

Elective Pathways

ENGINEERING & BUILT ENVIRONMENT

These pathways have been created to provide guidance for **Bachelor of Engineering (Honours)** and **Bachelor of Surveying (Honours)** students wishing to specialise in a study area with their elective courses. Each course has been selected to complement the content of these degrees with consideration of pre-requisites. **Please note** that these pathways are suggestions only and will not be noted formally on the final degree certificate.

Students are welcome to enrol in any elective provided that they satisfy the pre-requisites. For a full list of UON courses, [visit the course handbook](#).

List of Elective Pathways in this area:

- Introductory Chemical Engineering
- Advanced Topics in Chemical Engineering
- Introductory Civil Engineering
- Advanced Topics in Civil Engineering:
 - Construction Management
 - Geotechnical Engineering
 - Structural Engineering
 - Water Engineering
- Introductory Computer Systems Engineering:
 - Computer Engineering
 - Digital Electronics
 - Embedded Communications and Networking
- Introductory Computer Systems Engineering and Electrical and Electronic Engineering - Telecommunications Engineering
- Introductory Electrical and Electronic Engineering:
 - Analog Electronics
 - Electrical Power Engineering
- Advanced Topics in Electrical and Electronic Engineering:
 - Advanced Electrical Power Engineering
 - Advanced Electronics
 - Control Systems and Applications
- Introductory Environmental Engineering
- Introductory Mechanical Engineering
- Introductory Mechatronics Engineering:
 - Electrical Engineering students
 - Mechanical Engineering students
- Introductory Software Engineering
- Introductory Computer Science
 - Computer Systems
 - Databases
 - Software Development
- Web Development
- Advanced Topics in Computer Science:
 - Computer Systems and Robotics
 - Data Science
- Introductory Surveying
- Introductory Surveying - Civil and Environmental Engineering students
- Advanced Topics in Surveying:
 - Geotechnical Engineering
 - Land Development
 - Structural Engineering
 - Water Engineering
- Built Environment:
 - Quantity Surveying
 - Development in the Built Environment
 - Construction Project Delivery

Introductory Chemical Engineering

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Chemical. It offers an introduction to key principles in chemical engineering without requiring an in-depth knowledge of chemistry.

40 units from the following:

CHEE1000	Chemical Engineering Principles
CHEE2325	Thermodynamics of Chemical Processes
CHEE2935	Sustainable Engineering Practices
CHEE3425	Chemical Process Safety

Assumed knowledge:

- CHEE2325 requires MATH1110 and 1120, ENGG1500
- CHEE2935 requires MATH1110, MATH1120, CHEM1010, CHEM1020, ENGG1500
- CHEE3425 requires ENGG1500

Pathway available in the following degrees:

- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Software
- ✓ Surveying

Advanced Topics in Chemical Engineering

40 units from the following:

CHEM2410	Physical Chemistry
CHEE3690	Environmental Process Technology
CHEE3920	Coal and Mineral Processing
CHEE4510	Project Management and Innovation in Process Industries

Assumed knowledge:

- CHEM1010 and CHEM1020 require CHEE1000

Pathway available in the following degrees:

- ✓ Chemical

Introductory Civil Engineering

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Civil. It offers an introduction to key principles in chemical engineering without requiring an in-depth knowledge of chemistry.

Compulsory courses:

CIVL1100	Fundamentals of Engineering Mechanics
CIVL1200	Earth Systems
CIVL2310	Fluid Mechanics
CIVL2240	Civil Engineering Materials

Assumed knowledge:

- *CIVL2310 requires CIVL1100*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Software
- ✓ Surveying

Advanced Topics in Civil Engineering - Construction Management

A pathway in Construction Management would provide a good insight into the way civil infrastructure construction projects are managed and run. The courses give a good cross-section of some of the key management roles within a construction context.

Compulsory course:

[ARBE1305](#) Construction Technology, Sequencing and Representation

30 units from:

ARBE1301	Construction Law and Legislation	ARBE3301	Construction Project Planning
ARBE2303	Health and Safety in the Built	ARBE3307	Contract Administration
ARBE2309	Environment	ARBE3308	Building Information Modelling (BIM)
	Construction Procurement and Tendering		

Students should have a working knowledge of construction technology as it applies to the built product, together with a similar level of knowledge regarding construction processes and techniques.

Pathway available in the following degrees:

- ✓ Civil

Advanced Topics in Civil Engineering - Structural Engineering

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Civil). This pathway exposes students to structural engineering design practice, advanced theory and design of buildings and structures, and construction engineering management technologies and economics.

Compulsory courses:

CIVL3160	Reinforced Concrete Design
CIVL3170	Steel Design
CIVL4521	Structural Engineering Project
CIVL4640	Research Project – geotechnical engineering research topic
CIVL4110	Advanced Structural Analysis
CIVL4120	Residential Footings/Masonry/Timber Design

20 units from:

CIVL4660	Research Project (10 unit extension to CIVL4640)
ARBE1101	Construction Technology 1
ARBE1305	Construction Technology, Sequencing and Representation
ARBE2306	Maintenance Services and Rehabilitation
ARBE4102	Construction Technology and Services

Assumed knowledge:

- *CIVL4110 requires CIVL3180*
- *CIVL4521 requires CIVL3160 and CIVL3170*
- *CIVL4120 requires CIVL3280, CIVL3160 and CIVL3170*

Pathway available in the following degrees:

- ✓ Civil

Advanced Topics in Civil Engineering - Geotechnical Engineering

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Civil). This pathway exposes students to geotechnical engineering design practice, rock mechanics, geotechnical site characterisation, advanced computational modelling of geomaterials, and risk management for civil and mining engineering applications.

Compulsory courses:

CIVL3280	Geomechanics 2
CIVL4201	Geotechnical and Geoenvironmental Engineering
CIVL4571	Geotechnical Engineering Project
CIVL4640	Research Project – geotechnical engineering research topic

40 units from:

CIVL4660	Research Project (Extension to CIVL4640)
CIVL4220	Computational Mechanics
CIVL4230	Rock Mechanics and Rock Engineering
CIVL4240	Geotechnical Risk Analysis
CIVL4250	Geotechnical Site Characterisation

Assumed knowledge:

- CIVL4220 requires CIVL3840
- CIVL4230 requires CIVL2280 and CIVL3280
- CIVL4240 requires CIVL2040
- CIVL4250 requires CIVL2280 and CIVL3280
- CIVL4571 requires CIVL4201

Pathway available in the following degrees:

- ✓ Civil

Advanced Topics in Civil Engineering - Water Engineering

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Civil). This pathway exposes students to water engineering design practice, advanced modelling of water transport processes, design of water supply systems, and environmental modelling.

Compulsory courses:

CIVL4450	Water Engineering
CIVL4330	Hydrology
CIVL4541	Water Engineering Project
CIVL4640	Research Project – water engineering research topic

40 units from:

CIVL4660	Research Project (10 unit extension to CIVL4640)
CIVL3431	Land Surface Process and Management
CIVL3470	Contaminant Hydrogeology
CIVL3410	Hydrobiological Modelling
SURV2650	Spatial Data Systems and Remote Sensing

Assumed knowledge:

- *CIVL4220 requires CIVL3840*
- *CIVL4230 requires CIVL2280 and CIVL3280*
- *CIVL4240 requires CIVL2040*
- *CIVL4250 requires CIVL2280 and CIVL3280*

Pathway available in the following degrees:

- ✓ Civil

Introductory Computer Systems Engineering – Computer Engineering

This pathway can be undertaken by students enrolled in selected Bachelor of Engineering (Honours) degrees. This pathway will enable students to have expert knowledge in computer processor design. This is hardware intensive module which starts from the basic building blocks and programming, and towards the end the students design state of the art multicore processors in the lab.

Compulsory Courses:

ENGG1003	Introduction to Procedural Programming
ELEC1710	Digital and Computer Electronics 1
ELEC4720	Programmable Logic Design
ELEC4700	Advanced Computer Systems

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Assumed knowledge:

- *ELEC1710 requires ENGG1003*
- *ELEC4700 requires ELEC4720*
- *ELEC4720 requires ELEC1710*

Introductory Computer Systems Engineering – Digital Electronics

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Computer Systems. It enables students to attain expertise in digital hardware design and embedded software development.

Compulsory Courses:

ENGG1003	Introduction to Procedural Programming
ELEC1710	Digital and Computer Electronics 1
ELEC3730	Digital and Computer Electronics 2
ELEC4720	Programmable Logic Design

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Assumed knowledge:

- *ELEC1710 requires ENGG1003*
- *ELEC4720 requires ELEC1710*

Introductory Computer Systems Engineering - Embedded Communications and Networking

This pathway can be undertaken by students enrolled in selected Bachelor of Engineering (Honours) degrees. This pathway exposes students to the basic building blocks of wireless online devices like smartphones, and shows how digital electronics and network engineering interact with each other.

Compulsory Courses:

ENGG1003	Introduction to Procedural Programming
ELEC1710	Digital and Computer Electronics 1
ELEC3730	Digital and Computer Electronics 2
ELEC3500	ELEC3500 Telecommunication Networks

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Assumed knowledge:

- *ELEC1710 requires ENGG1003*
- *ELEC3500 requires ELEC3540 and ELEC1710*
- *ELEC3730 requires ELEC1710*

Introductory Computer Systems Engineering and Electrical and Electronic Engineering - Telecommunications Engineering

This pathway can be undertaken by students enrolled in selected Bachelor of Engineering (Honours) degrees. Recent rapid advances in wireless Communication Engineering and internetworking has had a significant socio-economic impact. The industry has doubled its size in each year recently, and the trend is expected to continue for at least a decade. This pathway is designed introduce students to the fundamental building blocks that are fueling this growth.

Compulsory Courses:

ELEC2430	Circuits and Signals
ELEC3540	Analog and Digital Communications
ELEC3500	Telecommunications Networks
ELEC4550	Wireless Communications

Pathway available in the following degrees:

- ✓ Mechanical
- ✓ Mechatronics

Assumed knowledge:

- *ELEC2430 requires MATH1110 and MATH1120*
- *ELEC3540 requires ELEC2430*
- *ELEC3500 requires ELEC3540 and ELEC1710*
- *ELEC4550 requires ELEC3540 and ELEC3500*

Introductory Electrical and Electronic Engineering – Analog Electronics

This pathway can be undertaken by students enrolled in selected Bachelor of Engineering (Honours) degrees. This pathway introduces students to analog electronics design using discrete components including diodes and transistors as well as integrated circuits.

Compulsory Courses:

ELEC1310	Introduction to Electrical Engineering
ELEC2430	Circuits and Signals
ELEC2320	Electrical and Electronic Circuits
ELEC3240	Analog Electronics

Assumed knowledge:

- *ELEC1310 requires MATH1110*
- *ELEC2430 requires ELEC1310*
- *ELEC2320 requires ELEC2430*
- *ELEC3240 requires ELEC2320*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Introductory Electrical and Electronic Engineering – Electrical Power Engineering

This pathway can be undertaken by students enrolled in selected Bachelor of Engineering (Honours) degrees. Electrical machines are the workhorses of heavy industry. They are used to convert mechanical energy into electrical energy in power stations, and convert electrical energy back into mechanical energy. Power systems are responsible for transporting electrical power generating stations and distributing it to users' premises. This pathway allows students to develop expertise in electrical machines and power systems.

Compulsory Courses:

ELEC1310	Introduction to Electrical Engineering
ELEC2132	Electric Energy Systems
ELEC3130	Electric Machines and Power Systems

10 units from:

ELEC3160	Off-Grid Power Systems
ELEC4100	Electrical Systems

Assumed knowledge:

- *ELEC1310 requires MATH1110*
- *ELEC2132 requires ELEC1310*
- *ELEC3130 requires ELEC2132*
- *ELEC3160 requires ELEC2132*
- *ELEC4100 requires ELEC3130*
- *In addition, some concepts from ELEC2430 and ELEC2320 may be helpful*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Advanced Topics in Electrical and Electronic Engineering – Advanced Electrical Power Engineering

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Electrical and Electronic). This pathway covers advanced topics in Electrical Power Engineering including modern and 'green' technologies, and key building blocks of advanced solid state drives, flexible transmission systems, micro-grids, distributed generation, smart grids, etc.

Compulsory Courses:

ELEC3160	Off-Grid Power Systems
ELEC3251	Power Electronics
ELEC4100	Electrical Systems
ELEC4160	Advanced Power Electronics and Drives

Pathway available in the following degrees:

- ✓ Electrical and Electronic

Assumed knowledge:

- *ELEC3160 requires ELEC2132*
- *ELEC3251 requires ELEC3240*
- *ELEC4100 requires ELEC3130*
- *ELEC4160 requires ELEC3130 and ELEC3251*

Advanced Topics in Electrical and Electronic Engineering – Advanced Electronics

This pathway enables students to obtain expertise in advanced topics in analog, digital and power electronics.

- ELEC3240 and ELEC4210 enable students to design advanced analog circuits like those used in radio frequency electronics
- ELEC3240 and ELEC3251 cover the key concepts of high power electronics which are employed in modern power systems, drives, micro-grids and smart grids
- ELEC4720 and ELEC4700 cover advanced topics in digital electronics including advanced processor design and hardware description languages

40 units from:

ELEC3240	Analog Electronics
ELEC3251	Power Electronics
ELEC4720	Programmable Logic Design
ELEC4210	Electronics Design
ELEC4700	Advanced Computer Systems

Pathway available in the following degrees:

- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Mechatronics

Assumed knowledge:

- *ELEC3240 requires ELEC2320*
- *ELEC3251 requires ELEC3240*
- *ELEC4720 requires ELEC1710*
- *ELEC4700 requires ELEC4720*
- *ELEC4210 requires ELEC3240*

Advanced Topics in Electrical and Electronic Engineering – Control Systems and Applications

Compulsory Courses:

- [ENGG2440](#) Modelling and Control
[ENGG3440](#) Linear Control and Estimation

20 units from:

- [ENGG4400](#) Nonlinear Control and Estimation
[MCHA3500](#) Mechatronics Design 1
[MCHA4000](#) Mechatronics Design 2

Assumed knowledge:

- ENGG2400 requires MATH2310
- ENGG3440 requires ENGG2440
- ENGG4440 requires ENGG3440
- MCHA3500 requires ENGG3400 and ELEC3730
- MCHA4000 requires ENGG4440 and MCHA3500

Pathway available in the following degrees:

- ✓ Computer Systems
- ✓ Electrical and Electronic

Introductory Environmental Engineering

This pathway can be undertaken by students enrolled in a selection of Bachelor of Engineering (Honours) degrees. It offers an introduction to key principles in geotechnical engineering.

Compulsory Courses:

- [CIVL1200](#) Earth Systems
[CIVL2310](#) Fluid Mechanics
[CIVL4330](#) Hydrology
[CIVL3470](#) Contaminant Hydrology

Assumed knowledge:

- CIVL4330 requires CIVL2310
- CIVL3470 requires CIVL4330

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Software
- ✓ Surveying

Introductory Mechanical Engineering

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Mechanical. It offers an introduction to key principles in mechanical engineering.

Compulsory Courses:

MECH1110	Mechanical Drawing/CAD and Workshop Practice
MECH2110	Mechanical Engineering Design 1
MECH2430	Mechanics of Solids 1
MECH3110	Mechanical Engineering Design 2

Assumed knowledge:

- *MECH2110 requires MECH1110*
- *MECH2430 requires CIVL1100*
- *MECH3110 requires MECH2110 and MECH2430*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechatronics
- ✓ Software
- ✓ Surveying

Introductory Mechatronics Engineering

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Mechatronics, Mechanical and Electrical and Electronic. It offers an introduction to key principles in mechatronics engineering.

Compulsory Courses:

ELEC1710	Digital and Computer Electronics 1
ELEC2320	Electrical and Electronic Circuits
MECH2360	Dynamics of Machines
ENGG3440	Linear Control and Estimation

Assumed knowledge:

- *ELEC2320 requires ELEC1310 and MATH1120*
- *MECH2360 requires MATH1110 and MATH1120*
- *ENGG3440 requires ENGG2440*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Environmental
- ✓ Software
- ✓ Surveying

Introductory Mechatronics Engineering – Electrical and Electronic Engineering Students

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Electrical and Electronic).

Compulsory Courses:

MECH2360	Dynamics of Machines
ENGG2440	Modelling and Control
ENGG3440	Linear Control and Estimation
MCHA3500	Mechatronics Design 1

Pathway available in the following degrees:

- ✓ Electrical and Electronic

Assumed knowledge:

- *MECH2360 requires MATH1110 and MATH1120*
- *ENGG2440 requires MATH1110, 1120, 2310, PHYS1210, ELEC2430*
- *ENGG3440 requires ENGG2440*
- *MCHA3500 requires MECH2350, MATH2450, ELEC3730, ELEC3240*

Introductory Mechatronics Engineering – Mechanical Engineering Students

This pathway is to be undertaken only by students enrolled in the Bachelor of Engineering (Honours) (Mechanical).

Compulsory Courses:

ELEC1710	Digital and Computer Electronics 1
ELEC2320	Electrical and Electronic Circuits
ENGG3440	Linear Control and Estimation
MCHA3500	Mechatronics Design 1

Pathway available in the following degrees:

- ✓ Mechanical

Assumed knowledge:

- *ELEC3230 requires MATH1120 and ELEC1310*
- *ENGG3440 requires ENGG2440*
- *MCHA3500 requires MECH2350, MECH2450, ELEC3730, ELEC3240*

Introductory Software Engineering

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Software. It offers an introduction to key principles in software engineering.

Compulsory Courses:

SENG1110	Object Oriented Programming
INFT1040	Databases & Information Management
SENG2130	Systems Analysis and Design
SENG3320	Software Verification and Validation

Assumed knowledge:

- *INFT1040 requires SENG1110*
- *SENG2130 requires SENG1110*
- *SENG3320 requires SENG2130*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Surveying

Introductory Computer Science – Computer Systems

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Software. It offers an introduction to key principles in software engineering.

Compulsory Courses:

SENG1110	Object Oriented Programming
SENG1120	Data Structures
COMP2240	Operating Systems
SENG3400	Network and Distributed Computing

Assumed knowledge:

- *SENG11120 requires SENG1110*
- *COMP2240 requires SENG1120*
- *SENG3400 requires SENG1110*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Surveying

Introductory Computer Science – Databases

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Software. It offers an introduction to key principles in software engineering.

Compulsory Courses:

SENG1110	Object Oriented Programming
SENG1120	Data Structures
INFT1040	Databases and Information Management
INFT3007	The Information Resource

Assumed knowledge:

- *SENG11120 requires SENG1110*
- *INFT1040 requires SENG1110*
- *INFT3007 requires INFT2040*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Surveying

Introductory Computer Science – Software Development

This pathway can be undertaken by students enrolled in any Bachelor of Engineering (Honours) degree other than Software. It offers an introduction to key principles in software engineering.

Compulsory Courses:

SENG1110	Object Oriented Programming
SENG1120	Data Structures
INFT1040	Databases and Information Management
SENG2130	Systems Analysis and Design

Assumed knowledge:

- *SENG 1120 requires SENG1110*
- *INFT1040 requires SENG1110*
- *SENG2130 requires SENG1110 and has antirequisite INFT2009*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Surveying

Introductory Computer Science – Web Development

Compulsory Courses:

SENG1110	Object Oriented Programming
SENG1050	Web Technologies
INFT1040	Databases and Information Management
SENG2050	Web Engineering

Assumed knowledge:

- *INFT1040 requires SENG1110*
- *SENG2050 requires SENG1110 and SENG1050*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Civil
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Environmental
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Surveying

Advanced Topics in Computer Science – Computer Systems and Robotics

Compulsory Courses:

COMP3330	Machine Intelligence
COMP3290	Compiler Design
ELEC1710	Digital and Computer Electronics 1
ELEC3730	Digital and Computer Electronics 2

Assumed knowledge:

- *COMP3330 requires SENG1120, MATH1510, MATH1110*
- *COMP3290 requires SENG1120 and either COMP2270 or ELEC2700*
- *ELEC1710 requires ENGG1003*
- *ELEC3730 requires ELEC1710*

Pathway available in the following degrees:

- ✓ Software

Advanced Topics in Computer Science – Computer Systems and Robotics

Compulsory Courses:

COMP3330	Machine Intelligence
COMP3340	Data Mining
INFT3007	Advanced Database
STAT1060	Business Decision Making

Assumed knowledge:

- *COMP3330 requires SENG1120, MATH1510 and MATH1110*
- *COMP3340 requires MATH1510 and SENG1110*
- *INFT3007 requires INFT2040*
- *STAT1060 has antirequisite STAT2020 and STAT1070*

Pathway available in the following degrees:

- ✓ Software

Introductory Surveying

40 units from:

SURV1200	Introduction to Surveying
SURV2210	Engineering Surveying
SURV2220	Surveying Methods and Equipment
SURV2230	Surveying Techniques and Computations
SURV3650	Spatial Data Systems and Remote Sensing
SURV3610	Photogrammetry

Assumed knowledge:

- *SURV2210 requires SURV1200*
- *SURV2220 requires SURV1200*
- *SURV2230 requires SURV1200 and SURV2100*
- *SURV3650 requires SURV1200 or SURV2210*
- *SURV3610 requires SURV1200, 2210, 2220 and 2230*

Pathway available in the following degrees:

- ✓ Chemical
- ✓ Computer Systems
- ✓ Electrical and Electronic
- ✓ Mechanical
- ✓ Mechatronics
- ✓ Software

Introductory Surveying – Civil and Environmental Engineering students

40 units from:

SURV2210	Engineering Surveying
SURV2220	Surveying Methods and Equipment
SURV2230	Surveying Techniques and Computations
SURV3650	Spatial Data Systems and Remote Sensing
SURV3610	Photogrammetry

Assumed knowledge:

- *SURV2210 requires SURV1200*
- *SURV2220 requires SURV1200*
- *SURV2230 requires SURV1200 and SURV2100*
- *SURV3650 requires SURV1200 or SURV2210*
- *SURV3610 requires SURV1200, 2210, 2220 and 2230*

Pathway available in the following degrees:

- ✓ Civil
- ✓ Environmental

Advanced Topics in Surveying – Geotechnical Engineering

40 units from:

CIVL1200	Earth Systems
CIVL2240	Civil Engineering Materials
CIVL2282	Introduction to Geomechanics
CIVL3280	Geomechanics 2
CIVL3470	Contaminant Hydrology
CIVL4571	Geotechnical Engineering Project

Assumed knowledge:

- *CIVL3470 requires CIVL1331, 2050 (or CIVL2040 and 2060) and MATH2310*
- *CIVL2282 requires CIVL1121 or CIVL1100*
- *CIVL3280 requires CIVL2282*
- *CIVL3470 requires CIVL1331, 2050 and MATH2310*
- *CIVL4571 requires CIVL2282, 3280 and 4201*

Pathway available in the following degrees:

- ✓ Surveying

Advanced Topics in Surveying – Land Development

Compulsory courses:

CIVL1200	Earth Systems
CIVL2720	Transportation Engineering & Design
SURV4720	Land Valuation

10 units from:

LEGL1001	Foundations of Law	ARBE4102	Construction Technology & Services
GEOS3250	Geographic Information Systems (GIS)	ARBE2308	Cost Planning and Estimating

Assumed knowledge:

- *CIVL2720 requires GENG1001, MATH1110 and MATH1120*
- *ARBE4102 requires ARBE1102*
- *GEOS3250 requires GEOS2161 or SURV3650*
- *ARBE2308 Anti-requisite: ARBE2304*

Pathway available in the following degrees:

- ✓ Surveying

Advanced Topics in Surveying – Structural Engineering

40 units from:

CIVL1200	Earth Systems
CIVL2240	Civil Engineering Materials
CIVL2130	Theory of Structures 1
CIVL3170	Steel Design
CIVL3160	Reinforced Concrete Design
CIVL3840	Advanced Analysis for Design

Assumed knowledge:

- *CIVL2130 requires CIVL1100*
- *CIVL3160 requires CIVL2130*
- *CIVL3170 requires CIVL2130*

Pathway available in the following degrees:

- ✓ Surveying

Advanced Topics in Surveying – Water Engineering

40 units from:

CIVL1200	Earth Systems
CIVL3431	Land Surface Process & Management
CIVL3470	Contaminant Hydrogeology
CIVL3410	Hydrobiological Modelling
CIVL4541	Water Engineering Project

Assumed knowledge:

- *CIVL3431 requires CIVL2050 (or CIVL2040 and 2060), 3330 and SURV2650*
- *CIVL3470 requires CIVL1331, 2050 (or CIVL2040 and 2060) and MATH2310*
- *CIVL3410 requires CIVL2310, CIVL3330 and CIVL2050 (or CIVL2040 and 2060)*
- *CIVL4541 requires CIVL4450*

Pathway available in the following degrees:

- ✓ Surveying

Built Environment – Quantity Surveying

Compulsory courses:

ARBE2301	Measurement of Building Works 1
ARBE3309	Measurement of Building Works 2
ARBE2308	Cost Planning and Estimating
ARBE2307	Economics of the Construction Industry

Assumed knowledge:

- *ARBE3309 requires ARBE2301*
- *ARBE2308 requires ARBE2301*

Pathway available in the following degrees:

- ✓ Civil
- ✓ Surveying

Built Environment – Development in the Built Environment

Compulsory courses:

ARBE2101	Construction Ecology 2 (United Nations 2030 Agenda for Sustainable Development)
ARBE3304	Development Economics and Facilities Management
ARBE2307	Economics of the Construction Industry
ARBE2309	Construction Procurement and Tendering

Assumed knowledge:

- *ARBE3304 requires ARBE2307*

Pathway available in the following degrees:

- ✓ Civil
- ✓ Surveying

Built Environment – Construction Project Delivery

Compulsory courses:

ARBE2309	Construction Procurement and Tendering
ARBE3307	Construction Administration
ARBE3301	Construction Project Planning
ARBE3308	Building Information Modelling

Pathway available in the following degrees:

- ✓ Civil
- ✓ Surveying