

# NUS SOC Summer Workshop 2022

Algorithm, Cloud & Security

## Solving Real World Problems with Simulation

### Course Information

#### Pre-requisites

🐼 Which year of study is appropriate for your topic?

Year 2 and above.

🐼 What background and programming languages are required for your topic?

Prior knowledge of Probability and Statistics, and knowledge of a high level language such as C would be good.

🐼 What do you think is attractive/unique about your topic to students?

Simulation is so pervasive, it is used in almost every field, be it in Medicine, Transportation, Manufacturing, Traffic systems, etc. It will be a useful knowledge/tool to have when one goes out to the working world.

#### Learning content and Teaching

🐼 What will be covered during “trial” lectures?

Basics of Modelling and Simulation, Input Modelling, Random Numbers, Statistical Distributions.

🐼 What will be covered during the “advanced” seminars?

Experimentation, Output Analysis, Applications of Simulation (Digital Twinning, Crisis management, Traffic Management)

🐼 What will be the nature of the project work? How do you intend to split students into project groups, each consisting of 3 or 4 students?

They will be designing and implementing a real world simulation application. Project groups of 3 to 4 per group, no preference in splitting).

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👤 Do you have any recommendations for references (books) students can study to prepare for your topic before coming to NUS?

[Banks, Carson, Nelson, Nichol, "Discrete-Event System Simulation", 5th Edition, Pearson](#)

👤 Besides their own personal laptops, what other equipment or software would students need for your topic?

[We will be using the simulation software Arena by Rockwell Automation.](#)

[www.arenasimulation.com](http://www.arenasimulation.com)

[You may download on your laptop first. This will be the student version. The full licensed version will be provided during the course.](#)