

NUS School of Computing				
Master of Computing (General Track) – Essential Modules Semester 2, AY2020/2021				
Module Code & Title	Lecture Day/Period	Time	Venue	Exam
IT5001 Software Development Fundamentals <i>*(Students are to attend both Wed and Sat lessons)</i> Lecturer: Alan Cheng	Wednesday [13 Jan 2021 - 3 Mar 2021]	6.30pm - 8.30pm	LECTURE (E-Learn)	Saturday, 20 March 2021, 2pm - 4pm Venue: TBC
	Saturday [16 Jan 2021 - 6 Mar 2021]	9am - 10am	LECTURE (E-Learn)	
		10am - 12pm	LAB (E-Learn)	
	Monday [18 Jan 2021 - 8 Mar 2021]	2pm - 4pm	LAB (COM1-B112)	
		4pm - 6pm	LAB (COM1-B112)	
	Wednesday [20 Jan 2021 - 10 Mar 2021]	3pm - 5pm	RECITATION (E-Learn)	
IT5003 Data Structures and Algorithms <i>*(Students are to attend both Tues and Sat lessons)</i> Lecturer: Jenny Lim	Tuesday [9 Mar 2021 - 27 Apr 2021]	6.30pm - 8.30pm	LECTURE (E-Learn)	Saturday, 8 May 2021, 9am - 11am Venue: TBC
	Saturday [13 Mar 2021 - 1 May 2021] <i>(*Please note that 1 May 2020 is a public holiday so there will be no class)</i>	9am - 10am	LECTURE (E-Learn)	
		10am - 12pm	LAB (E-Learn)	
	Monday [15 Mar 2021 - 3 May 2021]	2 - 4pm	LAB (COM1-B112)	
		4pm - 6pm	LAB (COM1-B112)	
	Wednesday [17 Mar 2021 - 5 May 2021]	3pm - 5pm	RECITATION (E-Learn)	
IT5004 Enterprise Systems Architecture Fundamentals Lecturer: Lek Hsiang Hui	Thursday [14 Jan 2021 - 15 Apr 2021]	6.30pm - 9.30pm	LECTURE (E-Learn)	Thursday, 29 April 2021, 5 - 7pm Venue: TBC
IT5006 Fundamentals of Data Analytics Lecturer: Ashish Deepak Dandekar	Friday [15 Jan 2021 - 16 Apr 2021]	4pm - 7pm	LECTURE (E-Learn)	Monday, 3 May 2021, 5 - 7pm Venue: TBC

* **Modules offered, descriptions and schedules may be subject to change.**

*Please refer to this link for lecture/lab venues: <https://www.comp.nus.edu.sg/maps/venues/>

Essential Modules:

IT5001 Software Development Fundamentals

This module aims to introduce non-computing students to the principles and concepts of software development at an accelerated pace. Students will be introduced to the basics of programming (control flow, code and data abstraction, recursion, types, OO), development methodology (ensuring correctness, testing, debugging), simple data structures and algorithms (lists, maps, sorting), and software engineering principles. Through hands on assignments and projects, students will learn good software development practices (documentation, style) and experience a typical software engineering cycle (waterfall and agile workflow). Students must pass IT5001 in order to continue with the other CF I modules.

IT5002 Computer Systems and Applications

This module aims to introduce non-computing students to (a) the common principles and concepts in computer systems: abstraction, layering, indirection, caching, hierarchical naming, prefetching, pipelining, locking, concurrency; (b) the inner workings of a computing device, including hardware (CPU, memory, disks), operating systems (kernels, processes and threads, virtual memory, files), and applications (Web, databases).

IT5003 Data Structures and Algorithms

This module introduces non-computing students to efficient computational problem solving in an accelerated pace. Students will learn to formulate a computational problem, identify the data required and come up with appropriate data structures to represent them, and apply known strategies to design an algorithm to solve the problem. Students will also learn to quantify the space and time complexity of an algorithm, prove the correctness of an algorithm, and the limits of computation. Topics include common data structures and their algorithms (lists, hash tables, heap, trees, graphs), algorithmic problem solving paradigms (greedy, divide and conquer, dynamic programming), and NP-completeness.

IT5004 Enterprise Systems Architecture Fundamentals

This module aims to equip non-computing students with fundamental knowledge in architecting and designing modern Enterprise Systems in organisations that can be reasonably complex, scalable, distributed, component-based and mission-critical. Students will develop an understanding of high-level concepts such as enterprise architecture and software architecture. They will then move on to acquire fundamental systems analysis and design techniques such as object-oriented requirements analysis and design using the Unified Modelling Language.

IT5005 Artificial Intelligence

The study of artificial intelligence, or AI, aims to make machines achieve human-level intelligence. This module provides a comprehensive introduction to the fundamental components of AI, including how problem-solving, knowledge representation and reasoning, planning and decision making, and learning. The module prepares students without any AI background to pursue advanced modules in AI.

IT5006 Fundamentals of Data Analytics

This module introduces students to the fundamental concepts in business analytics. They can learn how to apply basic business analytics tools (such as R), and how to effectively use and interpret analytic models and results for making informed business decisions. The module prepares students without any analytics background to pursue advanced modules in business and data analytics.