CHECKLIST Bachelor of Engineering (Honours) – Chemical Engineering Specialisation (2455): Transition to new program (commencing 2024)

IMPORTANT Notes:

- The information contained in this document is intended as general advice only. Students must follow the program rules & requirements listed on the Programs and Courses Website relevant to the year they commence. This planner must be used in conjunction with your program duration course list and program rules.
- Students need to check future course offerings, prerequisites, incompatibilities and restrictions for all courses as these are subject to change.
- Students cannot take courses that are incompatible with courses already counted towards their program, and cannot count the same course twice.

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
   *Majors available in: Biomedical Engineering; Bioprocess Engineering; Environmental Engineering; Materials Engineering; Metallurgical Engineering
   b. 16 units for Chemical Engineering Minor Options**, or
   **Minors available in: Computing; Data Science; Design
   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 First Year Engineering Elective Courses
VI. 0 to 4 units from BE(Hons) Program Elective Courses; and
VII. 0 to 4 units from General Elective Courses.

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.	BE(Hons) Core Courses (8 units)	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 **or** **CSSE1001** Introduction to Software Engineering	1,2	2		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	

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Specialisation in Chemical Engineering

Complete 36 units comprising:

i. 34 units for all Chemical Engineering Compulsory Courses, and
ii. 2 units from BE(Hons) Program Elective Courses

✓/X compl.	Specialisation in Chemical Engineering (36 units)	Sem offering	#	First offered	Approved substitution	Last offered
	34 units for all Chemical Engineering 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	1	2		Course must be completed	
	CHEE2010 Engineering Investigation & Statistical Analysis	1	2		Course must be completed	
	CHEE2020 Process Equipment & Control Systems	2	2		**CHEE4060** Process & Control System Synthesis (discontinued)	**1/23**
	CHEE2030 Chemical Thermodynamics	2	2		**CHEE3003** Chemical Thermodynamics (discontinued)	**1/22**
	CHEE2040 Heat & Mass Transfer	2	2		**CHEE3002** Heat & Mass Transfer (discontinued)	**1/22**
	CHEM2056 Physical Chemistry for Engineering	1	2		Course must be completed	
	CHEE3004 Unit Operations	1	2		Course must be completed	
	CHEE3005 Reaction Engineering	1	2		Course must be completed	
	CHEE3007 Process Modelling & Dynamics	2	2		Course must be completed	
	CHEE3020 Process Systems Analysis	2	2		Course must be completed	

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	CHEE4001 Process Engineering Design Project	2	4		Course must be completed	
	CHEE4002 Risk in Process Industries	1	2		Course must be completed	
	ENGG4901 Professional Practice and the Business Environment A **or** ENGG4902 Professional Practice and the Business Environment B	1,2	2	**1/24**	**ENGG4900** Professional Practice and the Business Environment (Discontinued)	**2/23**

	2 units from Program Electives

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Chemical Engineering No Major Option

Complete 16 units comprising:

i. 8 to 16 units from Chemical Engineering Advanced Electives
ii. 0 to 8 units from Chemical Engineering Research Electives; and
iii. 0 to 8 units from any Chemical Engineering Breadth Electives; and
iv. 0 to 4 units from BE(Hons) Program Electives; and
v. 0 to 4 units from General Electives

✓/X compl.	Chemical Engineering No Major (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	8 to 16 units from Chemical Engineering Advanced Electives					
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2		**CHEE4028** Metabolic Engineering (discontinued)	**2/20**
	BIOE6034 Cell and Tissue Engineering	1	2		**CHEE4034** Cell & Tissue Engineering (discontinued)	**1/20**
	BIOE4305 Biomaterials: Materials in Medicine	2	2		**CHEE4305** Biomaterials: Materials in Medicine (discontinued)	**2/20**
	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	
	BIOE4020 Bioprocess Engineering	1	2		**CHEE4020** Bioprocess Engineering (discontinued)	**1/21**
	CHEE4022 Principles of Adsorption	2	2		No substitution	
	CHEE4303 Interface and Colloid Science and Engineering	2	2		No substitution	
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVE3150 Environmental Systems Dynamics and Modelling	2	2		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	

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	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	MATE4302 Electrochemistry and Corrosion	2	2		**CHEE4302** Electrochemistry & Corrosion (discontinued)	**2/20**
	MECH4304 Net Shape Manufacturing	1	2		No substitution	
	METL6212 Pyrometallurgy	2	2		No substitution	
	METL3219 Process Mineralogy and Comminution	1	2		No substitution	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2		**MINE4204** Aqueous Solution Processes (Discontinued)	**1/21**
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		No substitution	

	0 to 8 units from Chemical 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 4		No substitution	

	0 to 8 units from any Chemical Engineering Breadth Electives					
	ENGG4103 Engineering Asset Management	1	2		No substitution	
	CHEM1200 Chemistry 2	1,2,S	2		No substitution	
	ERTH1501 Earth Processes & Geological Materials for Engineers	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,S	2		**MATH2000** Calculus & Linear Algebra II (discontinued)	

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	METR3100 Control System Implementation	2	2		No substitution	
	MICR2000 Microbiology & Immunology	2	2		No substitution	
	MICR2001 Food Microbiology I	2	2		No substitution	
	MINE3110 Integrated Orebody Knowledge	2	2		No substitution	
	Chemical Engineering Breadth Electives can also be chosen from course lists for the following majors: o Biomedical Engineering o Bioprocess Engineering o Environmental Engineering o Materials Engineering o Metallurgical Engineering					

	0 to 4 units from BE(Hons) Program Elective Courses					

	0 to 4 units from General Electives					

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Biomedical Engineering Major Option

Complete 16 units comprising:

i. 4 units for all Biomedical Engineering courses for Chemical Engineers,
ii. 8 units for all Biomedical Engineering Compulsory Courses, and
iii. 4 units from Biomedical Engineering Elective Courses

✓/X compl.	Major in Biomedical Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units from Biomedical Engineering courses for Chemical Engineers only					
	BIOE4020 Bioprocess Engineering	1	2		**CHEE4020** Biomolecular Engineering (Discontinued)	**1/21**
	BIOE6034 Cell &Tissue Engineering	1	2		**CHEE4034** Cell & Tissue Engineering (discontinued)	**1/20**
	8 units from Biomedical Engineering Compulsory Courses					
	BIOE1001 Principles of Biomedical & Bioprocess Engineering	1	2		**CHEE1001** Principles of Biological Engineering (discontinued)	**1/20**
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		Course must be completed	
	BIOE4305 Biomaterials: Materials in Medicine	2	2		**CHEE4305** Biomaterials: Materials in Medicine (discontinued)	**2/20**
	BIOE6901 Medical Device Engineering	1	2		**ELEC7901** Advanced Medical Device Engineering (discontinued)	**1/20**
	4 units from Biomedical Engineering Electives					
	BIOC2000 Biochemistry & Molecular Biology	1	2		No substitution	
	BIOC2001 Foundations of Molecular Biophysics	2	1		No substitution	
	BIOE6028 Metabolic Engineering	2	2		**CHEE4028** Metabolic Engineering (discontinued)	**2/20**
	BIOE6034 Cell and Tissue Engineering	1	2		No substitution	
	BIOE6403 Biomedical Instrumentation	2	2		**ELEC4403/ELEC6403** Biomedical Instrumentation (discontinued)	**2/20**
	BIOE6601 Medical Imaging	2	2		**ELEC6601** Medical Imaging (discontinued)	**2/20**
	BIOL1040 Cells to Organisms	2	2		No substitution	
	BIOL2200 Molecular Cell Biology I	1	2		No substitution	
	BIOL2202 Genetics	2	2		No substitution	

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	BINF3014 Advanced Bioinformatics	2	2		**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	
	COMP3820 Digital Health Software project	2	2		No substitution	
	COMP4702 Machine Learning	1	2		No substitution	
	COMS4113 Photonics	1	2		**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		**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 Bioinformatics 1: Introduction	1	2		No substitution	
	CHEE4026 Research Thesis **or** **CHEE4027** Research Thesis	1 2	4		**CHEE4006** Individual Inquiry **or** **CHEE4007** Individual Inquiry (plus 2 units electives)	

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Bioprocess Engineering Major Option

Complete 16 units comprising:

i. 12 units for all Bioprocess Engineering Compulsory Courses, and
ii. 0 to 4 units from Bioprocess Engineering Breadth Electives, and
iii. 0 to 4 units from Chemical Engineering Advanced or Research Elective Courses

✓/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		**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		**CHEE4020** Biomolecular Engineering (discontinued)	**1/21**
	BIOE6028 Metabolic Engineering	2	2		**CHEE4028** Metabolic Engineering (discontinued)	**2/20**
	0 to 4 units from Bioprocess Engineering Breathe Electives					
	BIOC3005 Molecular Systems Biology	2	2		No substitution	
	BIOE3001 Quantitative Methods in Biomedical Engineering (NEW)	2	2		No substitution	
	BIOL3303 Genomics	1	2		**BIOL3004** Genomics & Bioinformatics (discontinued)	**1/20**
	BIOL3213 Plant Biology and Biotechnology	1	2		No substitution	
	BIOM2402 Principles of Pharmacology	2	2		No substitution	
	BIOT3002 Drug Design & Development	1	2		No substitution	
	BIOT3004 Commercialisation of Biotechnology Products	2	2		No substitution	
	FOOD1001 Principles of Food Preservation	1	2		No substitution	
	FOOD3008 Food Process Engineering II	2	2		No substitution	
	SCIE2100 Bioinformatics 1: Introduction	1	2		No substitution	

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	0 to 4 units from Chemical Engineering Advanced or Research Elective Courses					
	CHEE4006 Research Project	1	2		No substitution	
	CHEE4007 Research Project	2	2		No substitution	
	CHEE4026 Thesis Project **or** **CHEE4027** Thesis Project	1,2			No substitution	
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	BIOE4020 Bioprocess Engineering	1	2		No substitution	
	BIOE4305 Biomaterials: Materials in Medicine	2	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2		No substitution	
	BIOE6034 Cell and Tissue Engineering	1	2		No substitution	
	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	
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVE3150 Environmental Systems Dynamics and Modelling	2	1		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	
	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	MATE4302 Electrochemistry and Corrosion	2	2		No substitution	
	MATE6301 Nanomaterials	2	2		No substitution	
	MECH4304 Net Shape Manufacturing	1	2		No substitution	
	METL3219 Process Mineralogy and Comminution	1	2		No substitution	
	METL3220 Physical Separations and Interfacial Engineering	2	2		No substitution	

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	METL6204 Hydrometallurgy and Electrometallurgy	1	2		No substitution	
	METL6212 Pyrometallurgy	1,2	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		No substitution	

Environmental Engineering Major Option

Complete 16 units comprising:

i. 8 units for all Environmental Engineering Compulsory Courses, and
ii. 4 to 8 units from Environmental Engineering Elective Courses, and
iii. 0 to 4 units from Environmental Engineering Research Elective Courses, and
iv. 0 to 4 units from Environmental Engineering Breadth Elective Courses, and
v. 0 to 4 units from Chemical Engineering Advanced Elective Courses, and
vi. 0 to 4 units from Civil Engineering Advanced Elective Courses

✓/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		**CHEE2501** Environmental Systems Engineering I: Processes (discontinued)	**2/20**
	ENVE3150 Environmental System Dynamics and Modelling	2	2		**CIVL3150** Modelling of Environmental Systems (discontinued)	**2/20**
	ENVE3160 Environmental Phenomena	1	2		Course must be completed	
	ENVE4610 Engineering the Circular Economy	1	2		Course must be completed	
	4 to 8 units from Environmental Engineering Electives					
	CIVL3430 Sustainable Transport Engineering	1	2	**1/24**	No substitution	
	CIVL4145 Groundwater Modelling and Management	1	2		**CIVL4140** Contaminant Transport Modelling (discontinued)	**1/21**
	CIVL4525 Sustainable Infrastructure Design	1	2		**CIVL4180** Sustainable Built Environment (discontinued)	**2/22**
	CIVL6111 Ocean, Coastal and Estuarine Engineering	2	2		No substitution	
	CIVL6112 Hydro and Marine Power Renewable Energy Systems	2	2		No substitution	
	CIVL6121 Environmental Hydraulics and Flood Management	1	2		No substitution	
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVM3103 Regulatory Frameworks for Environmental Management & Planning	1	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		No substitution	
	WATR6105 Integrated Urban Water Management	1	2		**WATR7105** Integrated Urban Water Management (discontinued)	**1/20**

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	WATR6106 Emerging Issues in the Urban Water Cycle and Public Health	1	2		**WATR7106** Emerging Issues in the Urban Water Cycle and Public Water (discontinued)	**1/20**
	WATR6108 Advanced Unit Operations in Water Management	1	2		**WATR7108** Advanced Unit Operations in Water Management (discontinued)	**1/20**
	WATR6109 Drinking Water Supply: Source, Treatment and Distribution	1	2		**WATR7109** Drinking Water Supply: Source, Treatment and Distribution (discontinued)	**1/20**

	0 to 4 units from 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	

	0 to 4 units from Environmental Engineering Breadth Electives					
	CIVL2135 Introduction to Environmental Engineering	1	2		No substitution	
	ENVM2100 Foundations of Sustainable Development	2	2		No substitution	
	ENVM3201 Catchment Processes & Management	1	2		No substitution	
	ERTH1501 Earth Processes & Geological Materials for Engineers	1	2		No substitution	
	ERTH2004 Structural Geology	2	2		No substitution	
	ERTH3250 Groundwater Processes and recourses	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	

	0 to 4 units from Chemical Engineering Advanced Elective Courses					
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	BIOE4020 Bioprocess Engineering	1	2		No substitution	
	BIOE4305 Biomaterials: Materials in Medicine	2	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2		No substitution	
	BIOE6034 Cell and Tissue Engineering	1	2		No substitution	
	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	
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVE3150 Environmental Systems Dynamics and Modelling	2	1		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	
	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	MATE4302 Electrochemistry and Corrosion	2	2		No substitution	
	MATE6301 Nanomaterials	2	2		No substitution	
	MECH4304 Net Shape Manufacturing	1	2		No substitution	
	METL3219 Process Mineralogy and Comminution	1	2		No substitution	
	METL3220 Physical Separations and Interfacial Engineering	2	2		No substitution	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2		No substitution	
	METL6212 Pyrometallurgy	1,2	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		No substitution	

	0 to 4 units from Civil Engineering Advanced Elective Courses					
	CIVL3220 Rock Mechanics	2	2		No substitution	
	CIVL3340 Structural Analysis	1	2		No substitution	
	CIVL3380 Structural Steel Design	1	2		No substitution	
	CIVL3390 Integrated Structural Design	2	2		No substitution	
	CIVL3430 Sustainable Transport Engineering	1	2		No substitution	
	CIVL4145 Groundwater Modelling and Management	2	2		No substitution	
	CIVL4230 Advanced Soil Mechanics	2	2		No substitution	
	CIVL4270 Geotechnical Investigation	1	2		No substitution	
	CIVL4333 Advanced Concrete Design	1	2		No substitution	
	CIVL4334 Design of Timber Structures	2	2		No substitution	
	CIVL4340 Wind Engineering	1	2		No substitution	
	CIVL4450 Traffic Flow Theory and Emerging Technologies	2	2		No substitution	
	CIVL4460 Highway Geometric Design	2	2		No substitution	
	CIVL4522 Analytical Methods for the Design of Construction Operations	2	2		No substitution	
	CIVL4525 Sustainable Infrastructure Design	2	2		No substitution	
	CIVL6111 Ocean, Coastal and Estuarine Engineering	2	2		No substitution	
	CIVL6112 Hydro and Marine Power Renewable Energy Systems	2	2		No substitution	
	CIVL6121 Environmental Hydraulics and Flood Management	1	2		No substitution	
	CIVL6210 Dam Engineering	2	2		No substitution	
	CIVL6215 Ground Improvement	1	2		No substitution	
	CIVL6360 Advanced Structural Analysis	2	2		No substitution	
	CIVL6410 Transport Network Modelling	1	2		No substitution	
	CIVL6415 Traffic Analysis and Simulation	2	2		No substitution	
	ENVE3150 Environmental Systems Dynamics and Modelling	2	2		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	

	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	FIRE3700 Introduction to Fire Safety Engineering	1	2		No substitution	
	FIRE4610 Fire Engineering Design: Solutions for Implicit Safety	1	2		No substitution	

Materials Engineering Major Option

Complete 16 units comprising:

i. 4 units for all Materials Engineering Courses for Chemical Engineers, or
ii. 8 units for all Materials Engineering Compulsory Courses, and
iii. 4 units from Materials Engineering Elective Courses

✓/X compl.	Major in Materials Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all Materials Engineering Courses for Chemical Engineers only					
	ENGG1700 Statics & Materials	1,2	2		Course must be completed	
	MECH2300 Structures and Materials	1	2		Course must be completed	
	8 units for all 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		**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		**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		**CHEE4301** Nanomaterials (discontinued)	**2/20**
	MECH2305 Introduction to Engineering Design and Manufacturing	1	2		No substitution	
	MECH4304 Net Shape Manufacturing	1	2		No substitution	

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Metallurgical Engineering Major Option

Complete 16 units comprising:

i. 10 units for all Metallurgical Engineering Compulsory Courses, and
ii. 4 to 6 units from Chemical Engineering Advanced or Research Elective Courses, and
iii. 0 to 2 units from Chemical Engineering Breadth Elective Courses

✓/x compl.	Major in Metallurgical Engineering (16 units)	Sem offering	#	First offered	Approved substitution	Last offered
	10 units for all Metallurgical Engineering Compulsory Courses					
	METL2201 Metal Production and Recycling	2	2		Course must be completed	
	METL6212 Pyrometallurgy	2	2		Course must be completed	
	METL3220 Physical Separations and Interfacial Engineering	2	2		Course must be completed	
	METL3219 Process Mineralogy and Comminution	1	2		Course must be completed	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2		**MINE4204** Aqueous Solution Processing & Electrometallurgy (Discontinued)	
	4 to 6 units from Chemical Engineering Advanced or Research Elective Course					
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	BIOE4020 Bioprocess Engineering	1	2		No substitution	
	BIOE4305 Biomaterials: Materials in Medicine	2	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2		No substitution	
	BIOE6034 Cell and Tissue Engineering	1	2		No substitution	
	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	
	ENGY4000 Energy Systems	1	2		No substitution	

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	ENVE3150 Environmental Systems Dynamics and Modelling	2	1		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	
	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	MATE4302 Electrochemistry and Corrosion	2	2		No substitution	
	MATE6301 Nanomaterials	2	2		No substitution	
	MECH4304 Net Shape Manufacturing	1	2		No substitution	
	METL3219 Process Mineralogy and Comminution	1	2		No substitution	
	METL3220 Physical Separations and Interfacial Engineering	2	2		No substitution	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2		No substitution	
	METL6212 Pyrometallurgy	1,2	2		No substitution	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2		No substitution	
	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	

	0 to 2 units from Chemical Engineering Breadth Elective Courses					
	CHEM1200 Chemistry 2	1,2,S	2		No substitution	
	ENGG4103 Engineering Asset Management	1	2		No substitution	
	ERTH1501 Earth Processes & Geological Materials for Engineers	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	

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	FOOD3017 Food Policy, Safety & Quality Management	1	2		No substitution	
	MATH2001 Calculus & Linear Algebra II	1,2,S	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	
	MINE3110 Integrated Orebody Knowledge	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 ○ Metallurgical Engineering					

Computing Minor

Complete 16 units comprising:

I. 4 units for all Computing Compulsory Courses, and
II. 4 units from Computing Elective Courses, and
III. 8 units from Chemical Engineering Advanced or Research Elective Courses

✓/x compl.	Minor in Computing (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all Computing 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 Elective Courses					
	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	
	8 units from Chemical Engineering Advanced or Research Elective Courses					

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Data Science Minor

Complete 16 units comprising:

i. 4 units for all Data Science Compulsory Courses, and
ii. 4 units from Data Science Elective Courses, and
iii. 8 units from Chemical Engineering Advanced or Research Elective Courses

✓/X compl.	Minor in Data Science (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	4 units for all Data Science Compulsory Courses					
	DATA2001 Introduction to Data Science	2	2		Course must be completed	
	INFS1200 Introduction to Information Systems	1,2	2		Course must be completed	

	4 units from Data Science Elective Courses					
	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	

	8 units from Chemical Engineering Advanced or Research Elective Courses

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Design Minor

Complete 16 units comprising:

I. 8 units for all Design Minor Compulsory Courses, and
II. 8 units from Chemical Engineering Advanced or Research Elective Courses

✓/x compl.	Minor in Design (8 units)	Sem offering	#	First offered	Approved substitution	Last offered
	8 units from Design Minor Compulsory Courses					
	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	

	8 units from Chemical Engineering Advanced or Research Elective Courses

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	8 units from Chemical Engineering Advanced or Research Elective Courses					
	BIOE3001 Quantitative Methods in Biomedical Engineering	2	2		No substitution	
	BIOE6028 Metabolic Engineering	2	2		**CHEE4028** Metabolic Engineering (discontinued)	**2/20**
	BIOE6034 Cell and Tissue Engineering	1	2		**CHEE4034** Cell & Tissue Engineering (discontinued)	**1/20**
	BIOE4305 Biomaterials: Materials in Medicine	2	2		**CHEE4305** Biomaterials: Materials in Medicine (discontinued)	**2/20**
	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	
	BIOE4020 Bioprocess Engineering	1	2		CHEE4020 Bioprocess Engineering (discontinued)	**1/21**
	CHEE4022 Principles of Adsorption	2	2		No substitution	
	CHEE4303 Interface and Colloid Science and Engineering	2	2		No substitution	
	ENGY4000 Energy Systems	1	2		No substitution	
	ENVE3150 Environmental Systems Dynamics and Modelling	2	2		No substitution	
	ENVE3160 Environmental Phenomena	1	2		No substitution	
	ENVE4610 Engineering the Circular Economy	1	2		No substitution	
	MATE4302 Electrochemistry and Corrosion	2	2		**CHEE4302** Electrochemistry & Corrosion (discontinued)	**2/20**
	MECH4304 Net Shape Manufacturing	1	2		No substitution	

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	METL6212 Pyrometallurgy	2	2		No substitution	
	METL3219 Process Mineralogy and Comminution	1	2		No substitution	
	METL6204 Hydrometallurgy and Electrometallurgy	1	2		**MINE4204** Aqueous Solution Processes	
	WATR6103 Advanced Wastewater and Biosolids Treatment	2	2			
	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	