

Degree Requirements of MSc (Chemical Engineering)
(for cohorts from Semester 1, AY2020/2021 to Semester 1, AY2023/2024)

The graduation requirements include obtaining a minimum Grade Point Average (GPA) of 3.0 (equivalent to an average of Grade B-) for the best 40 units. Of the 40 units, at least 32 units must be from Group 1 list of courses. The remaining units may be from Group 1, Group 2 or any courses from the graduate levels in the same or other disciplines as approved by the Department.

Courses in Group 1 are in several specialised areas of chemical engineering while those in Group 2 consist of selected courses from other Master of Science programmes in the College of Design and Engineering.

Group 1

CN5010	Mathematical & Computing Methods for Chemical Engineers
CN5020	Advanced Reaction Engineering
CN5030	Advanced Chemical Engineering Thermodynamics
CN5040	Advanced Transport Phenomena
CN5050	Advanced Separation Processes
CN5111	Optimization of Chemical Processes ^{#+}
CN5111B	Process Optimization with Industrial Applications
CN5112	Introduction to Electrochemical Systems
CN5124	Fluid-Particle Systems [#] <i>(new course in Sem 2, AY2024/2025)</i>
CN5131	Colloids and Surfaces
CN5150	Principles of Polymer Science and Engineering
CN5160	Advanced Topics in Catalysis
CN5161	Polymer Processing Engineering
CN5162	Advanced Polymeric Materials
CN5172	Biochemical Engineering [#]
CN5173	Downstream Processing of Biochemical & Pharmaceutical Products [#]
CN5181	Computer Aided Chemical Engineering ⁺
CN5190	Hydrogen Energy and Technology [#]
CN5191	Project Engineering ^{#+}
CN5192	Future Fuel Options: Prospects and Technologies
CN5193	Instrumental Methods of Analysis
CN5194	Carbon Capture Sequestration and Utilization [#]
CN5195	Biomass and Energy
CN5203	Circular Economy in the Chemical Industry [#]
CN5204	Green Chemical Process and Technology [#]
CN5205	Machine Learning in Chemical Engineering ^{#+} <i>(new course in Sem 2, AY2024/2025)</i>
CN5215	Atomistic Modelling of Molecules and Materials ^{#+}
CN5216	Electronic Materials and Energy Technologies ^{#+}
CN5219	Engineering Nanobiotechnology <i>(new course in Sem 1, AY2025/2026)</i>
CN5220	Colloidals and Soft Matter Engineering
CN5222	Pharmaceuticals and Fine Chemicals [#]
CN5246	Catalysis Science and Engineering [#]
CN5251	Membrane Science and Technology [#]
CN5252	Molecular and Computational Tools for Biotechnology
CN5277	Molecular Engineering of Advanced Drug Delivery Systems [#]
CN5371	Special Topics in Biochemical Engineering and Bioseparations
CN5391	Selected Topics in Advanced Chemical Engineering – I
CN5392	Selected Topics in Advanced Chemical Engineering – II
CN5401	Contemporary Topics in Advanced Chemical Engineering (2 units)

CN5432 Fundamentals and Applications of Porous Materials
CN5555 Chemical Engineering Project⁺ (8 units)
CN5566 Chemical Engineering Industrial Practice⁺ (8 units)

Group 2

ESE5202 Air Pollution Control Technology
ESE5602 Environmental Management Systems
MT5912 Frugal Innovation
MT5913 TechLaunch – Experiential Entrepreneurship
MT5920 Enterprise Development
SH5201 Process Hazard Analysis
SH5202 Quantified Risk Analysis
SH5204 Industrial Safety Engineering

Note: All courses listed are worth 4 units each except for CN5401 Contemporary Topics in Advanced Chemical Engineering (2 units), CN5555 Chemical Engineering Project (8 units) and CN5566 Chemical Engineering Industrial Practice (8 units).

** Not all courses listed above are necessarily available in any one year, and new courses may be made available from time to time.*

Courses that are also offered to BEng (Chem Eng) undergraduate students

+ 100% Continuous Assessment; no final exam