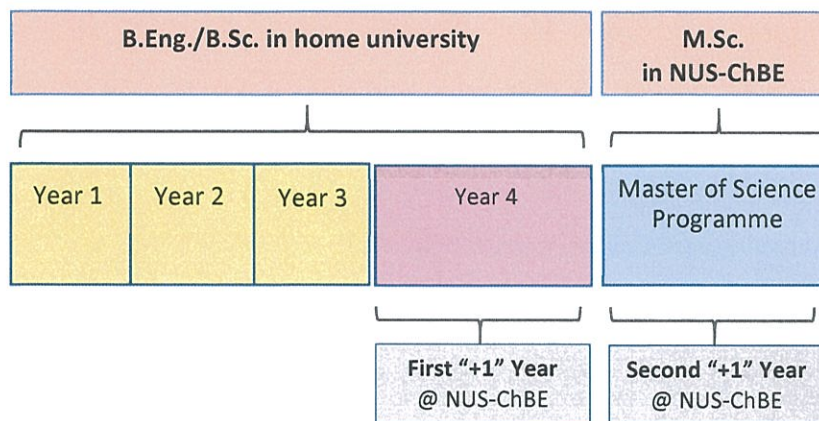


ANNEX:

1. The Time Schedule of the Framework

1.1 The time schedule of the entire framework is depicted as below.



2. The Fourth and Final Year of Undergraduate Studies at NUS-ChBE

2.1 A minimum of 24 MCs may be selected from a list of modules offered by **NUS-ChBE**. Students must enrol in a minimum of 12 MCs per semester to fulfil the conditions of their student pass. The module contents and assessments are all in English. For 5000 level modules, up to 10 MCs (with minimum B- grade) can be credit transferred to the M.Sc. programmes. An example of the list is as follows, which may be updated by NUS-ChBE from time to time.

Modules	Modular Credit
CN4118N Capstone Research Project	8
CN4122N Process Synthesis and Simulation	4
CN4201R Petroleum Refining	4
CN4203R Polymer Engineering	4
CN4205R Pinch Analysis and Process Integration	4
CN4211R Petrochemicals and Processing Technologies	4
CN4215R Food Technology and Engineering	4
CN4216R Electronic Materials Science	4
CN4218 Particle Technology Fundamentals and Applications	4
CN4221R Control of Industrial Processes	4
CN4227R Advanced Process Control	4
CN4238R Chemical & Biochemical Process Modelling	4
CN4240R Unit Operations and Processes for Effluent Treatment	4
CN4246R Chemical and Bio-Catalysis	4
CN4247R Enzyme Technology	4
CN4248 Sustainable Process Development	4
CN4250 Chemical Product Design	4
CN4251 Troubleshooting with Case Studies for Process Engineers	4
CN5010 Mathematical & Computing Methods for Chemical Engineers	4
CN5020 Advanced Reaction Engineering	4
CN5030 Advanced Chemical Engineering Thermodynamics	4
CN5040 Advanced Transport Phenomena	4
CN5050 Advanced Separation Processes	4
CN5172 Biochemical Engineering	4

CN5111	Optimization of Chemical Processes	4
CN5161	Polymer Processing Engineering	4
CN5162	Advanced Polymeric Materials	4
CN5173	Downstream Processing of Biochemical and Pharmaceutical Products	4
CN5191	Project Engineering	4
CN5192	Future Fuel Options: Prospects and Technologies	4
CN5193	Instrumental Methods of Analysis	4
CN5215	Atomistic Modelling of Molecules and Materials	4
CN5251	Membrane Science and Technology	4
CN5252	Metabolic Engineering	4
SH5002	Fundamentals in Industrial Safety	4
SH5003	Fundamentals in Environmental Protection	4
SH5101	Industrial Toxicology	4
SH5102	Occupational Ergonomics	4
SH5104	Occupational Health	4
SH5105	Noise and Other Physical Hazards	4
SH5106	Radiation	4
SH5107	Industrial Ventilation	4
SH5108	Chemical Hazard Management	4
SH5109	Biostatistics and Epidemiology	4
SH5110	Chemical Hazard Evaluation	4
SH5201	Hazard Identification and Evaluation	4
SH5202	Quantified Risk Analysis	4
SH5203	Emergency Planning	4
SH5204	Safety Engineering	4
SH5206	Human Factors in Process Safety	4
SH5401	SHE and Quality Management Systems	4
SH5402	Advanced SHE Management	4
SH5404	Safety Health and Environmental Project	4

2.2 NUS-ChBE will award letter grades for the modules read by a UPC-CHE student, which can be translated into UPC-CHE grading system as follows:

NUS Grade	NUS Point	UPC-CHE Grade
A+	5.0	Excellent (优)
A	5.0	
A-	4.5	
B+	4.0	Good (良)
B	3.5	
B-	3.0	
C+	2.5	Average (中)
C	2.0	
D+	1.5	Passed (及格)
D	1.0	
F	0.0	Failed (不及格)

3. Master of Science Programme at NUS-ChBE

3.1 A total of 40 MCs may be selected from a list of modules offered by NUS-ChBE to fulfil the respective M.Sc. degree graduation requirement. An example of the list of modules is as follows,

which may be updated by NUS-ChBE from time to time. The module contents and assessments are all in English.

M.Sc. Chemical Engineering module code and title	
CN5010	Mathematical & Computing Methods for Chemical Engineers
CN5020	Advanced Reaction Engineering
CN5030	Advanced Chemical Engineering Thermodynamics
CN5040	Advanced Transport Phenomena
CN5050	Advanced Separation Processes
CN5172	Biochemical Engineering
CN5111	Optimization of Chemical Processes
CN5161	Polymer Processing Engineering
CN5162	Advanced Polymeric Materials
CN5173	Downstream Processing of Biochemical and Pharmaceutical Products
CN5191	Project Engineering
CN5192	Future Fuel Options: Prospects and Technologies
CN5193	Instrumental Methods of Analysis
CN5215	Atomistic Modelling of Molecules and Materials
CN5251	Membrane Science and Technology
CN5252	Metabolic Engineering
CN5555	Chemical Engineering Project

M.Sc. Safety, Health & Environmental Engineering module code and title	
SH5002	Fundamentals in Industrial Safety
SH5003	Fundamentals in Environmental Protection
SH5101	Industrial Toxicology
SH5102	Occupational Ergonomics
SH5104	Occupational Health
SH5105	Noise and Other Physical Hazards
SH5106	Radiation
SH5107	Industrial Ventilation
SH5108	Chemical Hazard Management
SH5109	Biostatistics and Epidemiology
SH5110	Chemical Hazard Evaluation
SH5201	Hazard Identification and Evaluation
SH5202	Quantified Risk Analysis
SH5203	Emergency Planning
SH5204	Safety Engineering
SH5206	Human Factors in Process Safety
SH5401	SHE and Quality Management Systems
SH5402	Advanced SHE Management
SH5403	Independent Study
SH5404	Safety Health and Environmental Project

4 Implementation Details

4.1 The first intake shall be in August 2021.