COURSE DELIVERY PLAN 2025

Bachelor of Science

COURSE CODE: NBSC – Semester Two Commencement

CAMPUS	Footscray Park (FP)
COLLEGE	College of Sport, Health and Engineering
STUDY MODE	Full Time or Part Time
DURATION	3 years Full Time or Part Time equivalent
FEE TYPE	For information on course fees, refer to http://vu.edu.au/fees
APPLICATION METHOD	VTAC - https://vtac.edu.au Direct Application - https://gotovu.custhelp.com/app/landing
TIMETABLE	vu.edu.au/timetables
COURSE REQUIREMENTS	To attain the Bachelor of Science students will be required to complete 288 credit points, consisting of: • 96 credit points of First Year Core units; • 96 credit points of Major studies; AND select 96 credit points of: • 96 credit points of Major studies OR: • 2 x 48 credit points of two Minor studies.
FURTHER INFORMATION	Unit and course information is available from the University course search site at http://vu.edu.au/course-search or go to https://askvu.vu.edu.au or Phone VUHQ on 03 9919 6100
COURSE CHAIR	Wouter Van Dongen
COURSE ADVICE	AskVU https://askvu.vu.edu.au/app/askcua

Note: Students are required to enrol in all units for semester 1 and 2, and are not permitted to enrol in more than 48 credit points per semester as a full-time load.

Core/Elective Core (a unit that must be completed) & Elective (you have some choice in what you select).

Prerequisites A number of units within the degree have 'prerequisites'. These prerequisites must be met before enrolment in the unit is permitted. Generally these prerequisites require the successful completion of a unit or units taken at an earlier stage in the course. Students should pay particular attention to these prerequisite requirements as failure to meet these can seriously hinder progression through the course.

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YEAR 1

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
RCS1601	Chemistry 1A	Core	2B1	12	FP , SA	
RBF1320	Biology 2	Core	2B2	12	FP	
NEM1002	Statistics for Decision Making	Core	2B3	12	FP	
RCS1602	Chemistry 1B	Core	2B4	12	FP, SA	RCS1601

MAJORS AND MINORS

Option One – **Double Major** – NMABIT Biotechnology and NMAENV Ecology and Environmental Management	
Option Two **NMABIT Biotechnology Major** Plus two minors- select from: NMIEAA Ecology and Environmental Management NMIESC Environmental Science NMIMST Mathematics/Statistics EMIAGL Aboriginal Yulendj (Knowledge) and Community	**Option Three** **NMAENV Ecology and Environmental Management Major** Plus two minors- select from: NMICBM Cell Biology/Microbiology NMIMST Mathematics/Statistics EMIAGL Aboriginal Yulendj (Knowledge) and Community

YEAR 2

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
NSC1210	Skills for the Scientist	Core	1B1	12	FP	
RBF1150	Global Environmental Issues	Core	1B2	12	FP	
NEF1105	Mathematics for Engineering and Science	Core	1B3	12	FP	
RBF1310	Biology 1	Core	1B4	12	FP	
	Major 1 - Unit 1	Major		12		
	Major 1 - Unit 2	Major		12		
	Major 2 - Unit 1	Major		12		
	Major 2 - Unit 2	Major		12		

YEAR 3

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
	Major 1 - Unit 3	Major		12		

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	Major 1 - Unit 4	Major		12		
	Major 2 - Unit 3	Major		12		
	Major 2 - Unit 4	Major		12		
	Major 1 - Unit 5	Major		12		
	Major 1 - Unit 6	Major		12		
	Major 2 - Unit 5	Major		12		
	Major 2 - Unit 6	Major		12		

YEAR 4

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
	Major 1 - Unit 7	Major		12		
	Major 1 - Unit 8	Major		12		
	Major 2 - Unit 7	Major		12		
	Major 2 - Unit 8	Major		12		

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List of major/s available in this course
NMABIT Biotechnology
NMAENV Ecology and Environmental Management

List of minor/s available in this course
NMICBM Cell Biology/Microbiology
NMIEAA Ecology and Environmental Management
NMIESC Environmental Science
NMIMST Mathematics/Statistics
EMIAGL Aboriginal Yulendj (Knowledge) and Community

MAJORS:

Biotechnology NMABIT

After developing a solid grounding in science and mathematics from the core units in first year, this specific group of units allows you to pursue a Major in Biotechnology.

This biotechnology major has a strong research and application focus and will produce graduates that are 'work ready' by combining an extensive laboratory program with training on state-of-the-art instrumentation and techniques along with a final year research project. The course combines studies in modern cell-, molecular-, immuno- and micro-biology to develop a broad range of knowledge and investigative skills that are applicable to a broad range of research fields, industries and employers. The laboratory program includes hands-on training on modern analytical equipment including applications, theory of operation, optimisation and data analysis.

The major includes two Capstone units:
NEF3001 Applied Project 1 which provides an overview of the broad range of research fields and industries that utilise biotechnological advances in real world settings. This unit also provides research training in industrial techniques as well as field trips to biotechnology companies. This unit also considers the broader context of biotechnological advances in modern society.

NEF3002 Applied Project 2 which enables students to complete either a research project in a field of biotechnology or a work placement in the biotechnology industry. This provides graduates with significant practical experience in a research or industry setting and provides training in the administrative requirements of lab-based research.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
HBM2105	Medical Microbiology and Immunity	Major	2B1, 2B2, 2B3, 2B4	12	SA	RBF1310
HBM2106	Human Genetics	Major	1B2, 2B1, 2B4	12	SA	RBF1320
HBM3205	Clinical Genetics and Cellular Basis of Disease	Major	2B4	12	FP	RBM2560, RBM2133
			2B3		ORT	
RBM2133	Cell and Molecular Biology	Major	1B3	12	ORT	RBM2560, RBF1310
			1B2, 1B4, WB1		SA	

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RBM2560	Medical Biochemistry	Major	1B1, 1B2, 1B3, 1B4	12	FP	RBF1310; and RCS1602
RBM3720	Immunology	Major	1B1, 1B3, 1B4	12	SA	HBM2105
NEF3001	Applied Project 1	Major	1B1, 1B4, 2B1	12	ORT	
NEF3002	Applied Project 2	Major	1B4, 2B4	12	ORT	NEF3001

Ecology and Environmental Management NMAENV

This Ecology and Environmental Management major has a strong research and application focus and will produce graduates that are 'work ready' by combining an extensive laboratory and field-based program with training centred on state-of-the-art techniques and information along with final year research projects embedded in the capstone units. The course combines studies in ecology, zoology, ecology, geography, genetics and applied ecological management to develop a broad range of knowledge and investigative skills that are applicable to a wide range of research fields, industries and employers. The laboratory and field programs, includes hands-on training on modern analytical equipment including applications, theory of operation, optimisation and data analysis.

The major includes two Capstone units:
RBF3210 Environmental Rehabilitation builds on previously taken units and introduces a range of tools that will assist in the rehabilitation of Victoria's terrestrial environments and communities. Topics include the ecological parameters and adaptations of organisms in diverse environments and the key ecological relationships amongst organisms. Rehabilitation projects based on approaches using ecological theory will be reviewed using contemporary case studies. Practicals will include hands-on experience in the use of the Native Vegetation Management Framework, the Habitat Hectare approach, development of land management plans, and specific threatened species rehabilitation programs.

RBF3620 Conservation and Sustainability ties together, in both theoretical and practical ways, concepts and practices for maintaining biological diversity, and how these concepts and practices can be integrated with social and economic needs.

More specifically, this unit brings together concepts such as the development of conservation theory and practice in Australia; extinction and its significance, including pathways to extinction; the meanings, levels and interpretation of concepts of biodiversity; ecological and adaptive management approaches to conservation and recovery, including design of reserves, setting priorities, off-reserve conservation and ex-situ (captive breeding, reintroduction and translocation). Practical field studies and site visits will investigate the contributions of zoo's, national and state parks, friends groups, councils and shires, other government agencies and private landholders to the conservation and recovery of plant and animal species, from insects to mammals, and from mushrooms to trees. The subject will also include practical appraisals of techniques used to determine integrity of ecosystems, landscapes and overall environment, the contributions made by biodiversity to ecosystem services and integrated methods for recovery and sustainable management of species and ecosystems.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
NPU2110	Australian Landscapes and Biota	Major	1B2, 1B3	12	FP	
NPU3106	Conservation Genetics	Major	2B3	12	FP	RBF1310, RBF1320, RBF2610
RBF2610	Fundamentals of Ecology	Major	2B2, 2B3	12	FP	RBF1310, RBF1320

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RBF2620	Australian Plants	Major	2B4, SB1	12	FP	RBF1310, RBF1320
RBF2640	Australian Animals	Major	1B1, 1B4	12	FP	RBF1310
RBF3110	Marine & Freshwater Ecology	Major	1B3	12	FP	RBF1310, RBF1320, RBF2640
RBF3210	Environmental Rehabilitation	Major	2B1, 2B2	12	FP	RBF1310, RBF1320
RBF3620	Conservation and Sustainability	Major	1B4, WB1	12	FP	RBF1310, RBF1320, RBF2610

MINORS:

Cell Biology/Microbiology NMICBM

After developing a solid grounding in science and mathematics from the core units in first year this group of units allows you to pursue a breadth minor in Cell Biology and Microbiology.

This biotechnology minor is focussed upon the cellular processes fundamental to life and spans both single celled organisms through to complex multi-cellular life. In addition to the investigation of the intracellular processes underpinning life, the interaction between cells is also explored. This includes an understanding of multicellular cooperation, the basis of adaptive immunity and the breakdown of these regulated processes in disease (ie. cancer, auto-immunity... etc). It also explores the interaction between cells and the environment and the critical roles of microorganisms in the biosphere. This minor includes extensive practical training in methods for studying cellular processes including cell culture techniques, microbial culture/identification and immunological-based techniques.

This minor is appropriate for students undertaking major studies in a range of science discipline areas who wish to complement their studies with an understanding of the cellular basis of life and how that knowledge can be utilised in a broad range of settings, including medical, environmental, pharmaceutical and agricultural industries.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
HBM2105	Medical Microbiology and Immunity	Minor	2B1, 2B2, 2B3, 2B4	12	SA	RBF1310
RBM2133	Cell and Molecular Biology	Minor	1B3	12	ORT	RBM2560; and RBF1310
			1B2, 1B4, WB1		SA	
RBM2560	Medical Biochemistry	Minor	1B1, 1B2, 1B3, 1B4	12	FP	RBF1310; and RCS1602
RBM3720	Immunology	Minor	1B1, 1B3, 1B4	12	SA	HBM2105

Ecology and Environmental Management NMIEAA

The units within this group comprise of the Ecology and Environmental Management Minor within the new Bachelor of Science degree (NBSC). These units have been selected to provide students with a thorough grounding in the latest advances in ecology and environmental restoration and management. The units selected provide a focus on the theoretical and practical foundations of biological and environmental research. The practical application of ecologically

sound techniques across a broad spectrum of settings related to conservation and general environmental restoration and management, are covered in depth throughout these units. There is a clear focus on the applications, procedures and regulations used in ecological management and related industries to produce work-ready graduates.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
NPU2110	Australian Landscapes and Biota	Minor	1B2, 1B3	12	FP	
RBF2610	Fundamentals of Ecology	Minor	2B2, 2B3	12	FP	RBF1310, RBF1320
RBF3210	Environmental Rehabilitation	Minor	2B1, 2B2	12	FP	RBF1310, RBF1320
RBF3620	Conservation and Sustainability	Minor	1B4, WB1	12	FP	RBF1310, RBF1320, RBF2610

Environmental Science NMIESC

The units within this group comprise of the Environmental Science Minor within the new Bachelor of Science degree (NBSC). These units have been selected to provide students with a thorough grounding in the latest advances in botany, zoology, geography and ecology. The units selected provide a focus on the theoretical and practical foundations of biological and environmental research. The foundations of ecological knowledge and the key components of natural ecosystems are covered in depth throughout these units. There is a clear focus on the key elements needed to understand ecological applications, procedures and regulations used in ecological management and related industries. These key understanding will produce work-ready graduates that have a good grounding in environmental science.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
NPU2110	Australian Landscapes and Biota	Minor	1B2, 1B3	12	FP	
RBF2610	Fundamentals of Ecology	Minor	2B2, 2B3	12	FP	RBF1310, RBF1320
RBF2620	Australian Plants	Minor	2B4, SB1	12	FP	RBF1310, RBF1320
RBF2640	Australian Animals	Minor	1B1, 1B4	12	FP	RBF1310

Mathematics/Statistics NMIMST

After developing a solid grounding in science and mathematics from the core units in first year, this specific group of units allows you to pursue a breadth minor in mathematics and statistics.

These disciplines are at the heart of all modern science: from modelling of scientific problems to analyzing data. This minor includes the fundamental mathematics and statistics as used in modern applications, and will also provide you with the grounding to be an active and independent learner. This minor places great emphasis on applications, and also on the use of technology: from hand-held calculators to modern "industry strength" computer systems. As a science graduate with a solid grounding in mathematics and statistics you will be well placed to enter the workforce.

Much modern science requires the creation of a good mathematical model as an underpinning; this minor will provide the necessary tools to be able to create such models, analyze them, and use them for testing, evaluation, and prediction. As well, data produced from laboratory or field studies needs to be rigorously analysed, and this minor introduces the technical skills necessary for such analysis.

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This minor is appropriate for student undertaking major studies in a range of science discipline areas who wish to complement their studies with some training in applied mathematics and statistics, and in the use of technology to support those fields.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
RCM2611	Linear Statistical Models	Minor	1B1	12	FP	NEM1002
RCM2713	Modelling for Decision Making	Minor	1B2, 2B4	12	FP	NEF1105
RCM2911	Linear Optimisation Modelling	Minor	1B1, 2B3	12	FP	
RCM3711	Computational Methods	Minor	1B2	12	FP	RCM2713; or RCM2611; or RCM2911

Aboriginal Yulendj (Knowledge) and Community EMIAGL

With UNESCO's acknowledgement that Indigenous groups globally are challenged from 'development', global warming and globalisation and the Australian government's adoption of the UN Declaration on the Rights of Indigenous Peoples, how might Indigenity assert itself legally, politically, culturally, socially and technologically to secure/ensure an equitable and respected place in a multicultural globalised Australian context?

How might key Aboriginal issues underpinned by self-determination, land and country, treaty, economic development, urban and regional planning, traditional owners, cultural heritage and art, human rights, ethics and community development be considered and applied in a changing world and in Australian civics and citizenship, workplaces and community?

The Aboriginal Yulendj (Knowledge) and Community minor will be available for students enrolled in VU undergraduate programs and it will use Moondani Balluk (embrace people) units in decolonial and postmodern theories to consider a range of complex topics concerning personal and national identity in a changing global world. In this minor, students will explore, analyse and deconstruct their own disciplinary and lived perspectives as well as explore, reflect and understand the impacts and outcomes of colonisation for Aboriginal individuals, families and communities in South East Australia. Topics to be explored include history, human rights, traditional owners, sovereignty, governance and societal structures, coloniality and systems of power and community ethics.

Students studying the EMIAGL Minor will select:
-One of AEK1204 or AEK1105,
-One of AEK2205 or AEK2203,
-Plus AEK3203 and AEK3204.

UNIT CODE	UNIT TITLE	UNIT TYPE	SEM	CREDIT POINTS	CAMPUS	PRE-REQUISITES
AEK1204	Aboriginal History and Political Movements	Minor	2B1, 2B2, 2B3, 2B4	12	FP	
AEK1105	Aboriginal Traditions and Policy	Minor	1B2, 1B3, 1B4	12	FP	

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AEK2205	Politics of Aboriginal Art	Minor	1B3	12	FP	AEK1105; or AEK1204
AEK2203	Indigenous Perspectives On Sustainability	Minor	1B4, WB1	12	FP	AEK1105; or AEK1106; or AEK1204
AEK3203	Working Ethically in Aboriginal Community	Minor	1B1, 1B4, 2B1	12	FP	AEK1105; or AEK1204; and AEK2203; or AEK2205
AEK3204	Aboriginal Political and Reflective Learning	Minor	2B3	12	FP	