

JOSHUA CHENG XI HAN

Chemical & Biomolecular Engineering Undergraduate · Nanyang Technological University
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EDUCATION

Nanyang Technological University, Singapore Aug 2025 – Jun 2029 (expected)
Bachelor of Engineering (Honours) in Chemical & Biomolecular Engineering
Selected results: CBE Laboratory 2 (**A**), CBE Laboratory 1A (**A–**), Designing & Developing Databases (**A–**), Intro to Chemical & Biomedical Engineering (**B+**), Ethics & Civics in a Multicultural World (**B+**).
Catholic Junior College, Singapore Feb 2021 – Dec 2022
GCE A-Levels — H2 Biology, H2 Chemistry, H2 Mathematics, H1 Geography. Class ICT Leader.

HONOURS & AWARDS

Finalist — Project GreenShift, AIChE–NUS Process Design Hackathon Mar 2026
Finalist team in a process design competition organised by the AIChE Singapore Local Section and the NUS Department of Chemical & Biomolecular Engineering.
Gold Level, WorldQuant BRAIN Challenge 2026
Attained Gold Level on the WorldQuant BRAIN platform. Also qualified through Stage 1 of the 2026 International Quant Championship (top 20% of teams globally).

RESEARCH & TECHNICAL PROJECTS

FermentSG — Bioprocess Simulator for Sustainable Protein 2026 – Present
— Designed a batch-bioreactor model for single-cell protein production from local food side-streams (spent brewery grain, okara), aligned with Singapore's "30 by 30" food-security goal.
— Built the mass-and-energy balance engine in Python (NumPy, SciPy) with an Excel calculation layer, quantifying biomass yield, oxygen-transfer demand and metabolic cooling duty across batch scales.
— Identified heat and mass transfer as the governing scale-up constraint; mapped the regulatory pathway via the Singapore Food Agency novel-food framework.
Computational Process Engineering — Self-Directed 2026 – Present
— Developing Python tooling for material-balance and reaction-kinetics problems; building proficiency in Aspen Plus for separation and reactor simulation.

EXPERIENCE

Singapore Police Force — National Service, International Cooperation Department Jan 2023 – Jan 2025
— Completed full-time National Service supporting departmental coordination and day-to-day administrative operations within the International Cooperation Department.
— Developed working proficiency across the Microsoft Office 365 suite (Outlook, Word, Excel, PowerPoint) in a structured operational environment.
The Singapore Scout Association — Administrative Assistant (Part-Time) Apr 2025 – Jun 2025
— Administered the membership data system to streamline registration for incoming members.
— Processed financial documentation — tax invoices, claims and reimbursements — with attention to accuracy.
Enspire Pte. Ltd. — Salesperson (Part-Time) Oct 2024 – Dec 2024
— Engaged diverse customer segments in a fast-paced sales environment; supported social-media marketing of vocational course offerings.

TECHNICAL SKILLS

Programming	Python (NumPy, SciPy, pandas), SQL & relational database design
Engineering	Aspen Plus process simulation, material & energy balances, laboratory technique & documentation
Analytical	Data analysis, Bloomberg BQL, technical & scientific writing

CERTIFICATIONS

Bloomberg Finance Fundamentals — Bloomberg (2026)
Bloomberg Spreadsheet Analysis (BQL) — Bloomberg (2026)
Bloomberg Market Concepts — Bloomberg (in progress)
CMFAS Modules 9 & 9A — Singapore College of Insurance (2026)
Google AI Fundamentals — Google / Coursera (2026)
Intro to AI & ML on Google Cloud — Google (2026)
SoloLearn — Coding — SoloLearn (2026)
Class 3 Driving Licence — Singapore (2025)

ORGANIZATIONS

AIChE Student Chapter · IChemE NTU Student Chapter · NTU Engineers Without Borders · NTU Sentinels Cybersecurity Club