>• PLUS</li> </ul> <p>You may withdraw cash from most ATM machines displaying the above services, as long as you have the required PIN and service enabled on your credit/debit card. You should check with your card issuing bank before you leave your home country to enquire about overseas usage in Singapore.</p>	

## WITHDRAWAL POLICY

### FOR EXCHANGE STUDENTS

All Exchange Students admitted on tuition fee-waiver basis who wish to withdraw from the GEM Trailblazer Summer Programme should inform their Home University Exchange Coordinator and the GEM Trailblazer Team, in writing, of their decision to withdraw.

Notice of Withdrawal	Refund Outcome
30 days or more prior to the start of the student's GEM T summer programme	Registration and Administrative Fee will be refunded.
Less than 30 days before the start of the student's GEM T Summer programme	Only the Registration Fee will be refunded. Administrative Fees will NOT be refunded. <i>For Exchange coordinators – This will not count towards exchange.</i>
After Arrival at NTU	The Registration and Administrative Fee will NOT be refunded. Depending on when the student checks out, only the unconsumed period of accommodation (counted by 7-day weekly billing cycle) will be refunded. <i>For Exchange coordinators – This will count towards exchange.</i>



## WITHDRAWAL POLICY

### FOR FEE-PAYING STUDENTS

All fee-paying students who wish to withdraw from the GEM Trailblazer Summer Programme must inform GEM Trailblazer Office in writing of their decision to withdraw.

Notice of Withdrawal	Refund Outcome
Withdrawal notice received BEFORE the application deadline.	<ul style="list-style-type: none"> <li>The Tuition and Administrative fees will be refunded</li> <li>The Registration Fee of S\$150 will not be refunded</li> </ul>
Withdrawal notice received AFTER the application deadline and 30 or more days months prior to the start of the student's Summer Programme.	<ul style="list-style-type: none"> <li>50% of the Tuition and Administrative fees will be refunded</li> <li>The Registration Fee of S\$151 will not be refunded</li> </ul>
Withdrawal notice received AFTER the application deadline but less than 30 days before the start of the student's Summer Programme.	No refund on the Programme Fees (Tuition Fees, Registration and Administrative Fees)

## ABOUT SINGAPORE

### Singapore – A Garden City

Singapore is a compact island of only about 682 km<sup>2</sup>, but it has seen extraordinary growth and progress throughout its history since its founding. In just 150 years, Singapore has transformed into a leading vibrant economic hub despite limited land and not having any natural resources.

Singapore is now a cosmopolitan society where people live harmoniously and interact with different races. Visitors can enjoy the best of Chinese, Malay, Indian and Eurasian cultures through the many traditional and religious festivals that fill the Singapore calendar.

Located in the heart of Asia, Singapore enjoys a robust economy driven by a highly educated workforce, excellent connectivity, and high standard of living. It tops the world rankings in key sectors of Competitiveness and Business Environment, Economic Performance, Business Legislation and Efficiency.

Singapore has the world's busiest port and one of the world's major oil refining and distribution center. Rated as one the world's easiest place to do business, it is host to more than 7,000 MNCs and 150 international organizations. As a major air, sea and telecommunications hub, its strategic position in Asia offers easy access to more than 300 cities in 60 international destinations within a 7-hour flight radius from Changi Airport, consistently rated as the world's best airport.

For more information on Singapore, you may visit the official Singapore Tourism Website:

<https://www.visitsingapore.com/en/>

## ABOUT NTU

### NTU – A Garden Campus

A research-intensive public university, Nanyang Technological University (NTU) has about 33,000 undergraduate and postgraduate students in the colleges of Engineering, Business, Science and Humanities, Arts & Social Sciences. In 2013, NTU enrolled the first batch of students at its new medical school, the Lee Kong Chian School of Medicine, jointly with Imperial College London.

NTU is also home to world-class autonomous institutes – the National Institute of Education, S Rajaratnam School of International Studies, Earth Observatory of Singapore, Singapore Centre on Environmental Life Sciences Engineering and the Wealth Management Institute – and various leading research centres such as the Nanyang Environment & Water Research Institute (NEWRI) and the Energy Research Institute @ NTU (ERI@N).

Ranked 11th in the world, NTU is top in Asia and has been placed as the world's top young university for the past six years. The university's main campus is frequently listed among the Top 15 most beautiful university campuses in the world.

At any one time, NTU has on campus students from more than 100 nationalities. With more than 280 academic partners, international exchange students are an integral part of our vibrant community.

Besides its 200-ha (500-acre) lush green, residential campus in the western part of Singapore, NTU also has a second campus in the heart of Novena, Singapore's medical district.

For more information, please visit the NTU corporate website at <http://www.ntu.edu.sg>.



## CONTACT DETAILS

<p><b>GEM Partnership</b> <b>(For Summer spots &amp; Agreement)</b></p>	<p><b>Ms. Pauline Ho</b> <b>Deputy Director</b> <b>+65 6790-5088</b> <a href="mailto:Paulineho@ntu.edu.sg">Paulineho@ntu.edu.sg</a> <a href="mailto:GEM-Partnership@ntu.edu.sg">GEM-Partnership@ntu.edu.sg</a></p>
<p><b>GEM Trailblazer Summer Programme Team</b></p>	<p><b>Ms. Priscilla Phang</b> <i>Assistant Director</i> <b>+65 6513-2087</b></p> <p><b>Ms. Chia Hsiao Ching</b> <i>Manager</i> <b>+65 6592-2472</b></p> <p><b>Mr. Iswandi</b> <i>Assistant Manager</i> <b>+65 6592-3116</b></p>
<p><b>GEM Trailblazer Address</b></p>	<p><b>Office of Global Education and Mobility</b> <b>42 Nanyang Avenue, Student Services Centre, Level 1</b> <b>Singapore 639815</b></p> <p>Web: <a href="http://tinyurl.com/GEMTSummer">tinyurl.com/GEMTSummer</a> Email: <a href="mailto:summerNTU@ntu.edu.sg">summerNTU@ntu.edu.sg</a></p>