# CHECKLIST Bachelor of Engineering (Honours) - Chemical Engineering Specialisation (2455): Transition to new program

Full name:	Student Number:	Date:

### Points to note

- You need to ensure that you meet minimum program and major requirements (listed below)
- You cannot count the same course twice
- You need to ensure that you don't take courses that are incompatible with courses that you have already counted towards your program, and that any prerequisites have been met

#### Complete 64 units comprising -

- I. 8 units for all BE(Hons) Core Courses; and
- II. 36 units for one Specialisation in Chemical Engineering; and
- III. One of the following:
  - a. 16 units for one Major from Chemical Engineering Major Options\*, or
  - b. 16 units for Chemical Engineering Minor Options\*\*, or
  - c. 16 units for Chemical Engineering Specialisation No Major option, and
- IV. 0 to 4 units from Preparatory Science and Mathematics Courses; and
- V. 0 to 4 units from Program Electives; and
- O to 4 units from General Electives.

NB: Of the 64 units required for the program, students must complete at least 24 units of courses at level 3 or higher and no more than 24 units at level 1.

√/X compl.	You must complete (NEW Program requirements)	Sem offering	#	First offered	Approved substitution	Last offered
	8 units for all: Core Courses					
	ENGG1100 Professional Engineering	1,2	2		Course must be completed [ENGG1211 (4 units) will count as 2 units towards Part A in lieu of ENGG1100, and 2 units towards program electives]	
	ENGG1001 Programming for Engineers (NEW) or CSSE1001 Introduction to Software Engineering	1,2	2	1/21	Course must be completed	
	MATH1051 Calculus & Linear Algebra I or MATH1071 Advanced Calculus & Linear Algebra I	1,2	2		Course must be completed	
	MATH1052 Multivariate Calculus & Ordinary Differential Equations or MATH1072 Advanced Multivariate Calculus & Ordinary Differential Equations	1,2	2		Course must be completed	

<sup>\*</sup>Majors available in: Biomedical Engineering; Bioprocess Engineering; Environmental Engineering; Materials Engineering; Metallurgical Engineering

<sup>\*\*</sup>Minors available in: Data Science; Computing; Design

2021 Chemical Engineering specialisation (36 units)	Sem offering	#	First offered	Approved substitution	Last offered
34 units for all: Compulsory Courses					
CHEM1100 Chemistry 1	1,2	2		Course must be completed	
ENGG1500 Thermodynamics: Energy and the Environment	1,2	2		ENGG1500 Engineering Thermodynamics	
CHEE2001 Process Principles	2	2		Course must be completed	
CHEE2003 Fluid & Particle Mechanics (will change to semester 1 in 2022)	2	2		Course must be completed	
CHEE2010 Engineering Investigation & Statistical Analysis (will change to semester 1 in 2022)	2	2		Course must be completed	
CHEE2020 Process Equipment & Control Systems (NEW)(from 2022)	2	2	2/22	CHEE4060 Process & Control System Synthesis (discontinued)	1/23
CHEE2030 Chemical Thermodynamics	2	2	2/22	CHEE3003 Chemical Thermodynamics (discontinued)	1/22
CHEE2040 Heat & Mass Transfer	2	2	2/22	CHEE3002 Heat & Mass Transfer (discontinued)	1/22
CHEM2056 Physical Chemistry for Engineering	1	2		Course must be completed	
CHEE3004 Unit Operations (will change to semester 1 in 2023)	2	2		Course must be completed	
CHEE3005 Reaction Engineering (will change to semester 1 in 2023)	2	2		Course must be completed	
CHEE3007 Process Modelling & Dynamics	2	2		Course must be completed	
CHEE3020 Process Systems Analysis (will change to semester 2 in 2023)	1	2		Course must be completed	
CHEE4001 Process Engineering Design Project	2	4		Course must be completed	
CHEE4002 Risk in Process Industries	1	2		Course must be completed	
ENGG4900 Professional Practice and the Business Environment	1,2	2		Course must be completed	
2 units from Program Electives					
	34 units for all: Compulsory Courses CHEM1100 Chemistry 1  ENGG1500 Thermodynamics: Energy and the Environment  CHEE2001 Process Principles  CHEE2003 Fluid & Particle Mechanics (will change to semester 1 in 2022)  CHEE2010 Engineering Investigation & Statistical Analysis (will change to semester 1 in 2022)  CHEE2020 Process Equipment & Control Systems (NEW)(from 2022)  CHEE2030 Chemical Thermodynamics  CHEE2040 Heat & Mass Transfer  CHEM2056 Physical Chemistry for Engineering  CHEE3004 Unit Operations (will change to semester 1 in 2023)  CHEE3005 Reaction Engineering (will change to semester 1 in 2023)  CHEE3007 Process Modelling & Dynamics  CHEE3000 Process Systems Analysis (will change to semester 2 in 2023)  CHEE4001 Process Engineering Design Project  CHEE4002 Risk in Process Industries  ENGG4900 Professional Practice and the Business Environment	34 units for all: Compulsory Courses CHEM1100 Chemistry 1	34 units for all: Compulsory Courses  CHEM1100 Chemistry 1	34 units for all: Compulsory Courses  CHEM1100 Chemistry 1  ENGG1500 Thermodynamics: Energy and the Environment  1,2  CHEE2001 Process Principles  CHEE2003 Fluid & Particle Mechanics (will change to semester 1 in 2022)  CHEE2010 Engineering Investigation & Statistical Analysis (will change to semester 1 in 2022)  CHEE2020 Process Equipment & Control Systems (NEW)(from 2022)  CHEE2030 Chemical Thermodynamics  2  2  2/22  CHEE2040 Heat & Mass Transfer  2  CHEE2040 Heat & Mass Transfer  2  CHEE2040 Unit Operations (will change to semester 1 in 2023)  CHEE3004 Unit Operations (will change to semester 1 in 2023)  CHEE3005 Reaction Engineering (will change to semester 1 in 2023)  CHEE3007 Process Modelling & Dynamics  CHEE3007 Process Systems Analysis (will change to semester 2 in 2023)  CHEE4001 Process Engineering Design Project  CHEE4002 Risk in Process Industries  1  ENGG4900 Professional Practice and the Business Environment  1,2  2	34 units for all: Compulsory Courses CHEM1100 Chemistry 1  1,2  2 Course must be completed  ENGG1500 Thermodynamics: Energy and the Environment  1,2  2 ENGG1500 Engineering Thermodynamics  CHEE2001 Process Principles  CHEE2003 Fluid & Particle Mechanics (will change to semester 1 in 2022)  CHEE2003 Fluid & Particle Mechanics (will change to semester 1 in 2022)  CHEE2010 Engineering Investigation & Statistical Analysis (will change to semester 1 in 2022)  CHEE2020 Engineering Investigation & Statistical Analysis (will change to semester 1 in 2022)  CHEE2020 Chemical Thermodynamics  CHEE2030 Chemical Thermodynamics  2 2 2/22 CHEE3003 Chemical Thermodynamics (discontinued)  CHEE2030 Chemistry for Engineering  1 2 Course must be completed  CHEE3004 Unit Operations (will change to semester 1 in 2023)  CHEE3005 Reaction Engineering (will change to semester 1 in 2023)  CHEE3007 Process Modelling & Dynamics  CHEE3007 Process Systems Analysis (will change to semester 2 in 2023)  CHEE3007 Process Engineering Design Project  CHEE4008 Process Engineering Design Project  CHEE4009 Process Engineering Design Project  CHEE4009 Process Engineering Design Project  CHEE4000 Process Industries  1 2 Course must be completed  CHEE4000 Process Engineering Design Project  CHEE4000 Process Engineering Design Project  CHEE4000 Process Engineering Design Project  CHEE4000 Process Industries  1 2 Course must be completed  CHEE4000 Process Engineering Design Project  CHEE4000 Process Industries  1 2 Course must be completed  CHEE4000 Process Engineering Design Project  CHEE4000 Process Engineering

## Chemical Engineering No Major Option

Complete 16 units comprising -

- i. 8 to 16 units from Chemical Engineering Advanced Electives or Chemical Engineering Research Electives; and
- ii. 0 to 8 units from any Chemical Engineering Breadth Electives; and
- iii. 0 to 4 units from Program Electives; and
- iv. 0 to 4 units from General Electives

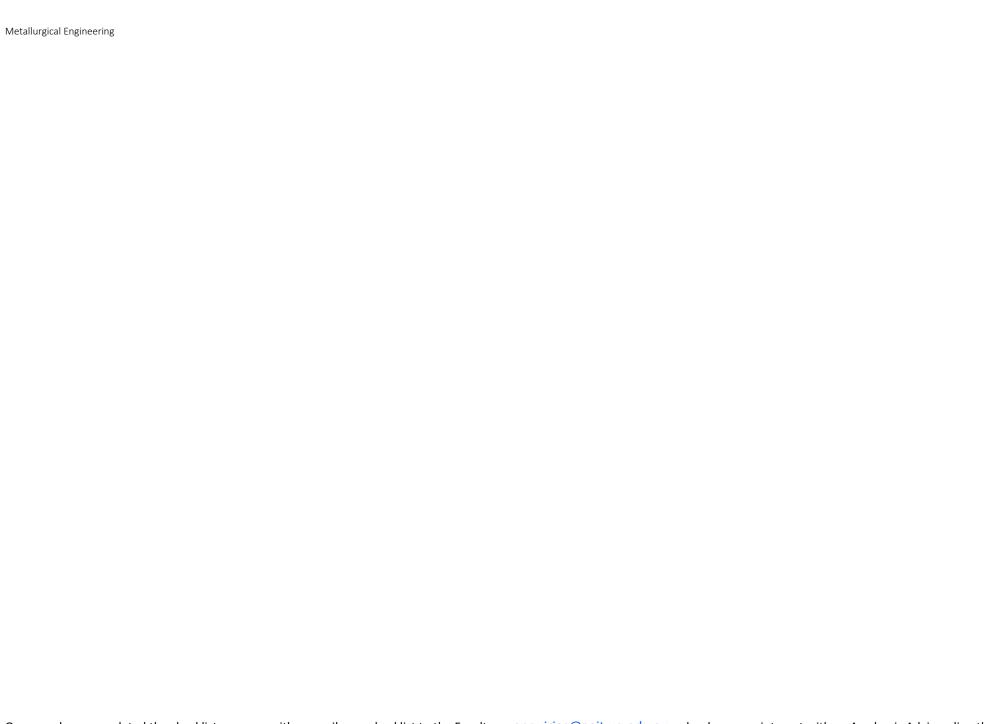
√/X	8 to 16 units from:	Sem	#	First offered	Approved substitution	Last offered
compl.	Chemical Engineering Advanced Electives or Chemical Engineering	offering				
	Research Electives					
	Chemical Engineering Advanced Electives					
	BIOE4020 Bioprocess Engineering	1	2	1/22	CHEE4020 Bioprocess Engineering (discontinued)	1/21
	BIOE4305 Biomaterials: Materials in Medicine	2	2	2/21	CHEE4305 Biomaterials: Materials in Medicine (discontinued)	2/20
	BIOE6028 Metabolic Engineering	2	2	2/21	CHEE4028 Metabolic Engineering (discontinued)	2/20
	BIOE6034 Cell and Tissue Engineering	1	2	1/21	CHEE4034 Cell & Tissue Engineering (discontinued)	1/20
	CHEE3008 Special Topics C	1,2	2		No substitution	
	CHEE3301 Polymer Engineering	1	2		No substitution	
	CHEE4003 Special Topics A	2	2		No substitution	
	CHEE4009 Transport Phenomena	1	2		No substitution	
	CHEE4303 Interface and Colloid Science and Engineering (discontinued 1/17)	2	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2	2/23	CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)	2/22
	ENGY4000 Energy Systems	1	2		No substitution	
	CHEE4022 Principles of Absorption(discontinued)	2	2	2/22	No substitution	
	ENVE3150 Environmental Systems Dynamics & Modelling					
	ENVE3160 Environmental Phenomena					
	ENVE4610 Engineering the Circular Economy					
	MATE4302 Electrochemistry and Corrosion	2	2	2/21	CHEE4302 Electrochemistry & Corrosion (discontinued)	2/20
	MATE6301 Nanomaterials	2	2	2/21	CHEE4301 Nanomaterials (discontinued)	2/20
	MECH4304 Net Shape Manufacturing	1	2		No substitution	

	METL3219 Process Mineralogy and Comminution	1	2	1/22	No substitution	
	METL3220 Physical Separations & Interfacial Engineering	2	2	2/23	MINE3208 Mineral and Coal Beneficiation OR METL3208 Physical Separation Processes (discontinued) OR METL4203 Flotation (discontinued)	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2	1/22	MINE4204 Aqueous Solution Processes	
	METL6212 Pyrometallurgy	2	2	2/22	No substitution	
√/X compl.	Chemical Engineering Research Electives	Sem offering	#	First offered	Approved substitution	Last offered
	CHEE4006 Research Project	1	2		No substitution	
	CHEE4007 Research Project	2	2		No substitution	
	CHEE4026 Research Thesis	1	4		No substitution	
	CHEE4027 Research Thesis	2	4		No substitution	

√/X compl.	0 to 8 units from any: Chemical Engineering Breadth Electives	Sem offering	#	First offered	Approved substitution	Last offered
	CHEM1200 Chemistry 2	1,2,5	2		No substitution	
	ENGG4103 Engineering Asset Management	1	2		No substitution	
	FIRE3700 Introduction to Fire Safety Engineering	2	2		No substitution	
	FOOD2000 Food Science	1	2		No substitution	
	FOOD3011 Food Product Development	2	2		No substitution	
	FOOD3017 Food Policy, Safety & Quality Management	1	2		No substitution	
	MATH2001 Calculus & Linear Algebra II	1,2,5	2		MATH2000 Calculus & Linear Algebra II (discontinued)	
	METR3100 Control System Implementation	2	2		No substitution	
	MICR2000 Microbiology & Immunology	2	2		No substitution	
	MICR2001 Food Microbiology I	2	2		No substitution	

Chemical Engineering Breadth Electives can also be chosen from course lists for the following majors:

Biomedical Engineering Bioprocess Engineering Environmental Engineering Materials Engineering



√/X compl.	Major in Biomedical Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for: Biomedical Engineering courses for Chemical Engineers <u>only</u>					
	BIOE4020 Bioprocess Engineering	1	2	1/22	CHEE4020 Biomolecular Engineering (Discontinued)	1/21
	BIOE6034 Cell &Tissue Engineering	1	2	1/21	CHEE4034 Cell & Tissue Engineering (discontinued)	1/20
	8 units for: Biomedical Engineering Compulsory Courses					
	BIOE1001 Principles of Biomedical & Bioprocess Engineering	1	2	1/21	CHEE1001 Principles of Biological Engineering (discontinued)	1/20
	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)	2	2	2/22	Course must be completed	
	BIOE4305 Biomaterials: Materials in Medicine	2	2	2/21	CHEE4305 Biomaterials: Materials in Medicine (discontinued)	2/20
	BIOE6901 Medical Device Engineering	1	2	1/21	ELEC7901 Advanced Medical Device Engineering (discontinued)	1/20
	4 units from: Biomedical Engineering Electives					
	BIOC2000 Biochemistry & Molecular Biology	1	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2	2/21	CHEE4028 Metabolic Engineering (discontinued)	2/20
	BIOE6403 Biomedical Instrumentation	2	2	2/21	ELEC4403/ELEC6403 Biomedical Instrumentation (discontinued)	2/20
	BIOE6601 Medical Imaging	2	2	2/21	ELEC6601 Medical Imaging (discontinued)	2/20
	BIOL1040 Cells to Organisms	2	2		No substitution	
	BIOL2200 Cell Structure & Function	1	2		No substitution	
	BIOL2202 Genetics	2	2		No substitution	
	BINF3014 Advanced Bioinformatics	2	2	2/21	BIOL3014 Advanced Bioinformatics (discontinued)	2/20
	BIOM2011 Integrative Cell & Tissue Biology	1	2		No substitution	
	BIOM2012 Systems Physiology	2	2		No substitution	
	BIOM2020 Human Anatomy	1	2		No substitution	
	BIPH2000 Foundations of Biophysics	2	2		No substitution	
	COMP4702 Machine Learning	1	2		No substitution	
	COMS4113 Photonics	1	2	1/21	COMS4103 Photonics (discontinued)	1/20

COMS4104 Microwave Engineering	1	2		No substitution	
CSSE2002 Programming in the Large	1,2	2		No substitution	
CSSE4011 Advanced Embedded Systems	1	2		No substitution	
ELEC4620 Digital Signal Processing	2	2		No substitution	
ELEC4630 Image Processing and Computer Vision	1	2		No substitution	
MATE6301 Nanomaterials	2	2	2/21	CHEE4301 Nanomaterials (discontinued)	2/20
MECH3301 Materials Selection	2	2		No substitution	
MECH4950 Advanced Manufacturing in Practice	2	2		No substitution	
METR4202 Robotics & Automation	2	2		No substitution	
MICR2000 Microbiology & Immunology	2	2		No substitution	
SCIE2100 Introduction to Bioinformatics	1	2		No substitution	
CHEE4026 Research Thesis	1	4		CHEE4006 Individual Inquiry OR CHEE4007 Individual Inquiry	
	CSSE2002 Programming in the Large  CSSE4011 Advanced Embedded Systems  ELEC4620 Digital Signal Processing  ELEC4630 Image Processing and Computer Vision  MATE6301 Nanomaterials  MECH3301 Materials Selection  MECH4950 Advanced Manufacturing in Practice  METR4202 Robotics & Automation  MICR2000 Microbiology & Immunology  SCIE2100 Introduction to Bioinformatics	CSSE2002 Programming in the Large 1,2  CSSE4011 Advanced Embedded Systems 1  ELEC4620 Digital Signal Processing 2  ELEC4630 Image Processing and Computer Vision 1  MATE6301 Nanomaterials 2  MECH3301 Materials Selection 2  MECH4950 Advanced Manufacturing in Practice 2  METR4202 Robotics & Automation 2  MICR2000 Microbiology & Immunology 2  SCIE2100 Introduction to Bioinformatics 1  CHEE4026 Research Thesis 1	CSSE2002 Programming in the Large 1,2 2  CSSE4011 Advanced Embedded Systems 1 2  ELEC4620 Digital Signal Processing 2 2  ELEC4630 Image Processing and Computer Vision 1 2  MATE6301 Nanomaterials 2 2  MECH3301 Materials Selection 2 2  MECH4950 Advanced Manufacturing in Practice 2 2  METR4202 Robotics & Automation 2 2  MICR2000 Microbiology & Immunology 2 2  SCIE2100 Introduction to Bioinformatics 1 2  CHEE4026 Research Thesis 1 4	CSSE2002 Programming in the Large       1,2       2         CSSE4011 Advanced Embedded Systems       1       2         ELEC4620 Digital Signal Processing       2       2         ELEC4630 Image Processing and Computer Vision       1       2         MATE6301 Nanomaterials       2       2       2/21         MECH3301 Materials Selection       2       2         MECH4950 Advanced Manufacturing in Practice       2       2         METR4202 Robotics & Automation       2       2         MICR2000 Microbiology & Immunology       2       2         SCIE2100 Introduction to Bioinformatics       1       2         CHEE4026 Research Thesis       1       4	CSSE2002 Programming in the Large 1,2 2 No substitution  CSSE4011 Advanced Embedded Systems 1 2 No substitution  ELEC4620 Digital Signal Processing 2 2 No substitution  ELEC4630 Image Processing and Computer Vision 1 2 No substitution  MATE6301 Nanomaterials 2 2 Z/21 CHEE4301 Nanomaterials (discontinued)  MECH3301 Materials Selection 2 2 No substitution  MECH4950 Advanced Manufacturing in Practice 2 2 No substitution  METR4202 Robotics & Automation 2 2 No substitution  MICR2000 Microbiology & Immunology 2 2 No substitution  SCIE2100 Introduction to Bioinformatics 1 2 No substitution  CHEE4026 Research Thesis 1 4 CHEE4006 Individual Inquiry OR CHEE4007 Individual Inquiry

√/X compl.	Major in Bioprocess Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	12 units for all: Bioprocess Engineering Compulsory Courses					
	BIOE1001 Principles of Biomedical & Bioprocess Engineering or BIOL1020 Genes, Cells & Evolution	1 1,2	2	1/21	CHEE1001 Principles of Biological Engineering (discontinued)	1/20
	BIOC2000 Biochemistry & Molecular Biology	1	2		Course must be completed	
	BIOL2202 Genetics	2	2		Course must be completed	
	BIOT3009 Quality Management Systems in Biotechnology: GMP, GLP, GCP	1	2		Course must be completed	
	BIOE4020 Bioprocess Engineering	1	2	1/22	CHEE4020 Biomolecular Engineering (discontinued)	1/21
	BIOE6028 Metabolic Engineering	2	2	2/21	CHEE4028 Metabolic Engineering (discontinued)	2/20
	0 to 4 units from: Bioprocess Engineering Electives					

BIOC3005 Molecular Systems Biology	2	2		No substitution	
BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)	2	2	2/22	No substitution	
BIOE4305 Biomaterials: Materials in Medicine	2	2	2/21	CHEE4305 Biomaterials: Materials in Medicine (discontinued)	2/20
BIOE6034 Cell &Tissue Engineering	1	2	1/21	CHEE4034 Cell & Tissue Engineering (discontinued)	1/20
BIOL3303 Genomics	1	2	1/21	BIOL3004 Genomics & Bioinformatics (discontinued)	1/20
BIOT3004 Commercialisation of Biotechnology Products	2	2		No substitution	
WATR6103 Advanced Wastewater and Biosolids Treatment	2	2	2/23	CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)	2/22
FOOD1001 Principles of Food Preservation	1	2		No substitution	
FOOD3008 Food Process Engineering II	2	2		No substitution	
SCIE2100 Introduction to Bioinformatics	1	2		No substitution	
0 to 4 units from: Bioprocess Engineering Research Electives					
CHEE4006 Research Project	1	2		No substitution	
CHEE4007 Research Project	2	2		No substitution	
CHEE4026 Thesis Project or CHEE4027 Thesis Project	1 2	4		No substitution	
	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)  BIOE4305 Biomaterials: Materials in Medicine  BIOE6034 Cell &Tissue Engineering  BIOL3303 Genomics  BIOT3004 Commercialisation of Biotechnology Products  WATR6103 Advanced Wastewater and Biosolids Treatment  FOOD1001 Principles of Food Preservation  FOOD3008 Food Process Engineering II  SCIE2100 Introduction to Bioinformatics  O to 4 units from: Bioprocess Engineering Research Electives  CHEE4006 Research Project  CHEE4007 Research Project	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)  2 BIOE4305 Biomaterials: Materials in Medicine  2 BIOE6034 Cell &Tissue Engineering  1 BIOL3303 Genomics  1 BIOT3004 Commercialisation of Biotechnology Products  2 WATR6103 Advanced Wastewater and Biosolids Treatment  2 FOOD1001 Principles of Food Preservation  1 FOOD3008 Food Process Engineering II  2 SCIE2100 Introduction to Bioinformatics  1 Oto 4 units from: Bioprocess Engineering Research Electives  CHEE4006 Research Project  1 CHEE4007 Research Project  1 CHEE4007 Thesis Project	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)  2 2  BIOE4305 Biomaterials: Materials in Medicine  2 2  BIOE6034 Cell &Tissue Engineering  1 2  BIOL3303 Genomics  1 2  BIOT3004 Commercialisation of Biotechnology Products  2 2  WATR6103 Advanced Wastewater and Biosolids Treatment  2 2  FOOD1001 Principles of Food Preservation  1 2  FOOD3008 Food Process Engineering II  2 2  SCIE2100 Introduction to Bioinformatics  1 2  O to 4 units from: Bioprocess Engineering Research Electives  CHEE4006 Research Project  1 2  CHEE4007 Research Project  1 4	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)  2 2 2/22  BIOE4305 Biomaterials: Materials in Medicine  2 2 2/21  BIOE6034 Cell &Tissue Engineering  1 2 1/21  BIOL3303 Genomics  1 2 1/21  BIOT3004 Commercialisation of Biotechnology Products  2 2 2/23  WATR6103 Advanced Wastewater and Biosolids Treatment  2 2 2/23  FOOD1001 Principles of Food Preservation  1 2  FOOD3008 Food Process Engineering II  2 2  SCIE2100 Introduction to Bioinformatics  1 2  CHEE4006 Research Project  1 2  CHEE4007 Research Project  1 4	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)  2 2 2/21 CHEE4305 Biomaterials: Materials in Medicine  2 2 2/21 CHEE4305 Biomaterials: Materials in Medicine (discontinued)  BIOE6034 Cell & Tissue Engineering  1 2 1/21 CHEE4304 Cell & Tissue Engineering (discontinued)  BIO13303 Genomics  1 2 1/21 BIO13004 Genomics & Bioinformatics (discontinued)  BIO13004 Commercialisation of Biotechnology Products  2 2 No substitution  WATR6103 Advanced Wastewater and Biosolids Treatment  2 2 2/23 CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)  FOOD1001 Principles of Food Preservation  1 2 No substitution  FOOD3008 Food Process Engineering II  2 2 2 No substitution  SCIE2100 Introduction to Bioinformatics  1 2 No substitution  CHEE4006 Research Project  1 2 No substitution  CHEE4007 Research Project  1 4 No substitution  CHEE4006 Thesis Project  1 4 No substitution

√/X compl.	Major in Environmental Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	8 units for all: Environmental Engineering Compulsory Courses					
	ENVE2501 Environmental Systems	2	2	2/21	CHEE2501 Environmental Systems Engineering I: Processes (discontinued)	2/20
	ENVE3150 Environmental System Dynamics and Modelling	2	2	2/21	CIVL3150 Modelling of Environmental Systems (discontinued)	2/20
	ENVE3160 Environmental Phenomena (NEW)	1	2	1/23	Course must be completed	
	ENVE4610 Engineering the Circular Economy (NEW)	1	2	1/23	Course must be completed	

Environmental Engineering Electives					
CIVL3420 Sustainable Transport Engineering	2	2		No substitution	
WATR6103 Advanced Wastewater and Biosolids Treatment	2	2	2/23	CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)	2
CIVL6111 Ocean, Coastal & Estuarine Engineering (NEW)	2	2	2/23	CIVL4110 Coastal & Estuarine Engineering (discontinued)	2
CIVL6112 Hydro- and Marine Power Renewable Energy Systems (NEW)	2	2	2/23	No substitution	
CIVL6121 Environmental Hydraulics and Flood Management (NEW)	2	2	2/23	CIVL4120 Advanced Hydraulic Engineering and Structures (discontinued)	2
CIVL4145 Groundwater Modelling and Management	1	2	2/22	CIVL4140 Contaminant Transport Modelling (discontinued)	1
CIVL4525 Sustainable Infrastructure Design (NEW)	1	2	1/23	CIVL4180 Sustainable Built Environment (discontinued)	2
ENGY4000 Energy Systems	1	2		No substitution	
ENVE6110 Environmental Sensor System & Monitoring	1	2	1/23	CIVL7135 Environmental Sensor Systems and Monitoring Techniques (discontinued)	1
<b>ENVM3103</b> Regulatory Frameworks for Environmental Management & Planning	1	2		No substitution	
WATR6105 Integrated Urban Water Management	1	2	1/21	WATR7105 Integrated Urban Water Management (discontinued)	1
WATR6106 Emerging Issues in the Urban Water Cycle and Public Water	1	2	1/21	WATR7106 Emerging Issues in the Urban Water Cycle and Public Water (discontinued)	1
WATR6108 Advanced Unit Operations in Water Management	1	2	1/21	WATR7108 Advanced Unit Operations in Water Management (discontinued)	1
WATR6109 Drinking Water Supply: Source, Treatment and Distribution	1	2	1/21	WATR7109 Drinking Water Supply: Source, Treatment and Distribution (discontinued)	1
0 to 4 units from a. Environmental Engineering Research Electives; and/or b. Environmental Engineering Breadth Electives; and/or c. Chemical Engineering Advanced Electives; and/or d. Civil Engineering Advanced Electives. Environmental Engineering Research Electives					
CHEE4006 Research Project	1	2		No substitution	
·					
CHEE4007 Research Project	2	2		No substitution	
CHEE4026 Research Thesis or CHEE4027 Research Thesis	1 2	4		No substitution	
Environmental Engineering Breadth Electives	+	+	1		

ENVM2100 Foundations of Sustainable Development	2	2	No substitution
ENVM3103 Regulatory Frameworks for Environmental Management & Planning	1	2	No substitution
ENVM3201 Catchment Processes & Management	1	2	No substitution
ERTH1501 Earth Processes & Geological Materials for Engineers	1	2	No substitution
ERTH2004 Structural & Metamorphic Geology	2	2	No substitution
ERTH3250 Hydrogeology	2	2	No substitution
GEOM1000 Fundamentals of Geographic Information & Technologies	2	2	No substitution
GEOM2001 Geographical Information Systems	1	2	No substitution
GEOS1100 Environment & Society	1,2	2	No substitution
GEOS2100 Environmental Systems	1	2	No substitution
GEOS3102 Global Change: Problems & Prospects	2	2	No substitution

√/X compl.	Major in Materials Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for:  Materials Engineering Courses for Chemical Engineers only					
	ENGG1700 Statics & Materials (NEW)	1,2	2	1/21	Course must be completed	
	MECH2300 Structures and Materials	1	2		Course must be completed	
	8 units for: Materials Engineering Compulsory Courses					
	MECH2310 Science and Engineering of Metals	2	2		Course must be completed	
	CHEE3301 Polymer Engineering	1	2		Course must be completed	
	MECH3301 Materials Selection	2	2		Course must be completed	
	MATE4302 Electrochemistry and Corrosion	2	2	2/21	CHEE4302 Electrochemistry & Corrosion (discontinued)	2/20
	4 units from: Materials Engineering Electives					
	AERO4300 Aerospace Composites	2	2		No substitution	
	BIOE4305 Biomaterials: Materials in Medicine	2	2	2/21	CHEE4305 Biomaterials: Materials in Medicine (discontinued)	2/20
	CHEE4006 Research Project	1	2		No substitution	
	CHEE4007 Research Project	2	2		No substitution	
	CHEE4026 Research Thesis or CHEE4027 Research Thesis	1 2	4		No substitution	
	MATE6301 Nanomaterials	2	2	2/21	CHEE4301 Nanomaterials (discontinued)	2/20
	MECH2305 Introduction to Engineering Design and Manufacturing	1	2		No substitution	
	MECH4304 Net Shape Manufacturing	1	2		No substitution	

√/X compl.	Major in Metallurgical Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	10 units for all: Metallurgical Engineering Compulsory Courses					
	METL3220 Physical Separations & Interfacial Engineering	2	2	2/23	MINE3208 Mineral and Coal Beneficiation OR METL3208 Physical Separation Processes	
	METL6212 Pyrometallurgy	2	2	2/22	Course must be completed	
	METL3219 Process Mineralogy and Comminution	1	2	1/22	Course must be completed	
	METL4203 Flotation (discontinued from 2024)	1	2	1	METL4203 Flotation (discontinued)	2/23
	METL6204 Hydrometallurgy and Electrometallurgy	1	2	1/22	MINE4204 Aqueous Solution Processing & Electrometallurgy	
	2 to 6 units from: Metallurgical Engineering Electives					
	METL2201 Physical & Chemical Processing of Minerals	2	2	2/22	No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2	2/23	CHEE4012 Industrial Wastewater & Solid Waste Management (discontinued)	2/22
	MATE4302 Electrochemistry and Corrosion	2	2	2/21	CHEE4302 Electrochemistry & Corrosion (discontinued)	2/20
	ENGY4000 Energy Systems	1	2		No substitution	
	MATE6301 Nanomaterials	2	2	2/21	CHEE4301 Nanomaterials (discontinued)	2/20
	MECH4304 Net Shape Manufacturing	1	2		No substitution	
	MECH2300 Structures & Materials	1	2		No substitution	
	0 to 4 units from: Metallurgical Engineering Research Electives					
	CHEE4006 Research Project	1	2		No substitution	
	CHEE4007 Research Project	2	2		No substitution	
	CHEE4026 Research Thesis or CHEE4027 Research Thesis	1 2	4		No substitution	

## Chemical Engineering with Engineering Minor

Comp	lete	16	units	com	nrisina	3
COIIIP	ilete	ΤU	units	COIII	אַוווכווט	ぅ

8 units for one of the following minors:

Data Science

Computing

Design

and

8 units from Chemical Engineering Advanced or Research Electives

√/X compl.	Minor in Computing (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all: Computing Minor Compulsory Courses					
	CSSE2002 Programming in the Large	1,2	2		Course must be completed	
	COMP3506 Algorithms and Data Structures	2	2		Course must be completed	
	4 units from: Computing Electives					
	COMP4702 Machine Learning	1	2		No substitution	
	COSC2500 Numerical Methods in Computational Science	2	2		No substitution	
	COSC3000 Visualization, Computer Graphics & Data Analysis	1	2		No substitution	
	COSC3500 High Performance Computing	2	2		No substitution	
	INFS1200 Introduction to Information Systems	1,2	2		No substitution	
	INFS3208 Cloud Computing	2	2		No substitution	
	MATH3202 Operations Research & Mathematical Planning	1	2		No substitution	

√/X compl.	Minor in Data Science (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all: Data Science Minor Compulsory Courses					
	DATA2001 Introduction to Data Science (NEW)	2	2	2/22	Course must be completed	
	INFS1200 Introduction to Information Systems	1,2	2		Course must be completed	
	4 units from: Data Science Electives					
	COMP4702 Machine Learning	1	2		No substitution	
	INFS2200 Relational Database Systems	2	2		No substitution	
	INFS3208 Cloud Computing	2	2		No substitution	
	INFS4203 Data Mining	2	2		No substitution	
	STAT2003 Mathematical Probability	1	2		No substitution	
	STAT2004 Statistical Modelling & Analysis	2	2		No substitution	

√/X compl.	Minor in Design (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	2 units for all: Design Minor Compulsory Courses					
	DSGN1500 Design for a Better World	2	2		Course must be completed	
	6 units from: Design Electives					
	DSGN1100 Design: Interaction	1	2		No substitution	
	DSGN1200 Design: Experience	2	2		No substitution	
	DSGN2100 Design: Organisation	1	2		No substitution	
	DSGN2200 Design: Environment	2	2		No substitution	
	DSGN3100 Design: Infrastructure	1	2		No substitution	