



# **seeNTU 2024**

## **Module Synopses**

## seeNTU 2024 Module Schedule

Date	Module Code	Module Title	Lecturer	Time
<b>27 May 2024 (Mon)</b>	SPMS/1	Discrete Mathematics and Optimization	Prof Bernhard Schmidt Dr Gary Royden Watson Greaves	9.30am – 1.00pm
	SSS/1	Understanding Crisis Leadership	Asst Prof Sabrina Luk	9.30am – 1.00pm
	CCEB/1	Introduction to Chemical Process Simulation in Aspen HYSYS	Dr Mukta Bansal	2.00pm – 5.30pm
	MSE/1	Rediscovery of Metals and Their New Nanofrontiers	Asst Prof Tan Kwan Wee Asst Prof Wu Dongshuang	2.00pm – 5.30pm
<b>28 May 2024 (Tue)</b>	CCEB/2	Be a Molecular Detective for a Day – Theory and hands-on experience on a benchtop NMR Spectrometer	Dr Sumod Pullarkat	9.30am – 5.30pm
	SSS/2	Understanding Thailand's Politics	Prof Duncan James McCargo	9.30am – 1.00pm
	SSS/3	Crash Course to Singapore Politics	Asst Prof Walid Jumblatt Abdullah	2.00pm – 5.30pm
<b>29 May 2024 (Wed)</b>	CEE/1	Membrane Technologies for Desalination and Reclamation	Assoc Prof Chong Tzyy Haur Dr Sim Lee Nuang	9.30am – 5.30pm
	MSE/2	Materials and Artificial Intelligence Masterclass	Asst Prof Leonard Ng	9.30am – 1.00pm
	NBS/1	The Future of Finance: The Path to a Thriving Career in FinTech	Dr Ernie Teo	2.00pm – 5.30pm
<b>30 May 2024 (Thu)</b>	CCDS/1	Python Project for Beginners	Dr Josephine Chong Leng Leng Dr Vidya Sudarshan	9.30am – 5.30pm
	MAE/1	Introduction to 3D Printing	Dr Goh Guo Liang	2.00pm – 5.30pm
	SSS/4	Exploring Human Economic Behaviours through Experiments	Asst Prof He Tai-Sen	2.00pm – 5.30pm
<b>31 May 2024 (Fri)</b>	SSS/5	Digital Games and Society	Dr Jeremy Sng	9.30am – 1.00pm
	EEE/1	Introduction to Aerial Robotics	Dr Yuan Shenghai Dr Thien-Minh Nguyen	2.00pm – 5.30pm

**School of Physical and Mathematical Sciences**

**27 May 2024 (Mon)**

**9.30am – 1.00pm**

**Module Code** SPMS/1

**Module Title** Discrete Mathematics and Optimization

**Description** Students will be introduced to intriguing mathematical concepts that appear in discrete mathematics and optimization, through a wealth of hands-on examples and problems.

An introduction to some basic and some advanced topics in discrete mathematics and optimization through examples, hands-on problems, and computer experiments will also be given. Real world applications of linear optimisation and game theory will be discussed.

The topics covered include:

- mathematical game theory
- matrix games
- mathematical models for games and computation of optimal strategies
- linear programming and applications
- simplex algorithm
- rental harmony
- combinatorial optimization
- lottery investment strategy
- finite geometry

**Lecturer** Prof Bernhard Schmidt  
Dr Gary Royden Watson Greaves

**Mode of Delivery** Lecture

**School of Social Sciences**

**27 May 2024 (Mon)**

**9.30am – 1.00pm**

**Module Code** SSS/1

**Module Title** Understanding Crisis Leadership

**Description** Crisis, by its very nature, is a significant threat to the basic structure and value of a system. It can take many forms without warning. It requires a leader to augment his/her competencies to mitigate the impact of a crisis under conditions of high uncertainties and tight time constraints.

This module aims to give the students a basic understanding of what crisis leadership is, why crisis leadership is important, how and why some leaders can successfully and skilfully handle crisis situations while others fail disastrously through local and international case studies.

This module will be taught using an interactive seminar style. Students are expected to actively participate in guided classroom discussions.

**Lecturer** Asst Prof Sabrina Luk

**Mode of Delivery** Seminar

**School of Chemistry, Chemical Engineering and Biotechnology**      **27 May 2024 (Mon)**      **2.00pm – 5.30pm**

<b>Module Code</b>	CCEB/1
<b>Module Title</b>	Introduction to Chemical Process Simulation in Aspen HYSYS
<b>Description</b>	<p>We all learn about the chemistry of reactions (rate equations, rate constant, order of reaction, equilibrium, etc.) in A-level Chemistry. Have you ever wondered where do chemical reactions fall in the scheme of things in a chemical plant? Do you know that the life of a Chemical Engineer can also be exciting? Chemical engineering is not just about experiments, but also about playing with simulation software.</p> <p>In this module, we shall look into various parts of a chemical plant. We shall employ the Aspen HYSYS modelling platform - a user-friendly and exciting tool - to simulate and understand the operation of different parts of chemical plants.</p> <p>This module shall incorporate a combination of lectures and hands-on simulation sessions. The broad aim of this module is to give students a light appreciation of some core chemical engineering fundamentals with the aid of typically used simulation tools.</p>
<b>Lecturer</b>	Dr Mukta Bansal
<b>Mode of Delivery</b>	Lecture / Tutorial / Laboratory

**School of Materials Science and Engineering**      **27 May 2024 (Mon)**      **2.00pm – 5.30pm**

<b>Module Code</b>	MSE/1
<b>Module Title</b>	Rediscovery of Metals and Their New Nanofrontiers
<b>Description</b>	<p>The epochs of civilization, such as the Stone, Bronze, and Iron Ages, have been defined by material technologies and developments. In the 21st century, materials science and engineering are expected to play crucial roles in enabling new properties and functions to enhance our daily lives, with applications in healthcare, green energy generation and storage, and other emerging sustainable fields.</p> <p>In this module, we will introduce you to the fascinating world of metals across different length scales: from the macroscopic level, which we can see and touch, to the atomic level, where we can control nanoscale properties. We will also explore innovative approaches for creating new metal combinations and applications.</p> <p>Participants will engage in hands-on laboratory experiments and use optical and electron microscopy instruments to gain a deeper understanding and appreciation of the correlations between materials processes, structures, and properties.</p>
<b>Lecturer</b>	Asst Prof Tan Kwan Wee Asst Prof Wu Dongshuang
<b>Mode of Delivery</b>	Lecture / Laboratory

**School of Chemistry, Chemical Engineering and Biotechnology****28 May 2024 (Tue)****9.30am – 5.30pm****Module Code** CCEB/2**Module Title** Be a Molecular Detective for a Day – Theory and hands-on experience on a benchtop NMR Spectrometer**Description** Nuclear Magnetic Resonance (NMR) Spectroscopy (a cousin of the Magnetic Resonance aka MRI Imaging technique used in hospitals) is a very powerful and advanced method which allows scientists to understand the structure and purity of compounds. It is used extensively in scientific research in the fields of chemistry, materials science and biology as well as in medicine, and various industries.

In this module, during the morning session, you will be introduced to the basic theory behind NMR spectroscopy (only basic knowledge of the atomic structure and a very preliminary understanding of types of simple molecules such as alcohols, amines, ethers and esters is required).

During the afternoon hands-on session, you will get to identify unknown compounds using the theory you have learned. You will get to use a new type of portable NMR spectrometer called a benchtop NMR and learn to acquire and interpret the data.

**Lecturer** Dr Sumod Pullarkat**Mode of Delivery** Lecture / Laboratory**School of Social Sciences****28 May 2024 (Tue)****9.30am – 1.00pm****Module Code** SSS/2**Module Title** Understanding Thailand's Politics**Description** In this module, we will look at a number of recent political developments in Thailand, including the 2014 military coup and the 2023 general election. The lecturer will give a short overview of these developments illustrated by photographs from his firsthand observations, as well as online video clips.

Students will roleplay some of these episodes, including taking part in a mock election and examining the mindset behind historic coup decisions.

The module is designed to give students a flavour of how we can best study the comparative politics of Southeast Asia.

**Lecturer** Prof Duncan James McCargo**Mode of Delivery** Lecture / Seminar

School of Social Sciences

28 May 2024 (Tue)

2.00pm – 5.30pm

**Module Code** SSS/3

**Module Title** Crash Course to Singapore Politics

**Description** The module will be an extremely brief introduction to Singapore politics, covering the basic facets of Singapore's political system. This includes the parliamentary system, electoral system, the reasons for PAP's longevity, and Singapore's core values and principles.  
The module will be interactive seminar-styled, as student participation will be vital.

**Lecturer** Asst Prof Walid Jumblatt Abdullah

**Mode of Delivery** Seminar

**School of Civil and Environmental Engineering**

**29 May 2024 (Wed)**

**9.30am – 5.30pm**

**Module Code** CEE/1

**Module Title** Membrane Technologies for Desalination and Reclamation

**Description** Lecture (2.5 hours): Introduction of desalination and water reclamation processes; discuss the basic principles of membrane technologies; analyse of the main factors that affect the membrane performance and energy consumption; discuss the challenges of membrane technologies.

Laboratory Session (4.5 hours): Perform membrane filtration test and analyze the water quantity and quality to determine the efficiency of membrane process. Note that students will need to go through basic lab safety briefing prior conducting any experiment.

**Lecturer** Assoc Prof Chong Tzyy Haur  
Dr Sim Lee Nuang

**Mode of Delivery** Lecture / Laboratory

**School of Materials Science and Engineering**

**29 May 2024 (Wed)**

**9.30am – 1.00pm**

**Module Code** MSE/2

**Module Title** Materials and Artificial Intelligence Masterclass

**Description** In today's era of Information, 'Data' is the new driving force, provided we know how to extract relevant 'Intelligence'.

In this module you will be introduced to the core principles of Data Science, basic tools and techniques of data handling, and exploratory data analysis. Explore the links between Materials Science and Artificial Intelligence through hands-on activity using relevant computer software.

- i) Python Programming
- ii) Prompt Engineering

No prior experience in computer programming is required.

**Lecturer** Asst Prof Leonard Ng

**Mode of Delivery** Lecture / Laboratory

**Nanyang Business School**

**29 May 2024 (Wed)**

**2.00pm – 5.30pm**

**Module Code** NBS/1

**Module Title** The Future of Finance: The Path to a Thriving Career in FinTech

**Description** The financial industry has undergone significant transformation due to advancements in technology. In this module, we will give a quick review of different types of technologies and their disruptive or empowering effects on financial services.

1. The basics of blockchain technology and decentralized finance.
2. The basics of artificial intelligence and its application in finance.
3. The Bachelor of Applied Computing in Finance program.

**Lecturer** Dr Ernie Teo

**Mode of Delivery** Seminar



**School of Computer Science and Engineering**

**30 May 2024 (Thu)**

**9.30am – 5.30pm**

**Module Code** CCDS/1

**Module Title** Python Project for Beginners

**Description** In the guided project, students are first introduced to simple Python concepts. Students will learn concepts such as variables, conditional statements, loops, and functions while building their Python project.

**Lecturer** Dr Josephine Chong Leng Leng  
Dr Vidya Sudarshan

**Mode of Delivery** Laboratory

**School of Mechanical and Aerospace Engineering**

**30 May 2024 (Thu)**

**2.00pm – 5.30pm**

**Module Code** MAE/1

**Module Title** Introduction to 3D printing

**Description** This module provides an exciting introduction to the world of 3D printing, a cool way of making objects from computer designs. You'll learn all about how 3D printing works, from the first step of coming up with an idea to the last step of printing it out.

What You Will Do and Learn:

1. Understanding the Basics: Grasp the foundational concepts of 3D printing, including its history and various printing techniques.
2. Hands-On Experience: Preparing design files and operating a 3D printer to transform your digital designs into physical objects.
3. Understanding the landscape of 3D printing: Getting the opportunity to see the state-of-the-art 3D printers for various research and industrial applications during the lab visit.

**Lecturer** Dr Goh Guo Liang

**Mode of Delivery** Lecture / Laboratory / Lab Tour

School of Social Sciences

30 May 2024 (Thu)

2.00pm – 5.30pm

**Module Code** SSS/4

**Module Title** Exploring Human Economic Behaviours through Experiments

**Description** This module aims to acquaint pre-tertiary students with the experimental methodology in behavioural economics. Throughout the 3.5-hour class, students will delve into the ways economists leverage experiments to enhance their insights into human economic and strategic decision-making.

In addition to lectures, the module incorporates interactive laboratory sessions, allowing students to actively engage as research participants.

This hands-on experience not only offers practical exposure but also provides an opportunity for students to earn rewards through their participation in the experiments.

**Lecturer** Asst Prof He Tai-Sen

**Mode of Delivery** Lecture / Laboratory

**School of Social Sciences**

31 May 2024 (Fri)

9.30am – 1.00pm

**Module Code** SSS/5

**Module Title** Digital Games and Society

**Description** The notion of play has been prevalent in human society. Through play, we learn to think, interact with others, and hone important real-world skills. Today, digital games offer increasingly immersive and engaging play experiences. Beyond entertainment, games can also serve as mediums for self-discovery, education, and behavioral change.

This module will guide students to understand and appreciate the impact of digital games on society by examining the latest trends and real-world case studies.

Some of the questions we will explore include: How can playing Animal Crossing offer psychological comfort? Why are Overwatch players so toxic?

Through interactive groupwork and class discussions, students will gain a deeper appreciation of the psychological and social dimensions of digital gameplay.

**Lecturer** Dr Jeremy Sng

**Mode of Delivery** Seminar

**School of Electrical and Electronics Engineering**

31 May 2024 (Fri)

2.00pm – 5.30pm

**Module Code** EEE/1

**Module Title** Introduction to Aerial Robotics

**Description** In this module, students will master manual UAV control and Python scripting. Highlights include hands-on flight practice, concept briefings, swarm demonstration time-lapse photography, and a skills competition.

By the end, you'll have a solid grasp of UAV control and scripting, ready for exciting opportunities in drone technology.

**Lecturer** Dr Yuan Shenghai  
Dr Thien-Minh Nguyen

**Mode of Delivery** Lecture / Laboratory