

**Overview of Popular Career paths, from Cryptography, Finance, to Internet  
8 to 12 July 2024**

**Venue: Nanyang Technological University  
50 Nanyang Ave, Singapore 639798  
North Spine, TR+23, Level 5 (NS4-05-101)  
Lecturer: Asst Prof Yong Ee Hou**

**Programme Schedule**

Date/Day	Time	Programme
8 Jul 2024 Monday	14:00 – 14:15	<b>Opening Remarks and Welcome by Asst Prof Yong Ee Hou</b>
	14:15 – 17:00	<b>Session 1:</b> <b>Mathematics of Financial Derivatives</b> <ul style="list-style-type: none"> <li>What do Quants in Wall Street do? Story of Emanuel Derman.</li> <li>Options and Markets?</li> <li>Asset price random walks</li> <li>Stochastic Differential Equation and Black-Scholes model</li> <li>Option theory: Put-Call Parity and different kinds of options</li> <li>Python: Financial-Models-Numerical-Methods</li> </ul>
9 Jul 2024 Tuesday	14:00 – 17:00	<b>Session 2:</b> <b>Introduction to Statistical Learning</b> <ul style="list-style-type: none"> <li>What is Statistical Learning?</li> <li>Role of modern-day Data Scientist.</li> <li>Assessing Model Accuracy, Overfitting and Its Avoidance</li> <li>Modeling Relationships and Trends in Data</li> <li>Linear Regression, Polynomial Regression, Logistic Regression</li> <li>Python: pandas, matplotlib, seaborn, and Scikit-Learn</li> <li>Case study: Titanic dataset</li> </ul>

Date/Day	Time	Programme
10 Jul 2024 Wednesday	14:00 – 17:00	<b>Session 3:</b> <b>Internet of Things</b> <ul style="list-style-type: none"> <li>♦ IoT device programming</li> <li>♦ Sensing and actuating technologies</li> <li>♦ IoT protocol stacks</li> <li>♦ Data science for IoT</li> <li>♦ Cloud-based IoT platforms</li> <li>♦ Case Study: Home Automation with Python and IoT</li> </ul>
11 Jul 2024 Thursday	14:00 – 17:00	<b>Session 4:</b> <b>Information cryptography</b> <ul style="list-style-type: none"> <li>♦ Introduction to cryptography</li> <li>♦ What does a Cybersecurity Specialist do?</li> <li>♦ Shannon's Perfect Secrecy Definition</li> <li>♦ Classical cryptography. What are ciphers?</li> <li>♦ Pseudorandom generators (PRG).</li> <li>♦ What are keys? Private vs Public.</li> <li>♦ Data Encryption Standard (DES)</li> </ul>
12 Jul 2024 Friday	14:00 – 17:00	<b>Session 5:</b> <b>Group Presentations by Participants</b>  <b>Closing Ceremony</b> Certificate Presentation and Group Photography Attire: Formal

*\*Programme schedule may subject to change.*