



Cape
Peninsula
University
of Technology

APPLIED SCIENCES

Faculty Handbook
2015





+27 21 959 6767



info@cput.ac.za



www.facebook.com/cput.ac.za



@CPUT



www.cput.ac.za

CONTACT DETAILS

NAME

ADDRESS

CELL

EMAIL

CAMPUS

RESIDENCE

IN CASE OF
EMERGENCY,
CONTACT

*You have registered with the
Faculty of Applied Sciences.
Here are our details, in case
you need them:*



Postal Address

Faculty of Applied Sciences
Cape Peninsula University of Technology
**PO Box 1906,
BELLVILLE, 7535**

Faculty of Applied Sciences
Cape Peninsula University of Technology
**PO Box 652,
CAPE TOWN, 8000**

Faculty of Applied Sciences
Cape Peninsula University of Technology
**Private Bag X8,
WELLINGTON, 7654**

Physical Address

Faculty of Applied Sciences
Cape Peninsula University of Technology
**Food Technology Building
Symphony Way,
BELLVILLE, 7530**

Faculty of Applied Sciences
Cape Peninsula University of Technology
**Science Building
Keizersgracht,
CAPE TOWN, 8001**

Faculty of Applied Sciences
Cape Peninsula University of Technology
**Jan van Riebeeck Street,
WELLINGTON, 7654**

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Biodiversity &
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Department
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Department of
Environmental &
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Department of
Food
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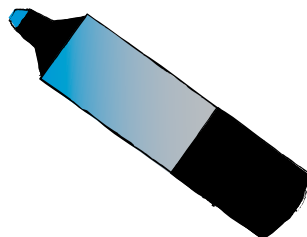
Department of
Horticultural
Sciences

155

Department of
Mathematics
& Physics

183

Every effort has been made to ensure the accuracy of the information in this handbook; however the University reserves the right at any time, if circumstances require making changes to any of the published details.



VISION AND MISSION

Vision

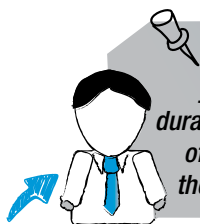
To be the faculty of choice for Mathematics, Science and Technology education in the country and in Africa, offering programmes closely aligned to national priorities.

Mission

With equitable access, equal opportunity and an ethos of equity, the Faculty of Applied Sciences aims to use excellence as both tool and touchstone in its teaching, its research and its technological transfer application in order to produce graduates equipped not only with competitively up-to-date vocational training, but also with the life-long learning skills which will ensure that they remain quality learners, valuable and ever-employable in a changing society.



CONTACT DETAILS: Office bearers



It is important to know whom you will be dealing with for the duration of your time at the Faculty of Applied Sciences. Here are all the contact details you will need.

POSITION	DEPARTMENT	NAME	TELEPHONE	E-MAIL
Dean	Faculty	Prof O Fatoki	021 460 3171	FatokiO@cput.ac.za
Faculty Manager	Faculty	Mr P Franck	021 460 3188	FranckP@cput.ac.za
Assistant Dean	Faculty	Dr BJ Ximba	021 460 3171	XimbaB@cput.ac.za
Head of Department	Curriculum & Academic Development	Dr T Maqutu	021 460 8346	MaqutuT@cput.ac.za
Head of Department	Agriculture	Dr F Lewu	021 864 5217	LewuF@cput.ac.za
Head of Department	Biodiversity & Conservation Management	Dr J Kioko	021 460 3213	KiokoJ@cput.ac.za
Head of Department	Mathematics and Physics	Mr J Farmer	021 959 6224	FarmerJ@cput.ac.za
Head of Department	Food Technology	Prof J Van Wyk	021 959 6176	VanwykJ@cput.ac.za
Head of Department	Horticulture	Prof C Laubscher	021 460 3198	Laubscherc@cput.ac.za
Head of Department	Chemistry	Prof F Wewers	021 959 6192	WewersF@cput.ac.za
Head of Department	Environmental & Occupational Studies	Mr. H van der Westhuizen	021 460 3420	VanderwesthuizenH@cput.ac.za
Head of Department	Biotechnology and Cons Science: Food & Nutrition	Dr S Crafford	021 460 3433	CraffordS@cput.ac.za
Dean's Secretary	Faculty	Ms L Poni	021 460 3803	PoniL@cput.ac.za
Admin Assistant: Curriculum Development	Faculty	Ms M Petersen	021 460 8327	PetersenM@cput.ac.za
Admin Assistant: Research	Faculty	Ms A Nel	021 460 4243	Nelan@cput.ac.za

FACULTY CONTACT INFORMATION

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POSITION	DEPARTMENT	NAME	TELEPHONE	E-MAIL
Research Coordinator	Faculty	Dr S Nelana	021 460 8333	Nelanas@cput.ac.za
ECP Coordinator	Faculty	Dr B Opeolu	021 460 3508	OpeoluB@cput.ac.za
WIL Coordinator	Faculty	Dr L Reddy	021 460 3819	Reddyl@cput.ac.za
Functional Foods Research Unit (FFRU)	Faculty	Prof S Benade/ Dr M Opperman	021 953 8677	BenadeS@cput.ac.za/ OppermanM@cput.ac.za
Faculty Officer	Faculty	Mr. X Mdoda	021 460 3218	MdodaX@cput.ac.za
Assistant Faculty Officer	Faculty	Ms V Jackson	021 460 3176	JacksonV@cput.ac.za
Faculty Assistant	Faculty	Ms T Erispe	021 460 3151	ErispeT@cput.ac.za
Faculty Assistant	Faculty	Ms L van Wyk	021 959 6818	VanwykL@cput.ac.za
Office Clerk	Faculty	Ms E Theunissen	021 460 3764	TheunissenE@cput.ac.za

Programme coordinators

CAMPUS	PROGRAMME	NAME	TELEPHONE	E-MAIL
Cape Town	Biotechnology	Dr R Mundembe	021 460 3175	MundembeR@cput.ac.za
Cape Town	Consumer Science: Food and Nutrition	Ms L du Toit	021 460 3431	DuToitL@cput.ac.za
Cape Town	Chemistry	Dr Z Sam	021 460 3197	SamZ@cput.ac.za
Bellville	Chemistry	Dr T Oosthuyzen	021 959 6192	OosthuyzenT@cput.ac.za
Bellville	Food Technology	Prof V Jideani	021 959 6776	JideaniV@cput.ac.za
Bellville	Mathematical Technology	Mr V Hess	021 959 6043	HessV@cput.ac.za
Bellville	Horticulture	Prof JC Coetzee	021 959 6174	CoetzeeJ@cput.ac.za
Bellville	Horticulture	Prof C Laubscher	021 959 5805	LaubscherC@cput.ac.za
Bellville	Landscape Technology	Mr J van Rooyen	021 959 6480	VanrooyenJo@cput.ac.za

FACULTY CONTACT INFORMATION

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CAMPUS	PROGRAMME	NAME	TELEPHONE	E-MAIL
Cape Town	Nature Conservation	Prof R Snyman	021 460 3947	SnymanR@cput.ac.za
Cape Town	Marine Science & Oceanography	Dr C Sparks	021 460 3766	SparksC@cput.ac.za
Cape Town	Environmental Health	Prof I. Human	021 460 3200	HumanI@cput.ac.za
Cape Town	Environmental Management	Mrs B. Kleyn-Magolie	021 460 3209	KleynmagolieB@cput.ac.za
Wellington	Agriculture	Mrs H Theron	021 873 1181	TheronH@cput.ac.za
Wellington	Agricultural Management	Dr M Fanadzo	021 864 5211	FanadzoM@cput.ac.za

Contact details: departments

DEPARTMENT	CAMPUS	CONTACT	TELEPHONE	FAX	E-MAIL
Agriculture	Wellington	Faculty Office	021 959 6818	021 959 6165	VanwykL@cput.ac.za
		Ms A Bollitye	021 864 5217	021 864 5253	BollityeA@cput.ac.za
Chemistry	Bellville	Dr BJ Ximba	021 959 6193	021 959 6165	XimbaB@cput.ac.za
		Faculty Office	021 959 6818	021 959 6165	VanwykL@cput.ac.za SisingoB@cput.ac.za
	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Ms M Wicht	021 460 3168	021 460 3854	WichtM@cput.ac.za
Biotechnology & Consumer Science	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Dr R Mundembe Ms L du Toit	021 460 3175 021 460-3431	021 460 3217	DuToitL@cput.ac.za
Environmental Health	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Ms V Ntapane	021 460 9068	021 460 3905	NtapaneV@cput.ac.za
Environmental Management	Cape Town	Faculty Office	021 460 3176 021 460 3151	021 460 3217	NtapaneV@cput.ac.za
		Mrs B Kleyn-Magolie	021 460 3209	021 460 3905	KleynmagolieB@cput.ac.za

FACULTY CONTACT INFORMATION

DEPARTMENT	CAMPUS	CONTACT	TELEPHONE	FAX	E-MAIL
Food Technology	Bellville	Faculty Office	021 959 6818 021 959 8404	021 959 6165	VanwykL@cput.ac.za SisingoB@cput.ac.za
		Prof J Van Wyk	021 959 6176	021 959 6095	VanwykJ@cput.ac.za
Horticulture	Bellville	Faculty Office	021 959 6818	021 959 6165	VanwykL@cput.ac.za SisingoB@cput.ac.za
Landscape Technology	Bellville	Mr J van Rooyen	021 959 6480		VanRooyenJ@cput.ac.za
Nature Conservation	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Prof R Snyman	021 460 3213	021 460 3193	SnymanR@cput.ac.za
Marine Science & Oceanography	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Dr C Sparks	021 460 3766	021 460 3193	SparksC@cput.ac.za
Mathematical Technology	Bellville	Faculty Office	021 959 6818	021 959 6165	VanwykL@cput.ac.za
		Ms C Hansby	021 959 6094	021 959 6165	HansbyC@cput.ac.za
Biotechnology	Cape Town	Faculty Office	021 460 3176	021 460 3217	JacksonV@cput.ac.za
		Dr R Mundembe	021 460 3175	021 460 3193	MundembeR@cput.ac.za

Academic Programme 2015



Get to know your academic calendar for the year 2015.

MON	TUE	WED	THU	FRI	
			1 Jan	2 Jan	All admin staff on duty from 5 Jan
5 Jan	6 Jan	7 Jan	8 Jan	9 Jan	
12 Jan	13 Jan	14 Jan	15 Jan	16 Jan	All academic staff on duty from 14 Jan 2 – 4 Feb Welcoming of first years Orientation week 26 - 4 Feb
19 Jan	21 Jan	22 Jan	23 Jan	24 Jan	
26 Jan	27 Jan	28 Jan	29 Jan	30 Jan	
2 Feb	3 Feb	4 Feb	5 Feb	6 Feb	2 February: Lectures commence
9 Feb	10 Feb	11 Feb	12 Feb	13 Feb	
16 Feb	17 Feb	18 Feb	19 Feb	20 Feb	
23 Feb	24 Feb	25 Feb	26 Feb	27 Feb	
2 Mar	3 Mar	4 Mar	5 Mar	6 Mar	
9 Mar	10 Mar	11 Mar	12 Mar	13 Mar	
16 Mar	17 Mar	18 Mar	19 Mar	20 Mar	
23 Mar	24 Mar	25 Mar	26 Mar	27 Mar	
30 Mar	31 Mar	1 Apr	2 Apr	3 Apr	2 – 6 April: Recess
6 Apr	7 Apr	8 Apr	9 Apr	10 Apr	
13 Apr	14 Apr	15 Apr	16 Apr	17 Apr	13 – 18 April: Autumn graduation week
20 Apr	21 Apr	22 Apr	23 Apr	24 Apr	
27 Apr	28 Apr	29 Apr	30 Apr	1 May	
4 May	5 May	6 May	7 May	8 May	9 – 10 May: Open day Cape Town Campus
11 May	12 May	13 May	14 May	15 May	
18 May	19 May	20 May	21 May	22 May	22 May: Africa Day
25 May	26 May	27 May	28 May	29 May	
1 Jun	2 Jun	3 Jun	4 Jun	5 Jun	
8 Jun	9 Jun	10 Jun	11 Jun	12 Jun	
15 Jun	16 Jun	17 Jun	18 Jun	19 Jun	

ACADEMIC PROGRAMME 2015

MON	TUE	WED	THU	FRI	
22 Jun	23 Jun	24 Jun	25 Jun	26 Jun	26 June – 29 July: Faculty vacation
29 Jun	30 Jun	1 Jul	2 Jul	3 Jul	
6 Jul	7 Jul	8 Jul	9 Jul	10 Jul	
13 Jul	14 Jul	15 Jul	16 Jul	17 Jul	17 July: Mandela Day
20 Jul	21 Jul	22 Jul	23 Jul	24 Jul	
27 Jul	28 Jul	29 Jul	30 Jul	31 Jul	
3 Aug	4 Aug	5 Aug	6 Aug	7 Aug	
10 Aug	11 Aug	12 Aug	13 Aug	14 Aug	
17 Aug	18 Aug	19 Aug	20 Aug	21 Aug	
24 Aug	25 Aug	26 Aug	27 Aug	28 Aug	
30 Aug	1 Sep	2 Sep	3 Sep	4 Sep	
7 Sep	8 Sep	9 Sep	10 Sep	11 Sep	7 – 11 September: Faculty vacation
14 Sep	15 Sep	16 Sep	17 Sep	18 Sep	18 September: Spring Graduation
21 Sep	22 Sep	23 Sep	24 Sep	25 Sep	
28 Sep	29 Sep	30 Sep	1 Oct	2 Oct	
5 Oct	6 Oct	7 Oct	8 Oct	9 Oct	
12 Oct	13 Oct	14 Oct	15 Oct	16 Oct	
19 Oct	20 Oct	21 Oct	22 Oct	23 Oct	
26 Oct	27 Oct	28 Oct	29 Oct	30 Oct	
2 Nov	3 Nov	4 Nov	5 Nov	6 Nov	
9 Nov	10 Nov	11 Nov	12 Nov	13 Nov	
16 Nov	17 Nov	18 Nov	19 Nov	20 Nov	
23 Nov	24 Nov	25 Nov	26 Nov	27 Nov	
30 Nov	1 Dec	2 Dec	3 Dec	4 Dec	
7 Dec	8 Dec	9 Dec	10 Dec	11 Dec	11 Dec: Publication of results
14 Dec	15 Dec	16 Dec	17 Dec	18 Dec	

Message from the Vice-Chancellor



Dear Students

Welcome to a very special year at CPUT- our 10th birthday celebration. For a decade we have produced some of the country's most promising graduates and I am certain that you will also one day walk across the stage in front of me during your graduation and join their ranks as a proud CPUT alumnus.

Each year our Admissions Department is flooded with thousands of applications from across the country by young people, just like you, who recognise that CPUT is a leader in innovation and technology. Whether you are a first year or a returning student, you have fought hard to get a seat at our institution and that determination should follow you through to the end of your studies.

Be determined to say no to negative influences, to give your best to each and every evaluation and to becoming a well-rounded student who fully participates in the multitude of extra-mural activities that are available to you through our Student Affairs Department.

We are also determined to ensuring you are fully supported on your journey to graduation. There are a number of intervention units in place to assist students. These include the Student Learning unit which assists you with attributes like academic literacy, study skills and time management. I urge all of you to make contact with this unit and the many others like Student Counseling, the clinic and HIV/Aids unit who are all dedicated to your future success.

Ultimately however your success lies in your own hands. The journey for 2015 starts right now and I wish you well along your way.

Your Vice-Chancellor

Dr Prins Nevhutalu

Campus info



ATHLONE SERVICE POINT

Klipfontein Road, Heideveld
PO BOX 1906

Tel 021 684 1200

BELLVILLE
7535

BELLVILLE CAMPUS

Symphony Way, Bellville
PO BOX 1906

Tel 021 959 6911

BELLVILLE
7535

CAPE TOWN CAMPUS

Keizersgracht, Cape Town
PO BOX 652

Tel 021 460 3911

CAPE TOWN
8000

GRANGER BAY CAMPUS

Beach Road, Mouille Point
PO BOX 652

Tel 021 440 5700

CAPE TOWN
8000

MOWBRAY CAMPUS

Highbury Road, Mowbray
PO BOX 652

Tel 021 680 1500

CAPE TOWN
8000

MEDIA CITY

10th Floor
No 1 Heerengracht
Rua Vasco Da Gama Entrance
FORESHORE
8000

WELLINGTON CAMPUS

Jan van Riebeeck Street, Wellington
PRIVATE BAG X8

Tel 021 864 5200

WELLINGTON
7654

Enquiries:

086 123 2788 (086 123 CPUT)

CORE VALUES

INTEGRITY
EXCELLENCE
ACCOUNTABILITY
EQUITY
DEMOCRACY
UBUNTU
RESPECT
INNOVATION

Department of Student Affairs

The Department of Student Affairs (DSA) is a fully integrated student support service aimed at developing the holistic potential of all students through excellence and maximum participation in the five main focus areas of its operation, namely:

- Student Development
- Student Governance (including the SRC)
- Arts and Culture
- Sport Development
- Student Media

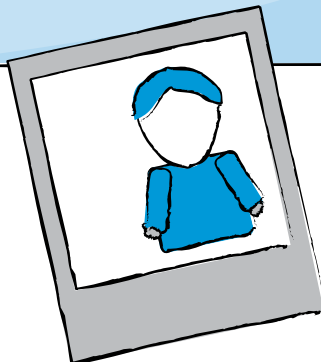
We currently have offices at the following CPUT Campuses:

Bellville Campus

Student Development and Arts and Culture: New Library Extension, Ground Floor
Tel 021 959 6261 Fax 021 959 6110

Sport Development: Major Sport Hall, 1st Floor
Tel 021 959 6319 Fax 021 959 6089

Student Representative Council and Student Structures: Student Centre, 1st Floor



Cape Town Campus

Student Affairs Offices: Student Centre, 4th Level
Tel 021 460 3149 Fax 021 460 3720

Sport Development: Multipurpose Hall, 2nd Level
Tel 021 460 3844 Fax 021 460 3845

Student Representative Council and Student Structures: Student Centre, 1st Floor



Mowbray Campus

Student Representative Council and Student Structures: New Gymnasium, Room 110

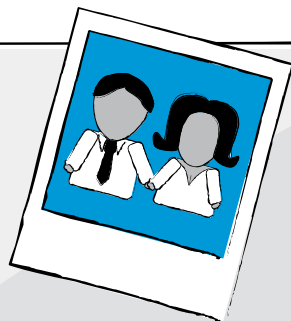


Wellington Campus

Student Governance: E Block, Room E6B
Tel 021 864 5519 Fax 021 864 2033

Sport Development: F Block, Room F2A and B
Tel 021 864 5507 Fax 021 864 5508

Student Representative Council and Student Structures: E Block, Room E6C



Emergency Contact Details



STATE AMBULANCE SERVICES

State Ambulance Emergencies 10177
Police Flying Squad 10111
Fire Brigade (Back/Neck Injuries) 021 535 1100

Poison Information Centre:

Red Cross 021 689 5227
Tygerberg Hospital 021 931 6129

PRIVATE AMBULANCES

Emergencies services after hours 021 950 8989
Western Cape Paramedics 0800 225 599

STATE HOSPITALS

Groote Schuur (Dr Stein FP) 021 404 9111
Trauma Unit 021 404 4112
Psychiatric Emergency Unit 021 404 2175
Medical Emergency Unit 021 404 4141

CAMPUS SECURITY

Bellville 021 959 6341
Cape Town 021 460 3122

CAMPUS CLINICS

Bellville Campus 021 959 6403
Cape Town Campus 021 460 3405
Mowbray Campus 021 680 1555
Wellington Campus 021 864 5278

RAPE CRISIS
021 447 9762

POLICE
10111

LIFE LINE
021 461 1111

HIV / AIDS NATIONAL HELP LINE
0800 012 322

GROOTE SCHUUR HOSPITAL
TRAUMA UNIT: - THUTHUZELA
021 404 3031

G.F. JOOSTE HOSPITAL
TRAUMA UNIT: - THUTHUZELA
021 690 1011 / 1000

KARL BREMER TRAUMA UNIT
(BELLVILLE)
021 949 0296

SOMERSET HOSPITAL TRAUMA UNIT
(GREEN POINT)
021 402 6000

HIV/AIDS unit: Vision and Mission



VISION

To be the epicentre of excellence in HIV/AIDS Programmes at higher education institutions in Africa.

MISSION

To mitigate the impact of HIV/AIDS/STI and TB by promoting, advocating, facilitating and implementing innovative interventions among students, staff and the community.

We strive to develop, equip, influence and empower individuals in skills and knowledge through educating, teaching, training, learning and research in the prevention of HIV/AIDS/STI and TB. We also render a quality service, to those infected and affected, towards achieving holistic health and sustaining a healthy lifestyle.

CORE OBJECTIVES

- Curricular Integration of HIV/AIDS/STI & TB
- Student and staff training workshops
- Awareness campaigns
- Peer Education
- Community Outreach
- Workplace Programme
- Care and support of HIV negative & positive clients
- Wellness Mobile
- Internship and Volunteer Programme
- Research

CONTACT DETAILS:

CAPE TOWN OFFICE:

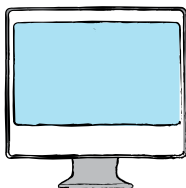
Admin Building, 2nd Floor
(Opposite Applications office)

Tel: 021 460 4253/2

BELLVILLE OFFICE:

Opposite Tabeisa Cafe

Tel: 021 959 6898/6828



ONLINE DETAILS:

Website: www.cput.ac.za/hivaids



Facebook: CPUT HIV/AIDS Unit



Twitter: @cputhivaidsunit

Health services



CAMPUS HEALTH CLINICS TELEPHONE NUMBERS:

Bellville Campus Clinic
Tel: 021 959 6403
Fax: 021 959 6123

Cape Town Campus Clinic
Tel: 021 460 3405
Fax: 021 460 3638

Mowbray Campus Clinic
Tel: 021 680 1555
Fax: 021 680 3952

Wellington Campus Clinic
Tel: 021 864 5522
Fax: 021 864 5278

HIV/AIDS UNIT

HIV/AIDS UNIT Cape Town Campus
Room 2.00a, Level 2, Administration Building,
Cape Town
Tel: 021 460 4253
Fax: 021 460 4244
Email: mohammedaa@cput.ac.za

HIV/AIDS Unit Bellville Campus

Temporary office opposite Start Up Café
Tel: 021 959 6807
Email: runeyip@cput.ac.za

DISABILITY UNIT

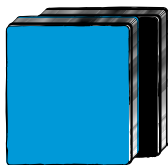
Bellville and Wellington Campuses as well as Athlone and Tygerberg Service Points:
IT Centre, Ground Floor, Room 1.09,
Bellville Campus,
Tel 021 953 8447
Tel 021 959 6964

Cape Town, Granger Bay and Mowbray Campuses:
Ground floor, Level 2, Atrium, Administration Building, Cape Town Campus,
Tel 021 460 9071

Contact

Dr Nina du Toit
Room 1.09 & 1.10, Ground Floor, IT Centre,
Bellville Campus
Tel: 021 959 6964
Fax: 021 959 6231
Email: dutoitn@cput.ac.za

Library services



CPUT Libraries offers you a welcoming and practical study environment; supporting independent and group working facilities; with access to print, digital and multimedia resources; and qualified staff that are dedicated to serve your needs. Library facilities are available at all campuses of CPUT.

Membership

If you are a registered student or staff member at CPUT, you may use any of the CPUT Libraries (by agreeing to abide by the rules and regulations of the CPUT and CPUT Libraries).

Book Collections

Choose from our growing book collections, books that are focused on your academic subjects and studies. Book collections are arranged according to faculty content which makes it convenient to get all your information from one area in the library.

Electronic Resources

Gives you access to hundreds of up-to-date journal articles for your studies and research that will not be found in books or on the Internet. These can even be accessed from home, work and places away from the libraries.

Learning Commons

An area filled with computers for internet access to relevant academic websites, typing of assignments, printing, scanning, CD-burning – particularly geared to your independent learning. Specialised Learning Commons are only in Bellville & Cape Town, but similar facilities are available at most of the other libraries.

Study facilities

Choose to use the seminar rooms for working in groups, to hold discussions and make presentations, or use the quiet study areas for independent study.

Research Information Support Centres

Separate demarcated areas are available in Bellville and Cape Town for the exclusive use of postgraduate students and staff.

Information Skills training

Attend free training sessions that will empower you with skills to find information from various information tools and resources needed for your studies. Do not hesitate to contact your faculty or branch librarian for more information. CPUT Libraries cares about your safety and your learning needs, and all the services offered to you are provided within a framework of fair-minded and liberal policies as laid out by the University.

Therefore, you are encouraged to use the libraries to your maximum benefit.

For more information, please visit the Libraries' comprehensive webpage:

<http://library.cput.ac.za>

Financial aid



Bellville Financial Aid Office

Library Extension

Tel: 021 959 6371/ 6594/ 6349

Fax: 021 9596108

Cape Town Financial Aid Office

Administration Building, Level 5 (Entrance via Student Centre)

Tel: 021 460 3744/ 3856/ 3327

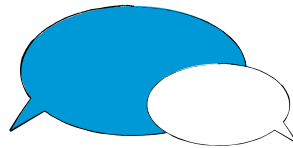
Fax: 021 460 3899

Wellington Campus

Administration Building, Room A19

Tel: 021 864 5218

Student counselling



Bellville Campus

Library Extension Building

Ground Floor

Tel: 021 959 6182 or 6269

Cape Town Campus

Administration Building

2nd Level, Room 2.700

Tel: 021 460 3237 or 3254

Mowbray Campus

Barkley Davies Building

Room 0.03

Tel: 021 680 1501 or 1574

Wellington Campus

Extension to the Administration Building

Tel: 021 864 5201 or 5206

1. The maximum time allowed to complete a programme shall be double the minimum completion duration, for example, six years for a three-year qualification. In addition, students shall be given a maximum of one chance to repeat a semester, year, subject, course or module. In other words, repeaters are limited to one repeat.
2. Students shall pass at least 50% of their subjects, including at least two of the three major subjects that they are registered for in any semester or year of study, in order to proceed to the next level of their studies, unless otherwise prescribed by statutory bodies, such as professional bodies. Students shall carry over repeated subjects to the next level that they are promoted to, pending time-tabling. Students shall not be allowed to carry over more than two subjects per semester/year or at any one time.
3. When a student fails to comply with the above requirements for progression, he/she will be notified in writing of his/her exclusion from the programme or from progression.
4. Where a student fails to meet rule 2 above, he/she shall be permitted to repeat the carry-over subject ONLY once.
5. These prescribed requirements will be stated in subject requirements and all efforts shall be made by the department concerned to familiarise students with these additional requirements.
6. If a student fails the level or subjects more than once, he/she shall be excluded from the programme.
7. If a student obtains an overall mark of less than 30%, he/she shall be excluded from registering for any programme in the faculty.
8. If a student obtains an overall mark between 30% and 40%, he/she shall be excluded from the programme. Such a student may apply for admission to any other programme within the faculty, subject to meeting the admission requirements.
9. If a student obtains an overall mark between 40% and 50%, he/she shall be allowed to repeat the level, subject to rule 2 of this section.
10. When a student fails to comply with the above requirements for progression, he/she shall be notified in writing of his/her exclusion from the programme or from progression.
11. Where a student has only one or two subjects remaining before completion and is nearing the maximum number of years for registration, he/she may apply, with appropriate motivation, to the Dean's office for extension of the period of registration for an additional year.
12. Normal appeal procedures will apply.

Credits

1. Credit transfers require CPUT to validate prior formal learning through evaluation of the quality of an accredited provider.
2. Subject exemptions as practised in the past are regarded as Recognition of Prior Learning (RPL) and are dealt with in the appropriate RPL policy.
3. In the interests of student access, mobility and articulation, and to avoid unnecessary repetition of studies, consideration may be given to extend to the student:
 - 3.1 Recognition by granting credits for any subjects passed at CPUT, but in another programme, whether complete or incomplete, with a view to studying for a University programme.
 - 3.2 Recognition by granting credits whereby credits obtained at one institution may be recognised by another as meeting part of the requirements for graduation, and credits for a completed qualification may be recognised as meeting part of the requirements for another qualification.
4. The mark obtained at higher education institutions from which the credit is transferred shall be confirmed by SENEX. The purpose of this requirement is to ensure that students who were granted credits can also be considered for cum laude awards by the University.
5. Credits will only be recorded on the student's academic history by the AGC once approved by SENEX.
6. In all instances the total number of credits awarded shall not exceed 50% of the number of subjects/courses in the programme.
7. All credits accumulated in respect of incomplete qualifications shall only be valid for a maximum of ten years.



Course Information

MINIMUM ADMISSION REQUIREMENTS

A National Senior Certificate (NSC), as certified by Umalusi, with an achievement rating of 3 (moderate achievement: 40 – 49%) or better in four recognised NSC 20-credit subjects, and an achievement rating of 2 for Mathematics or Mathematical Literacy, and an achievement rating of 3 in the required official language at Home Language level, and an achievement rating of 2 in the other required language on at least First Additional Language level; one of these languages shall be English or Afrikaans.

Specific minimum requirements of a course (subjects required/recommended, achievement rating, portfolio to be submitted, interview in Cape Town or experience required) are indicated below. All candidates who comply with the minimum requirements are still subject to selection procedures.

Rating

For easy reference, the scale of achievement for the National Curriculum Statement Grades 10 – 12 (General) is given below.

Rating Code	Rating	Marks %
7	Outstanding achievement	80-100
6	Meritorious achievement	70-79
5	Substantial achievement	60-69
4	Adequate achievement	50-59
3	Moderate achievement	40-49
2	Elementary achievement	30-39
1	Not achieved	0-29

ABBREVIATIONS

OF DESIGNATED NATIONAL SENIOR CERTIFICATE SUBJECTS used in the following pages (where a rating will be supplied, e.g. M4 for Mathematics rating 4)

GROUP A: COMPULSORY NSC SUBJECTS

LANGUAGES (20 credits each)

Two official languages at Home and First Additional Language level:

- A = Afrikaans Home Language OR Afrikaans First Additional Language
- E = English Home Language OR English First Additional Language
- AE = Afrikaans or English, Home or First additional language
- FAL = First additional language AND
- HL = Home Language (Any two of: Afrikaans, English, IsiNdebele, IsiXhosa, IsiZulu, Sepedi, Sesotho, Setswana, SiSwati, Tshivenda or Xitsonga)

MATHEMATICAL SCIENCES (20 credits each)

- M = Mathematics
- ML = Mathematical Literacy

HUMAN AND SOCIAL STUDIES (10 credits)

- LO = Life Orientation

GROUP B: RECOGNISED NSC ELECTIVES

AGRICULTURE (20 credits each)

- AMP = Agricultural Management Practices
- AS = Agricultural Science
- AT = Agricultural Technology

CULTURE AND ARTS (20 credits each)

- DANCE = Dance Studies
- DES = Design
- DRAMA = Dramatic Arts
- MUS = Music

VA = Visual Arts

BUSINESS, COMMERCE AND MANAGEMENT STUDIES (20 credits each)

ACC = Accounting

BUS = Business Studies

ECON = Economics

ENGINEERING AND TECHNOLOGY (20 credits each)

CIVT = Civil Technology

ELECT = Electrical Technology

MECHT = Mechanical Technology

EGD = Engineering Graphics and Design

HUMAN AND SOCIAL STUDIES (20 credits each)

GEO = Geography

HIS = History

RELS = Religion Studies

PHYSICAL, MATHEMATICAL, COMPUTER AND LIFE SCIENCES (20 credits each)

CAT = Computer Applications Technology

IT = Information Technology

LS = Life Sciences

PS = Physical Sciences

SERVICES (20 credits each)

CS = Consumer Studies

HS = Hospitality Studies

TOUR = Tourism

FACULTY OF APPLIED SCIENCES MINIMUM REQUIREMENTS

Required/recommended subjects and ratings

Agricultural Management	Required: AE4, M3 or ML5 Also required: one of the following: LS4, PS4, AS4 and one of the following: GEO3, LS3, PS3, AMP3, ECON3, AS3, AT3
Agriculture (Animal Production, Crop Production or Viticulture and Oenology)	Required: AE3, M3 Also required: one of the following: LS4, PS4, and one of the following: GEO3, IS3, PS3 AS3, ECON3
Analytical Chemistry	Required: E3, M4, PS4 Recommended: one of the following: IS3, ECON3, IT3, AS3, GEO3, ACC3
Biotechnology	Required: E4, M4, PS4, LS4
Consumer Science: Food and nutrition	Required: E4, M3 or ML4, LS4 or PS4
Environmental Health/ Management	Required: E4, M3 or ML4, LS3, PS3
Food Technology	Required: E4, M4, PS4 Recommended: BUS4, LS4, IT4, MECHT4, EGD4, AS4, CS4
Horticulture	Required: E3, M3 or ML5 Also required: one of the following: PS3, LS3 and two of the following: IS3, PS3, ACC3, AS3, BUS3, ECON3, EGD3, GEO3, IT3, VA3
Landscape Technology	Required: E3, M3 or ML5 Also required: one of the following: PS3, LS3 and two of the following: IS3, PS3, ACC3, BUS3, ECON3, AS3, GEO3, EGD3, IT3, VA3
Mathematical Technology	Required: E3, M4 Also required: one of the following: PS4, BUS4, ECON4, ACC4 and two of the following: LS3, GEO3, EGD3, AS3, IT3
Nature Conservation	Required: E4, M3 or ML5, LS4 Also required: two of the following: AS3, GEO3, IT3, HS3
Marine Sciences	Required: E4, M4, PS4, LS4 Also required: any of the following: AS3, GEO3, IT3

FACULTY ACADEMIC STAFF

NAME	POSITION	QUALIFICATIONS
Prof OS Fatoki	Dean	BSc, MSc, PhD (Chem)
Prof VI Hugo	Assistant Dean	BSc, BScHons, DTech, PhD (Chem)
Dr TZ Maqutu	Coordinator: Curriculum & Academic Development	BSc (Ed) MSc (Chem Ed), DEd
Dr S Nelana	Faculty Research Coordinator	BSc, BSc (Hons), MSc (UWC), PhD (UJ) Certificate in Higher Education Management (Wits)
Dr BO Opeolu	Faculty ECP Coordinator Faculty WIL Coordinator	B Env Man and Toxicology (B.EMT)M Sc, PhD (Env Tox)
Dr L Reddy	Faculty WIL Coordinator	BSc, MMed Sc, DTech (Biotech)

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Dr F Lewu	Head of Department	021 864 5217	021 864 5217	LewuF@cput.ac.za
Ms A Bollitye	Administrative Assistant	021 864 5217	021 864 5217	BollityeA@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Dr F. Lewu	PhD (Botany)
Senior Lecturer	
Dr FS Lategan	D Tech Agriculture
Lecturers	
Dr M Fanadzo	PhD (Crop Science)
Mrs MJ Hall	BSc Hons
Mr B Saaiman	MSc (Agricultural Extension)
Dr E Hough	PhD (Agricultural Economics)
Ms A Schmulian	MSc (Agriculture)
Ms H Theron	MSc (Agriculture)

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDAGRC	ND: Agriculture	Wellington	3	1 Year
Undergrad	National Diploma	NDAGRM	ND: Agricultural Management	Wellington	3	1 Year
Postgrad	Baccalaureus Technologiae	BTAGRC	BTech: Agriculture	Wellington	1	
Postgrad	Magister Technologiae	MTAGRR	MTech: Agriculture	Wellington	1	

NATIONAL DIPLOMA: AGRICULTURAL MANAGEMENT

Duration: Full-time: Three years, including Work Integrated Learning. For further information, please contact the Department of Agriculture directly.

Venue: Wellington Campus

Course Aim

The course is structured to provide career-oriented education in order to prepare students for employment in the management-related sector of the agricultural industry. The course equips the student with the skills and techniques necessary for the analysis of agricultural production systems and the solving of agricultural management, technical and related problems in a variety of industries.

Purpose and rationale of the qualification

The purpose of this programme is to provide the industry with people who have the required technical knowledge and managerial competencies to manage agricultural enterprises effectively as part of a production team. Graduates will be able to solve problems regarding financial planning, business management and human resource management within an agricultural context.

Career opportunities

Graduates follow career paths in organised agriculture, including agricultural corporations, agricultural development institutions, the Department of Agriculture, agricultural input suppliers and production units.

Admission requirements

For the minimum admission requirements, see admission requirements.

Professional registration

This qualification is not registered at any professional body.

NATIONAL DIPLOMA: AGRICULTURAL MANAGEMENT SUBJECTS

Agricultural Calculations 1

Pre-requisites: None

Course outline: This subject includes basic numeracy and calculation competencies required of a professional in the field of agriculture.

Assessment: All assessments are compulsory.

Agricultural Engineering 1

Pre-requisites: None

Course outline: Students must be able to know, understand and recommend various components used in agricultural systems, manage systems such as irrigation systems, drainage systems, cooling in greenhouses and hydroponic systems in greenhouses and do irrigation scheduling and calibration of spraying equipment.

Assessment: All assessments are compulsory.

Agricultural Law 2

Pre-requisites: None

Course outline: This subject attempts to provide the student with the necessary knowledge and skills regarding common law, social legislation, labour relations and other legislation relevant to agricultural enterprises. The process of legislation, labour law applicable to agriculture, contract law, relevant agricultural laws, the agricultural transformation process and the contribution of agriculture to economic development are also included.

Assessment: All assessments are compulsory.

Agricultural Marketing Management 1

Pre-requisites: Agricultural Marketing Management 1

Course outline: This subject introduces the business world and the place of agricultural management, the main economic systems, agriculture in the market economy, nature of business management, the establishment and management of an agricultural enterprise and entrepreneurship to the student.

Assessment: All assessments are compulsory.

Agricultural Marketing Management 2

Pre-requisites: Agricultural Marketing Management 1

Course outline: Introduction to agricultural marketing management, evolution of marketing thought, the marketing concept, components of the marketing process, market research, consumer behaviour, market segmentation, target market selection and positioning of agricultural products by the correct use of marketing mix.

Assessment: All assessments are compulsory.

Agricultural Marketing Management 3

Pre-requisites: Agricultural Marketing Management 2

Course outline: This subject discusses the financial analysis, planning and control, financing and investment related to the correct pricing of farm products and the enhancement of financial management of the farming enterprises.

Assessment: All assessments are compulsory.

Agricultural Practice 3 (WIL year)

Pre-requisites: All subjects during the first four semesters

Course outline: The third year of both diploma programmes is dedicated to experiential learning. CPUT's Department of Agriculture utilises the project-based modality of the Work Integrated Learning methodology, whereby students are placed in industry at approved agricultural businesses to gain experience and prove their ability to integrate theory with practice. The course is structured, monitored and assessed to meet the desired exit level outcomes of both the diploma programmes. Learning is focused on the overall management of an agricultural business, including aspects such as:

- the natural and business environment wherein the business is operated
- production processes and systems
- the labour practice implemented in the business
- the prevailing management information system in the business.

Students do comprehensive academic assignments on the above-mentioned aspects and have to be able to evaluate and discuss the overall functioning of the business critically. At the end of the year the final assessment is done by means of an oral examination.

Assessment: All assessments are compulsory.

Agricultural Production & Operational Techniques 1

Pre-requisites: None

Course outline: This subject deals primarily with operations management, product planning and design, fixed and variable capacity planning, transportation methods, demand management, aggregate planning and master scheduling and operations scheduling.

Assessment: All assessments are compulsory.

Agricultural Production & Operational Techniques 2

Pre-requisites: Agricultural Production & Operational Techniques 1

Course outline: This subject deals primarily with project management, total quality, inventory management, work study as management tool and productivity.

Assessment: All assessments are compulsory.

Agricultural Production Management 2

Pre-requisites: None

Course outline: This subject strives to develop the knowledge and skills of students to demonstrate the capital requirements, financing policy, the right to use land, the management of farm machinery and buildings and the investment of funds related to farming enterprises.

Assessment: All assessments are compulsory.

Agricultural Soil Science 1

Pre-requisites: None

Course outline: Students must understand the influence of soil characteristics such as soil texture on soil nutrition, be able to use soil analysis results to make recommendations regarding soil improvement practices, and design a fertilisation programme based on the interpretation of the soil analysis results.

Assessment: All assessments are compulsory.

Agricultural Soil Science 2

Pre-requisites: Agricultural Soil Science 1

Course outline: Students must understand the influence of soil characteristics such as soil structure on a soil's agricultural potential, as well as the relationship between the characteristics of the sub-soil layers of the various soil forms in a landscape and a soil's agricultural potential. They must be able to use this information to make recommendations regarding soil preparation and suitability of soils for irrigation purposes.

Assessment: All assessments are compulsory.

Human Resource Management: Agriculture 2

Pre-requisites: None

Course outline: This subject deals with human resources management and labour relations in the agricultural environment. In this subject students develop relevant knowledge and skills to deal with staffing and retention of people, behavioural aspects of employees (management as well as employees), group and organisational empowerment through interventions and strategic human resources management.

Assessment: All assessments are compulsory.

Livestock Production 1

Pre-requisites: None

Course outline: This course is an introduction to Livestock Ecology. In this subject students develop thematic knowledge applicable to farm animals, in the context of beef production. They become familiar with important terminology and are introduced to the field of farm animal management. The systems approach to understanding subject content is followed.

Assessment: All assessments are compulsory.

Livestock Production 2

Pre-requisites: Livestock Production 1

Course outline: This course deals with the theory of applied small stock production (including goat, sheep and angora livestock production systems). Students are expected to be able to manage all aspects of a small stock unit in the Western Cape and theory is based on practices of farmers in the surrounding area.

Assessment: All assessments are compulsory.

Livestock Production 3

Pre-requisites: Livestock Production 2

Course outline: This subject covers milk hygiene and dairy cow management. This entails primary milk production in the Western Cape. The first section of the course pertains to the composition and production of milk, while the second section is focused on management of the dairy cow over the period of the lactation/gestation cycle. The latter includes proper nutrition, disease management, housing, bedding systems, behavioural management and reproductive management. Students are exposed to a holistic approach to dairy production.

Assessment: All assessments are compulsory.

Pasture Science 1

Pre-requisites: None

Course outline: This subject focuses on the study of natural and planted pastures and how this underpins good animal management. The emphasis is always placed on the management of natural plant communities for sustainability and erosion prevention. Holistic and integrated feed flow plans are discussed, as well as correct cultivar choice for the Western Cape biome, including grasses and legume species.

Assessment: All assessments are compulsory.

Plant Production 1

Pre-requisites: None

Course outline: Students are taught to base the cultivation practices used in crop production on an understanding of the correlation between these practices and basic anatomical and morphological characteristics of plants, as well as the physiological processes in plants.

Assessment: All assessments are compulsory.

Plant Production 2

Pre-requisites: Plant Production 1

Course outline: The course introduces students to the general principles of crop production in South Africa, with special reference to the Western Cape. The module is divided into four sections: (1) Introduction to Horticultural principles, (2) Olericulture (Vegetable production), (3) Pomology (Fruit and nut production) and (4) Grain production. Topics covered include (1) definition of horticulture, difference between agriculture and horticulture, branches of horticulture, horticultural classifications, the market chain for fresh horticultural products, protected cropping; (2) classification of vegetable crops, principles of vegetable production (production cycle), capital investment, production management for a selection of important vegetable crops (cucurbits and cole crops); (3) reasons why fruit production is a unique part of horticulture, classification of fruit crops, criteria to be considered in site selection, principles of fruit production, guidelines for making planting holes, phases of fruit development, thinning and pruning, physiological maturity and ripening; (4) overview of the South African grain industry, production of maize and wheat as the two most important grain crops in South Africa (production areas and general agronomy), soil tillage (conventional versus conservation tillage).

Assessment: All assessments are compulsory.

Plant Production 3

Pre-requisites: Plant Production 2

Course outline: This is a general, comprehensive introduction to crop protection. The module covers the three main components of crop protection: plant pathology (the study of plant diseases, causes, management and control), entomology (the study of insects, their biology, management and control) and weed science. The objective is to give students a working knowledge of pest management and control in crop production. Topics include definitions of disease, insect pests and weeds; economic importance of plant disease, insects and weeds; classification of diseases, insects and weeds; causes of biotic and abiotic diseases; biology and ecology of plant pathogens, insect pests and weeds; and management and control of plant diseases, insect pests and weeds. The practical classes give students a working knowledge of the major problem disease symptoms, insect feeding, identification and control, as well as herbicide use and calibration of spraying equipment.

Assessment: All assessments are compulsory.

NATIONAL DIPLOMA: AGRICULTURE

Duration: Full-time: Three years, including Work Integrated Learning. For further information, please contact the Department of Agriculture directly.

Venue: Wellington Campus

Course Aim

The course is structured to provide career-oriented education in order to prepare students for employment in the agricultural sector. The aim of the course is to train students in the latest agricultural techniques within the context of a specific specialisation field (fruit production; agronomy; viticulture; oenology or livestock production).

Purpose and rationale of the qualification

The purpose of this programme is to provide industry with agricultural and extension practitioners that are able to apply technical knowledge, practical competencies and appropriate extension and scientific communication skills in operating agricultural production units effectively as part of a production and/or advisory team. Graduates will be able to define, conceptualise and develop basic solutions for problems of limited complexity relating to agricultural production systems and human relations.

Career opportunities

Graduates follow career paths in agricultural research, extension, quality control, production and marketing. All of these are applicable in a wide variety of farming, research, agricultural input and marketing industries.

Admission requirements

For the minimum admission requirements, see admission requirements.

Professional registration

This qualification is not registered with any professional body.

NATIONAL DIPLOMA: AGRICULTURE SUBJECTS

(in alphabetical order)

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Agricultural Calculations 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Agricultural Economics & Marketing 1

Pre-requisites: None

Course outline: This subject addresses the concept of macro and micro economics, how prices and quantities exchanged are determined by supply and demand, the supply and demand for labour, the various functions of money in the economy and monetary and fiscal policies.

Assessment: All assessments are compulsory.

Agricultural Economics & Marketing 2

Pre-requisites: Agricultural Economics & Marketing 1

Course outline: This subject introduces agricultural marketing management; agricultural marketing; components, concept and the process; the market of agricultural products by using marketing mix, market instruments and segmentation for the positioning of agricultural products in the market.

Assessment: All assessments are compulsory.

Agricultural Economics & Marketing 3

Pre-requisites: Agricultural Economics & Marketing 2

Course outline: This subject covers the financial analysis, planning and control, financing and investment related to farming enterprises. It develops the knowledge and skills of students to demonstrate the capital requirements, financing policy, the right to use land, the management of farm machinery and buildings and the investment of funds related to farming enterprises.

Assessment: All assessments are compulsory.

Agricultural Engineering 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Agricultural Extension 1

Pre-requisites: None

Course outline: The purpose of this module is to facilitate the learning process for the students to understand and to gain basic skills in: the basic philosophy of agricultural extension; the role and concepts of agricultural extension in agricultural development; the basic concepts, role and importance of communication in agricultural extension and rural development; and the adoption and diffusion of innovations in farming communities

Assessment: All assessments are compulsory.

Agricultural Extension 2

Pre-requisites: Agricultural Extension 1

Course outline: The purpose of this module is to facilitate the learning process for students to understand and gain insight into the human problems experienced in extension and rural development, including aspects of rural sociology, group dynamics, leadership development and adult education.

Assessment: All assessments are compulsory.

Agricultural Extension 3

Pre-requisites: Agricultural Extension 2

Course outline: Through this module the student will acquire a functional knowledge of the human behavioural aspects of agricultural production and its associated decision-making processes. This module also facilitates the learning process for students to equip them with knowledge and understanding of and insight into the planning, implementation, monitoring and evaluation of agricultural extension and rural development projects and programmes.

Assessment: All assessments are compulsory.

Agricultural Practice 3 (WIL year)

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Agricultural Soil Science 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Agricultural Soil Science 2

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects These sessions are aimed at preparing the individual for post-graduation through an increased focus on business start-up activities, spanning across legislative requirements, key financial concepts and operations management. The continuous assessments include class tests, individual and group assignments as well as presentations. The activities are designed to cultivate critical thinking around the interactive relationship between business and design, as well as to engage the student in retrospective personal development.

Assessment: All assessments are compulsory.

Animal Nutrition 1

Pre-requisites: None

Course outline: During this course an analytical approach is taken to the study of ruminant nutrition. Students learn the dynamics of digestion, the nutrient content of different feeds found in the Western Cape, the nutrient requirements of different ruminant animal classes and how to formulate a ration to feed animals in different production stages

Assessment: All assessments are compulsory.

Biometry 1

Pre-requisites: None

Course outline: This subject is an introductory course in Research Methodology, including the analysis and interpretation of data.

Assessment: All assessments are compulsory.

Crop Protection 1

Pre-requisites: None

Course outline: This is a general, comprehensive introduction to Plant Pathology. The module focuses on plant diseases, causes, management and control. The topics covered include definition of disease, importance of plant diseases, classification of plant diseases, disease diagnosis, biotic versus abiotic diseases with examples, pathogen survival and dispersal of plant parasites, the infection process, disease measurement, epidemiology and disease management. The practical classes give students a working knowledge of the major symptoms of plant disease.

Assessment: All assessments are compulsory.

Crop Protection 2

Pre-requisites: Crop Protection 1

Course outline: Also called Entomology, the subject is a comprehensive introduction to insect biology and management. The topics covered include morphology, classification, development, physiology, ecology, principles of control, toxicology of insecticides and the biology of the major economic pests in South Africa. Practical classes give students a working knowledge of the major orders of insects, species of economic importance, principles of collection, preservation and identification. Students conduct a project involving the collection and presentation of a small sample of insects.

Assessment: All assessments are compulsory.

Crop Protection 3

Pre-requisites: Crop Protection 2

Course outline: This subject covers principles of weed ecology and biology as well as weed management and control. The topics covered include definition of a weed, common problem weeds, characteristics of weeds, classification, economic importance of weeds, reproduction in weeds, weed ecology, weed-crop interactions, weed management and control, classification of herbicides and an introduction to integrated weed management (IWM). Students do a herbarium project and practical classes that will give them a working knowledge of the major problem weeds, identification, classification and control.

Assessment: All assessments are compulsory.

Fruit Production 2

Pre-requisites: None

Course outline: Students must understand aspects of the deciduous fruit tree such as cold requirement, bud development, flowering and fruit development and be able to apply practices such as thinning, picking readiness, post-harvest handling and cooling to manipulate the fruit tree for higher yields of a better quality fruit.

Assessment: All assessments are compulsory.

Fruit Production 3

Pre-requisites: Fruit Production 2

Course outline: Students must understand how to establish and manipulate an orchard, plant young trees, train, prune, fertilise, irrigate and spray deciduous fruit trees with chemicals in order to ensure the highest possible yield of the best possible quality over the longest period of time at the lowest cost.

Assessment: All assessments are compulsory.

Livestock Production 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Livestock Production 2

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Livestock Production 3

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Oenology 1

Pre-requisites: None

Course outline: The history of wine, grape components, berry growth and ripening, the basic winemaking process, with emphasis on specific actions performed when respectively making red and white table wines. malolactic degradation; usage of wood and wood products during winemaking; the Wine of Origin scheme and the certification process including wine evaluation. The various methods of colour extraction, the role of SO₂ and calculation of SO₂-dosages are discussed.

Assessment: All assessments are compulsory.

Oenology 2

Pre-requisites: Oenology 1

Course outline: Practical winemaking techniques and sensorial evaluation, introductory wine chemistry and standard laboratory analyses and calculations, fining agents, wine stabilisation techniques, alcoholic fermentation and factors affecting it, causes, effects and prevention of stuck fermentation, malolactic fermentation (MLF) and the factors affecting it, the making of various wine styles, the necessary calculations regarding the use of fining agents, SO₂, spirits during fortification and grape concentrate when making sweeter wines.

Assessment: All assessments are compulsory.

Oenology 3

Pre-requisites: Oenology 2

Course outline: The principles and application of the IPW scheme, management of cellar waste water, the basic principles of occupational health and safety, most important old and new world wine producing countries, oxygen usage during winemaking, the causes and prevention of spoiled and faulty wines, quality management in the cellar, identification and management of problem fermentations, the SAWIS (South African Wine Industry Information and Systems) documentation system.

Assessment: All assessments are compulsory.

Pasture Science 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Plant Production 1

Pre-requisites: See details under National Diploma: Agricultural Management Subjects

Course outline: See details under National Diploma: Agricultural Management Subjects

Assessment: All assessments are compulsory.

Vegetable Production 1

Pre-requisites: None

Course outline: This subject covers principles and methods of vegetable production, drawing information from relevant disciplines in crop production, such as Crop Protection and Agricultural Soil Science.

Assessment: All assessments are compulsory.

Viticulture 2

Pre-requisites: None

Course outline: Origin, description, identification and cultivation properties of most important rootstock and wine grape cultivars, principles of site analysis and cultivar choice, basic grapevine anatomy, morphology and physiology; concepts of bud dormancy and fertility, grapevine vegetative growth and phenology, reproductive growth and ripening, translocation patterns of photosynthetates in grapevine canopies and factors contributing to the size and quality of the yield.

Assessment: All assessments are compulsory.

Viticulture 3

Pre-requisites: Viticulture 2

Course outline: Improvement of grapevine material, vegetative propagation and nursery practices, trellising systems, vine spacing, planting and development of young vines, winter pruning and canopy management with reference to grapevine anatomy, morphology and physiology, organic farming and weed control.

Assessment: All assessments are compulsory.

B TECH: AGRICULTURE

Duration: Full-time: One year

Venue: Wellington Campus

Course Aim

The course is structured to provide career-oriented education in order to prepare students for higher-level employment in the agricultural sector. Graduates will be conversant with the latest agricultural techniques within the context of a specific specialisation field (fruit production; agronomy; viticulture; oenology or livestock production).

Purpose and rationale of the qualification

The purpose of this programme is to provide industry with agricultural and extension practitioners that are able to apply technical knowledge, practical competencies and appropriate extension and scientific communication skills in operating agricultural production units effectively as part of a production and/or advisory team. Graduates will be able to define, conceptualise and develop solutions for complex problems relating to agricultural production systems and human relations.

Career opportunities

Graduates will be able to follow career paths in organised agricultural research, e.g. agricultural corporations, agricultural development institutions, the Department of Agriculture, agricultural input suppliers, production units, agricultural regulatory services, importers and exporters of agricultural produce.

Admission requirements

A National Diploma in Agriculture or an equivalent qualification on NQF level 6 is required. Agricultural Extension 3 and a pass mark of 60 % in the field of specialisation on exit level of the National Diploma: Agriculture are required for admission.

Professional registration

This qualification is not registered at any professional body.

BACCALAUREUS TECHNOLOGIAE: AGRICULTURE SUBJECTS

(in alphabetical order)

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Agricultural Communication 1

Pre-requisites:

Course outline: This course is aimed at equipping senior students who are about to enter the workplace with a “toolkit” that will enable them to communicate effectively in the work environment. Upon completion of the course students will understand the communication process, categories of communication, why communication is important in the workplace and barriers to communication. They will also have studied the theory of behaviour change, how communication can be utilised in persuasion, promotional communication and the art of effective writing. Through practical sessions, students are also trained in public speaking.

Assessment: All assessments are compulsory.

Agricultural Extension 4

Pre-requisites:

Course outline: This course equips students to identify and describe a typical agricultural problem on a farm or within a rural community, do a comprehensive physical and human conceptualisation of the problem, formulate objectives for an extension programme to solve the problem, design a programme of activities (work plan) with a timeframe and budget to be executed, and design applicable evaluation methods to assess the effectiveness and impact of the extension programme. The extension programme must be documented in a report for submission.

Assessment: All assessments are compulsory.

Animal Production 4

Pre-requisites:

Course outline: Students must identify a researchable problem in the area of Animal Science which includes the subdivisions of reproduction, breeding, nutrition and pasture management, niche production systems, or disease management. Students must complete a comprehensive literature review, compose a research protocol in which the research problem is outlined and choose a suitable methodology (surveys, case studies, questionnaires and interviews) to complete the research. Results are discussed critically and submitted as part of the final project report at the end of the year.

Assessment: All assessments are compulsory.

Crop Production 4

Pre-requisites:

Course outline: The aim of this subject is to deepen and broaden the knowledge of the student in the specialist area of choice. Students also need to write a research report (based on a literature study and/or data collected), which will expose them to research principles and writing and start to prepare them for doing a Masters degree. They should identify a research topic and write a research proposal, conduct a scientific literature search and write a scientific literature review with correct usage of citations, use/collect data and present it in a scientific appropriate manner and base their discussion and conclusions on logical links made between own data/findings and published literature discussed in review. Overall, students should demonstrate autonomy of learning in the specialist area of preference.

Assessment: All assessments are compulsory.

Research Methodology 1

Pre-requisites:

Course outline: The aim of this subject is to introduce students to the basic principles of scientific research and the research cycle. After completion of this course, students should be able to write a project proposal for a research topic of their choice. This includes the formulation of the problem statement, deciding on the methods of data collection and analysis as well as the critical evaluation and discussion of the results based on a complete literature study, using the accepted style of scientific writing.

Assessment: All assessments are compulsory.

BACCALAUREUS TECHNOLOGIAE: AGRICULTURE SUBJECTS

(in alphabetical order)

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Agricultural Communication 1

Pre-requisites:

Course outline: This course is aimed at equipping senior students who are about to enter the workplace with a “toolkit” that will enable them to communicate effectively in the work environment. Upon completion of the course students will understand the communication process, categories of communication, why communication is important in the workplace and barriers to communication. They will also have studied the theory of behaviour change, how communication can be utilised in persuasion, promotional communication and the art of effective writing. Through practical sessions, students are also trained in public speaking.

Assessment: All assessments are compulsory.

Agricultural Extension 4

Pre-requisites:

Course outline: This course equips students to identify and describe a typical agricultural problem on a farm or within a rural community, do a comprehensive physical and human conceptualisation of the problem, formulate objectives for an extension programme to solve the problem, design a programme of activities (work plan) with a timeframe and budget to be executed, and design applicable evaluation methods to assess the effectiveness and impact of the extension programme. The extension programme must be documented in a report for submission.

Assessment: All assessments are compulsory.

Animal Production 4

Pre-requisites:

Course outline: Students must identify a researchable problem in the area of Animal Science which includes the subdivisions of reproduction, breeding, nutrition and pasture management, niche production systems, or disease management. Students must complete a comprehensive literature review, compose a research protocol in which the research problem is outlined and choose a suitable methodology (surveys, case studies, questionnaires and interviews) to complete the research. Results are discussed critically and submitted as part of the final project report at the end of the year.

Assessment: All assessments are compulsory.

Crop Production 4

Pre-requisites:

Course outline: The aim of this subject is to deepen and broaden the knowledge of the student in the specialist area of choice. Students also need to write a research report (based on a literature study and/or data collected), which will expose them to research principles and writing and start to prepare them for doing a Masters degree. They should identify a research topic and write a research proposal, conduct a scientific literature search and write a scientific literature review with correct usage of citations, use/collect data and present it in a scientific appropriate manner and base their discussion and conclusions on logical links made between own data/findings and published literature discussed in review. Overall, students should demonstrate autonomy of learning in the specialist area of preference.

Assessment: All assessments are compulsory.

Research Methodology 1

Pre-requisites:

Course outline: The aim of this subject is to introduce students to the basic principles of scientific research and the research cycle. After completion of this course, students should be able to write a project proposal for a research topic of their choice. This includes the formulation of the problem statement, deciding on the methods of data collection and analysis as well as the critical evaluation and discussion of the results based on a complete literature study, using the accepted style of scientific writing.

Assessment: All assessments are compulsory.

NATIONAL DIPLOMA: AGRICULTURE

QUALIFICATION CODE: NDAGRC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	PO100S	Plant Production1	C		5	12	0.100	Continuous	Yes
1	1 st Sem	AAY100S	Agric. Anatomy & Physiology 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	AEC100S	Agricultural Economics 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	VPR100S	Vegetable Production 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	CRO100S	Crop Protection 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	SSC100S	Soil Science 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	AGT100S	Agricultural Extension 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	AMR200S	Agricultural Marketing 2	C	AEC100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	AGA100S	Agricultural Mechanization 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	BID100S	Biometry 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	CRO200S	Crop Protection 2	C	CRO100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	SLS200S	Soil Surveys 2	C	SSC100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	ANU200S	Animal Nutrition 2	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	OEN100S	Oenology 1	C		6	12	0.100	Continuous	Yes
2	1 st Sem	AGT200S	Agricultural Extension 2	C	AGT100S	6	12	0.100	Continuous	Yes
2	1 st Sem	BID200S	Biometry 2	C	BID100S	6	12	0.100	Continuous	Yes
2	1 st Sem	CRO300S	Crop Protection 2	C	CRO200S	6	12	0.100	Continuous	Yes
2	1 st Sem	FON200S	Fruit Production 2	C	AGB100S	6	12	0.100	Continuous	Yes
2	1 st Sem	SML200S	Small Stock Production 2	C	AAY100S	6	12	0.100	Continuous	Yes
2	1 st Sem	VIT200S	Viticulture	C		6	12	0.100	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	OEN200S	Oenology 2	C	OEN100S	6	12	0.100	Continuous	Yes
2	2 nd Sem	AGT300S	Agricultural Extension 3	C	AGT200S	6	12	0.100	Continuous	Yes
2	2 nd Sem	AGR300S	Agric. Production Management 3	C	AMR200S	6	12	0.100	Continuous	Yes
2	2 nd Sem	FON300S	Fruit Production 3	C	FON200S	6	12	0.100	Continuous	Yes
2	2 nd Sem	CDP100S	Cultivated Pastures 1	C		6	12	0.100	Continuous	Yes
2	2 nd Sem	SML300S	Small Stock Production 3	C	SML200S	6	12	0.100	Continuous	Yes
2	2 nd Sem	ACS100S	Agricultural Calculations 1	C		6	12	0.100	Continuous	Yes
2	2 nd Sem	VIT300S	Viticulture 3	C	VIT200S	6	12	0.100	Continuous	Yes
2	2 nd Sem	OEN300S	Oenology 3	C	OEN200S	6	12	0.100	Continuous	Yes
3	1 st Sem	AUM100S	Agricultural Production Techniques 1	C		6	60	0.500	Continuous	Project
3	2 nd Sem	AUM200S	Agricultural Production Techniques 2	C		6	60	0.500	Continuous	Project

BACCALAUREUS TECHNOLOGIAE: AGRICULTURE QUALIFICATION CODE: BTAGRC

4	Year	EXB400S	Extension Bridging	C		7	30	0.250	Continuous	Yes
4	Year	AGN100S	Agricultural Communication 1	C		7	30	0.250	Continuous	Yes
4	Year	ALE400S	Agricultural Extension 4	C		7	30	0.250	Continuous	Yes
4	Year	REA100S	Research Methodology	C		7	30	0.250	Continuous	Yes
4	Year	CPN400S	Crop Production 4	E		7	30	0.250	Continuous	Yes
4	Year	ANI400S	Animal Production 4	E		7	30	0.250	Continuous	Yes

MAGISTERTECHNOLOGIAE: AGRICULTURE

QUALIFICATION CODE: MTAGRR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5069	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

NATIONAL DIPLOMA: AGRICULTURE MANAGEMENT

QUALIFICATION CODE: NDAGR M

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	PPO100S	Plant Production 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	AGM100S	Agricultural Management 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	ASC100S	Agricultural Soil Science 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	KOR100S	Computer Skills 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	ANP100S	Animal Production 1	C		6	9.96	0.083	Continuous	Yes
1	2 nd Sem	PAF100S	Pasture Science 1	C		6	9.96	0.083	Continuous	Yes
1	2 nd Sem	AGM200S	Agricultural Management 2	C	AGM100S	6	9.96	0.083	Continuous	Yes
1	2 nd Sem	PML100S	Personnel Man: Agriculture 2	C		6	24	0.200	Continuous	Yes
1	2 nd Sem	CAG200S	Computer Applications: Agric 2	C	KOR100S	6	9.96	0.083	Continuous	Yes
1	2 nd Sem	SCL200S	Soil Classification 2	C	ASC100S	6	9.96	0.083	Continuous	Yes
2	1 st Sem	PRQ100S	Prod. & Operational Tech 1	C		6	9.96	0.083	Continuous	Yes
2	1 st Sem	AGR200S	Agric. Production Management 2	C		6	12	0.100	Continuous	Yes
2	1 st Sem	AGL100S	Agricultural Law 1	C		6	24	0.200	Continuous	Yes
2	1 st Sem	PPO200S	Plant Production 2	C	PPO100S	6	9.96	0.083	Continuous	Yes
2	1 st Sem	ANP200S	Animal Production 2	C	ANP100S	6	9.96	0.083	Continuous	Yes
2	2 nd Sem	APQ200S	Agric. Production Techniques 2	C		6	12	0.100	Continuous	Yes
2	2 nd Sem	AGM300S	Agricultural Management 3	C	AGM200S	6	24	0.200	Continuous	Yes
2	2 nd Sem	ANP300S	Animal Production 3	C	ANP200S	6	24	0.200	Continuous	Yes
2	2 nd Sem	PPO300S	Plant Production 3	C	PPO200S	6	24	0.200	Continuous	Yes
2	2 nd Sem	AEG100S	Agricultural Engineering 1	C		6	24	0.200	Continuous	Yes
3	YEAR	ARC300S	Agricultural Practice 3	C		6	96	0.800	Continuous	Project

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Dr S Crafford	Head of Department	021 460 3433	021 460 3193	CraffordS@cput.ac.za
Ms N Mfayana	Administrative Assistant	021 460 3186	021 460 3854	MfayanaN@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Dr S Crafford	B Home Econ, B Home Econ Hons, Dip Ed, M Dip Tech, PhD
Senior Lecturer	
Ms LD du Toit	B Home Econ, NHD, B Ed, M Tech
Dr AM Opperman	BSc (Diet), MSc, (Nutrition), PhD (RDSA)
Dr I Venter	BA, B Ed, B Hons, M Ed (Psych)
Dr VA Jackson	BSc, BSc Hons, MSc (Microbiology), D Tech (Biomedical Technology)
Dr M Nakhoda	BSc, BSc Hons, MSc, PhD
Lecturers	
Ms LC April	BA, B Ed, B Hons, M Ed (Psych)
Ms EC Hinrichsen-Swart	ND, NHD, B Tech
Wesley Clarence	BA, M (Business Administration)
Ms Rache Hanekom	B Home Eco, M Tech
Dr SKO Ntwampe	Eng D, HDET, MSDAIChe, MWISA
Dr V Okudoh	ND, B Tech Hons, MSc, PGCE, PhD

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDBIOT	ND: Biotechnology	Cape Town	3	1 Year
Undergrad	National Diploma	NDCSFN	ND: Consumer Science: Food & Nutrition	Cape Town	3	5 Months
Postgrad	Baccalaureus Technologiae	BTCSFN	BTech: Consumer Science: Food & Nutrition	Cape Town	1	
Postgrad	Magister Technologiae	MTCSFR	MTech: Consumer Science: Food & Nutrition	Cape Town	2	

NATIONAL DIPLOMA: BIOTECHNOLOGY

Duration: Full-time: Three years, including Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Cape Town Campus

Course Aim

The course is structured to provide diplomats who are competent in theoretical, applied and general skills across a variety of scientific and technology disciplines. During the first and second semester students acquire broad insights into the microbiological and biochemical underpinnings of biotechnology. During the third and fourth semester the focus of teaching and training is on in-depth theoretical and practical knowledge in microbial biochemistry, molecular biology, fermentation technology and bioprocessing fields. Graduates may apply for registration with the South African Council for Natural Scientific Professions as Certificated Natural Scientists. Research-orientated graduates are facilitated to achieve higher qualifications and play a role in the development, production and analysis of biotechnology-important products in the bioprocessing/biomanufacturing industries.

Purpose and rationale of the qualification

Biotechnology is one of the most rapidly expanding sciences internationally. This diploma presents an intensive series of courses (theory and practice) that will produce a qualified biotechnologist equipped with the necessary skills required to embark on a successful career in biotechnology at both academic and industrial levels. In addition to a wide variety of fermentation and molecular techniques, the students will also be familiarised with ethics and basic business principles. The training is primarily in the field of microbial biotechnology, but during their integrated work learning experience, students may be exposed to eukaryotic biotechnology.

Career opportunities

Graduates may be employed in production and quality control sections in the bioprocessing/biomanufacturing industries where they may play a role in the development, production and analysis of biotechnology-important products. Graduates may also be employed as technicians in both teaching and research institutions. Research-orientated graduates are facilitated to achieve higher qualifications.

Admission requirements

Minimum admission requirements are NSC level 4 passes in English, Mathematics, Life Sciences and Physical Sciences.

Professional registration

This qualification is not registered at any professional body.

NATIONAL DIPLOMA SUBJECTS: BIOTECHNOLOGY

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

* FISA: Final Integrated Summative Assessment

Sanitation, Safety and Hygiene I (credit value: 0,110)

Pre-requisites:

Course outline: Topics covered are laboratory safety, safe storage and handling of chemicals, first aid, safety legislation and reporting, cleaning and sanitising raw materials and equipment, chemical cleansers and sanitisers, classification of biological hazards, monitoring of factory contamination, SABS methods and associated legislation. Good personal hygiene practice, GMP, GLP, GCPm QA principles and procedures, SOP writing, validation methodology, validation study design, industrial safety practices, safety audits, environmental regulations, including waste disposal and environmental health and safety are also covered.

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Mathematics I (credit value: 0,080)

Pre-requisites:

Course outline: Calculus, statistics, mathematical modelling, trending analysis, sampling techniques, calibration techniques, sensitivity of analyses, logarithms, exponents and graphs

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Physics I (credit value: 0,120)

Pre-requisites:

Course outline: Theory: introduction, mechanics and fluids, molecular and matter, including heat, optics, waves, current electricity, batteries, Emf and circuits, electrical energy and power, atomic physics, radioactivity, sound, electromagnetism

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Chemistry 1 (Credit value: 0.120)

Pre-requisites:

Course outline: Inorganic: matter, atomic structure, Periodic Table, chemical bonding, composition, equations and stoichiometry, gases, liquids and solids, solutions, chemical equilibrium, acids, bases and salts, oxidation and reduction, electrochemistry. Organic: carbon structures, functional groups, kinds of organic reactions, hydrocarbons, classification, nomenclature and reactions of alkanes, cycloalkanes, alkenes, alkynes, haloalkanes, aromatic compounds, alcohols and phenols, ethers, aldehydes and ketones, carboxylic acids, amides and amines

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Microbiology I (credit value: 0,150)

Pre-requisites:

Course outline: Microbial diversity: bacteria, protozoa, fungi, algae, viruses, microbial growth and culture techniques, microscopy, staining techniques, sterilisation, disinfection and control, enumeration of bacteria and fungi

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Biochemistry II (credit value: 0,130)

Pre-requisites:

Course outline: Structure and reactivity of carbohydrates, lipids, proteins, nucleic acids, as well as the analysis of the above including centrifugation, kjeldhal, uv and vis spectroscopy, qualitative methods

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)

FISA mark (40%): 1 x 3 hours

Disease and Immune Response II (credit value: 0,125)

Pre-requisites:

Course outline: Introduction to immunology, cells of the immune system, tissues of the immune system, antibody structure, antibody function, T cell receptors and MHC, the complement system, the immune response, immunopathology

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Analytical Chemistry: Biological II (credit value: 0.130)

Pre-requisites:

Course outline: Acid base theory, acid base titrations, volumetric analysis, gravimetric analysis, compleximetric analysis, precipitation titrations, redox titrations, separation techniques, chromatography

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Microbiology II (credit value: 0,130)

Pre-requisites:

Course outline: Stock culture, preservation, physical and chemical factors affecting microbial growth, microbial ecology, viruses, introduction to bacterial structure, introduction to fungal structure, pathogen testing, introduction to molecular biology and recombinant DNA technology

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and Assignments (40%)
FISA mark (40%): 1 x 3 hours

Process Technology and Management I (credit value: 0,110)

Pre-requisites:

Course outline: Introduction to general management, communication and interpersonal skills, transcultural management, business courses/workshops, business/technical writing and communication, business economics, teamwork principles/practices, supervisory skills, project management, regulatory, legal & IP affairs, relative laws to biotechnology, patent laws and procedures

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Fermentation Technology II (credit value: 0,125)

Pre-requisites:

Course outline: Isolation of micro-organisms, primary and secondary screening, inoculation and production of media, sterilisation of media, inoculum development, batch and continuous cultures, transfer criteria, sterility and aseptic conditions, stirred aerated tank reactor design, other types of reactors, instrumentation, product recovery, fermentation economics

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments etc. (40%)
FISA mark (40%): 1 x 3 hours

Microbial Biochemistry III (credit value: 0,125)

Pre-requisites:

Course outline: Fermentation, respiration, chemolithotrophs and chemoheterotrophs, photoautotrophs and photoheterotrophs, nitrogen fixation, protein metabolism, carbohydrate metabolism, lipid metabolism, biological regulation in the above pathways

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Food Microbiology III (credit value: 0,140)

Pre-requisites:

Course outline: Section 1: Major bacterial and fungal groups, microbial food spoilage, groups of microbes important in the food, food-borne diseases, detection of microbes in foods, control of microbes in foods, hazard analysis and critical control points (HACCP) and associated platelet-rich plasma (PRPs)
Section 2: Viruses and prions, the viral genome, viral reproduction, culture and purification, viruses of bacteria and archaea, virusoids, HIV

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Bioprocessing III (credit value: 0,125)

Pre-requisites:

Course outline: Products of fermentation technology (fermented foods and beverages, amino acids, solvents, organic acids, vitamins, antibiotics, single cell protein, baker's yeast), biotransformation, enzyme technology, domestic and industrial wastewater treatment including legislation and treatment processes of activated sludge, biofilters, anaerobic digestion, oxidation ponds, biotechnology in agriculture, animal and plant cell culture, safety in biotechnology

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Microbiology: Biological III (credit value: 0,125)

Pre-requisites:

Course outline: Structure and function of prokaryotic cells, classification and identification of bacteria, industrially significant bacteria and fungi, microbial genetics, introduction to recombinant DNA, molecular biology techniques, basics of bioinformatics

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Analytical Biochemistry III (credit value: 0,130)

Pre-requisites:

Course outline: The separation of small and macromolecules on both the analytical and preparative levels using techniques such as high performance liquid chromatography (HPLC), microbore HPLC, gas liquid chromatography (GLC), capillary electrophoresis, and 2D electrophoresis, including DNA, RNA and protein isolation and separation techniques, chromatography (column, polar, gas, liquid), spectrophotometry (infra red, uv, vis), spectroscopy, polarimetry and refractometry

Assessment: Continuous

Course mark (60%): Theory tests (60%), practical and assignments (40%)
FISA mark (40%): 1 x 3 hours

Biotechnology Industry Practice 1 and 2 (Credit value 0.5 + 0.5)

Students have to demonstrate the ability to function in a variety of biotechnology-related sectors using the core practical skills covered in year 1 and 2 of the Diploma(Workplace learning)

Assessment: Continuous, with final mark based on WIL report and Project report

NATIONAL DIPLOMA: BIOTECHNOLOGY

QUALIFICATION CODE: NDBIOT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CHE108M	Chemistry 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	CHE108B	Chemistry 1 – Practical (Module B)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	CHE108A	Chemistry 1 – Theory (Module A)	C		6	12.6	0.105	Continuous	Yes
1	1 st Sem	SSH100M	Sanitation, Safety And Hygiene 1	C		6	0	0.000	Continuous	Yes
1	1 st Sem	SSH100A	Sanitation And Hygiene (Module A)	C		6	9.6	0.080	Continous	Yes
1	1 st Sem	SSH100B	Computer Skills: Word (Mod B)	C		6	1.8	0.015	Continuous	Yes
1	1 st Sem	SSH100C	Com Skills: Power Point (Mod C)	C		6	1.8	0.015	Continuous	Yes
1	1 st Sem	WIS102S	Mathematics 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	PHB106S	Physics 1	C		6	14.4	0.120	Continuous	Yes
1	2 nd Sem	BIG201S	Biochemistry 2	C	CHE10SA/ CHE108B	6	15.6	0.130	Continuous	Yes
1	2 nd Sem	ACL201S	Analytical Chemistry:Biological 2	C	CHE10SA/ CHE108B	6	15.6	0.130	Continuous	Yes
1	2 nd Sem	DMI200S	Disease And Immune Response 2	C		6	15	0.125	Continuous	Yes
1	2 nd Sem	MIY103S	Microbiology 1	C	CHE10SA/ CHE108B	6	18	0.150	Continuous	Yes
2	1 st Sem	MBC300S	Microbial Biochemistry 3	C	BIG201/ MIY103S	6	15	0.125	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	MIY202S	Microbiology 2	C	MIY103S	6	15.6	0.130	Continuous	Yes
2	1 st Sem	PTA100S	Process Technology & Man 1	C		6	13.2	0.110	Continuous	Yes
2	1 st Sem	FER200S	Fermentation Technology 2	C	MIY103S/ WIS102S	6	15	0.125	Continuous	Yes
2	2 nd Sem	FMG301S	Food Microbiology 3	C	MIY103S/ MIY202S	6	16.8	0.140	Continuous	Yes
2	2 nd Sem	ANB300S	Analytical Biochemistry 3	C	BIG201S/ ACL201S	6	15	0.125	Continuous	Yes
2	2 nd Sem	MMB300S	Microbiology: Biological 3	C	MIY103S/ MIY202S	6	15	0.125	Continuous	Yes
2	2 nd Sem	BOP300S	Bioprocessing 3	C	FER200S	6	15	0.125	Continuous	Yes
3	Year	EXB100S	Biotechnology: Industry Practical 1	C	All S3 Subjects Passed	6	60	0.500	Continuous	Project
3	Year	EXB200S	Biotechnology: Industry Practical 1	C	All S3 Subjects Passed	6	60	0.500	Continuous	Project

NATIONAL DIPLOMA: BIOTECHNOLOGY

QUALIFICATION CODE: NDBIOT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CHE108M	Chemistry 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	CHE108B	Chemistry 1 – Practical (Module B)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	CHE108A	Chemistry 1 – Theory (Module A)	C		6	12.6	0.105	Continuous	Yes
1	1 st Sem	SSH100M	Sanitation, Safety And Hygiene 1	C		6	0	0.000	Continuous	Yes
1	1 st Sem	SSH100A	Sanitation And Hygiene (Module A)	C		6	9.6	0.080	Continous	Yes
1	1 st Sem	SSH100B	Computer Skills: Word (Mod B)	C		6	1.8	0.015	Continuous	Yes
1	1 st Sem	SSH100C	Com Skills: Power Point (Mod C)	C		6	1.8	0.015	Continuous	Yes
1	1 st Sem	WIS102S	Mathematics 1	C		6	9.96	0.083	Continuous	Yes
1	1 st Sem	PHB106S	Physics 1	C		6	14.4	0.120	Continuous	Yes
1	2 nd Sem	BIG201S	Biochemistry 2	C	CHE10SA/ CHE108B	6	15.6	0.130	Continuous	Yes
1	2 nd Sem	ACL201S	Analytical Chemistry:Biological 2	C	CHE10SA/ CHE108B	6	15.6	0.130	Continuous	Yes
1	2 nd Sem	DMI200S	Disease And Immune Response 2	C		6	15	0.125	Continuous	Yes
1	2 nd Sem	MIY103S	Microbiology 1	C	CHE10SA/ CHE108B	6	18	0.150	Continuous	Yes
2	1 st Sem	MBC300S	Microbial Biochemistry 3	C	BIG201/ MIY103S	6	15	0.125	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1st Sem	MIY202S	Microbiology 2	C	MIY103S	6	15.6	0.130	Continuous	Yes
2	1st Sem	PTA100S	Process Technology & Man 1	C		6	13.2	0.110	Continuous	Yes
2	1st Sem	FER200S	Fermentation Technology 2	C	MIY103S/ WIS102S	6	15	0.125	Continuous	Yes
2	2nd Sem	FMG301S	Food Microbiology 3	C	MIY103S/ MIY202S	6	16.8	0.140	Continuous	Yes
2	2nd Sem	ANB300S	Analytical Biochemistry 3	C	BIG201S/ ACL201S	6	15	0.125	Continuous	Yes
2	2nd Sem	MMB300S	Microbiology: Biological 3	C	MIY103S/ MIY202S	6	15	0.125	Continuous	Yes
2	2nd Sem	BOP300S	Bioprocessing 3	C	FER200S	6	15	0.125	Continuous	Yes
3	Year	EXB100S	Biotechnology: Industry Practical 1	C	All S3 Subjects Passed	6	60	0.500	Continuous	Project
3	Year	EXB200S	Biotechnology: Industry Practical 1	C	All S3 Subjects Passed	6	60	0.500	Continuous	Project

NATIONAL DIPLOMA: CONSUMER SCIENCE: FOOD AND NUTRITION

Duration: Full-time: Three years, including five months Workplace-based Learning/Work Integrated Learning (WIL)

Venue: Cape Town Campus

Course Aim

The purpose of the National Diploma in Consumer Science: Food and Nutrition is to deliver graduates who would be able to combine science-based food and nutrition knowledge and culinary skills in fresh convenience food production, food retail and food service with the aim of promoting consumer well-being.

Purpose and rationale of the qualification

Consumers are becoming more aware of the relationship between lifestyle choices and health and the fresh food industry is addressing consumer concerns in this regard. Access to healthy and safe food is also high on the national agenda, leading to a need for qualified graduates with a sound knowledge of both food and nutrition.

This course is unique in its integration of the study fields of food and nutrition and theoretical learning is complemented by the development of culinary skills.

Career opportunities

This programme offers a wide range of career destinations in the fresh convenience food production, food retail and food service industries. Former students are working in test kitchens: formulating and developing recipes for food production, training employees in retail and food production companies, implementing quality control systems, advising consumers on food and nutrition products, managing the preparation and production of convenience food products, supervising food retail departments and managing food service facilities. Students also have the background to become entrepreneurs as the knowledge and skills needed to start an own business is developed by combining business subjects with food and nutrition knowledge and culinary skills.

Admission requirements

For the minimum admission requirements, see admission requirements.

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

YEAR I

Food and Food Science 1

Pre-requisites: None

Course outline: The course consists of a theoretical and practical component. In the theory, food science principles are studied. Focus is on the composition, structure and properties of the following food products: foods of plant origin (cereals, grains, fruit, vegetables, legumes) and foods of animal origin (eggs, dairy, meat, poultry and fish). The physical and chemical reactions, interactions and outcomes that occur during storage, preparation and cooking are studied. In the practical, food science principles and processes are applied in small-scale food production, incorporating the development of culinary skills.

Assessment: All assessments are compulsory.

Nutrition 1

Pre-requisites: None

Course outline: Introduces human nutrition and helps students to understand the role of food in the maintenance of health. It also includes the way the body handles nutrients, their functions, requirements and dietary sources. It is divided into macronutrients (carbohydrates, lipids and proteins), micronutrients (vitamins, minerals and water), energy and food and nutrition guides (e.g. Food Group Guide, MyPyramid and Food-based Dietary Guidelines).

Assessment: All assessments are compulsory.

Applied Sciences 1

Pre-requisites: None

Course outline: The subject consists of three modules: The Physics component deals with measurements, optics and electricity. Foundation Inorganic Chemistry involves the study of matter, acids, bases and salts with some solution chemistry and strengths. The basic chemical principles are applied to the food processing environment. The Biochemistry module begins with the basics of organic chemistry, with emphasis on major functional groups, before dealing with carbohydrates, lipids, proteins, enzymes and DNA macro-molecules. Practical sessions focus on measurements, acids and pH plus laboratory tests on proteins, sugars and carbohydrates.

Assessment: All assessments are compulsory.

Physiology: Food 1

Pre-requisites: None

Course outline: The aim is to give students a basic understanding of the human body, cells, tissues, organs and systems. The course covers nine major systems, namely: skeletal system, digestive system, blood, cardiovascular system, respiratory system, lymphatic system, endocrine system, urinary system and nervous system. Students are required to know terminologies, functions, structures and locations within these systems.

Assessment: All assessments are compulsory.

Consumer Behaviour 1

Pre-requisites: None

Course outline: The course was designed to provide students with a theoretical, practical and managerial understanding of consumer behaviour within the context of South Africa. Students will be exposed to the differences between consumer groups by understanding their purchasing patterns and an infinite number of other major factors that all contribute to the diversity of consumer behaviour within this landscape.

Assessment: All assessments are compulsory.

Communication 1

Pre-requisites: None

Course outline: Computer basics, the internet and the World Wide Web, introduction to presentations, introduction to word-processing, file management, Microsoft excel, databases

Assessment: All assessments are compulsory.

YEAR II

Food and Food Science 2

Pre-requisites: Food and Food Science 1

Course outline: Consists of a theoretical and practical component. In the theory of food the focus is on the composition, structure and properties of selected food products: baked products, confectionary, preservation and processing. The physical and chemical reactions, interactions and outcomes that occur during storage, preparation and cooking/baking are studied. In the practical application food science principles and processes are applied in small-scale food production, with the emphasis on experimentation and the development of advanced culinary skills.

Assessment: All assessments are compulsory.

Nutrition 2

Pre-requisites: Nutrition 1

Course outline: The nutritional needs and dietary practices required for the maintenance and promotion of wellness throughout the life cycle are studied. Nutritional status assessment, allergies and intolerances and weight management are included. In addition, world food and nutrition problems and South African food choices and dietary habits are studied. Practical application: meal and menu planning

Assessment: All assessments are compulsory.

Food Communication 2

Pre-requisites: None

Course outline: The focus is on the development of communication skills through food-related educational and promotional presentations and demonstrations using appropriate media to support the information. Students are also made aware of food trends and food personalities nationally and internationally. Sales promotion is used as a short-term tactic to boost sales within an organisation. It enables students to promote products and increase sales within the food industry.

Assessment: All assessments are compulsory.

Food Production Management 1

Pre-requisites: None

Course outline: Students explore the conceptualisation planning and execution of various interior spaces, identify a strong branding/corporate identity and develop functional, aesthetic and hazard-free interior spaces that fulfil the needs of their occupants, and resolve their concepts into practical solutions by investigating available construction methods, materials and finishes and building services

Assessment: All assessments are compulsory.

Business Management I

Pre-requisites: None

Course outline: The course features the application of management techniques and skills within the business environment. This component is structured to provide an understanding of management through a critical lens, illustrating the interdisciplinary nature of management sciences. In addition, the course enables students to apply the functions of any enterprise, namely marketing, finance, human resources and production.

Assessment: All assessments are compulsory.

Food Microbiology 1

Pre-requisites: None

Course outline: The classification, identification and growth of micro-organisms are studied. Attention is given to fermentation systems, food spoilage and food-borne disease. Personal, operational and environmental hygiene, and legislation form the background to food safety systems, i.e. hazard analysis and critical control points (HACCP).

Assessment: All assessments are compulsory.

YEAR III

Food and Food Science 3

Pre-requisites: Food and Food Science 2

Course outline: The course consists of a theoretical and practical component. In the theory new trends and processes in the food industry, the theory of recipe development, food additives, packaging and food legislation are studied. In addition, food within a cultural perspective is studied focusing on South African eating habits. Food safety systems and the principles of sensory evaluation are emphasised. In the practical application food science principles, processes and culinary skills are applied in recipe development for small-scale food production with the emphasis on fresh, convenience food products.

Assessment: All assessments are compulsory.

Nutrition 3

Pre-requisites: Nutrition 2

Course outline: Students study food choices, dietary eating habits and eating patterns within the South African context, including world food and nutrition problems. The practical application of the subject focuses on meal and menu planning for specific chronic lifestyle diseases. Students also study alternative feeding practices, food labeling and legislation and food and nutrition misconceptions, faddism and quackery.

Assessment: All assessments are compulsory.

Food Communication 3

Pre-requisites: Food Communication 2

Course outline: The course consists of three components: Copywriting (any commercial writing or construct created which are aimed at influencing and changing consumer behaviour) enables students to employ effective cross-medium, cross-promotional copywriting principles, given the complexities of different audience requirements. Public relations involve the planning and management of relationships between an organisation and everyone whom the organisation needs to succeed, enabling students to facilitate effective organisational communication within the food industry. Visual merchandising involves stimulating a customer to purchase products by influencing sensory characteristics. It enables students to display the merchandise and brand of organisations in the food retail industry.

Assessment: All assessments are compulsory.

Workplace Relations 1

Pre-requisites: None

Course outline: The module aims to provide students with an understanding of human behaviour and to assist them to apply this knowledge effectively in the workplace. It includes the following: Self-management, interpersonal relationships (handling stress, conflict and cultural diversity) and ethics and behaviour in the workplace. The practical application includes: Compiling a CV, applying for a position, preparing for an interview.

Assessment: All assessments are compulsory.

Food Practice 2 (Workplace-based Learning/WIL)

Pre-requisites: Food and Food Science 3, Nutrition 3, Food Communication 3, Workplace Relations 1

The aim of Workplace-based Learning is to give the student, through exposure and guidance, the opportunity to familiarise him/herself with a specific food industry sector, namely, fresh food production, food retail or food service. Knowledge and skills gained are applied. Personal characteristics such as responsibility and accountability, carrying out tasks with confidence, participating in effective problem solving and operating effectively in a team relationship are emphasised.

Assessment: In all subjects a system of continuous assessment comprising regular formative and summative assessment opportunities is used. Formative assessments take place during the process of teaching and learning and have as its purpose the development of students' abilities. Summative assessment is used to determine if the subject learning outcomes have been achieved. Subject content, based on outcomes, is divided into learning modules. Each learning module is assessed by two or more moderated, summative assessment opportunities (e.g. theory tests, practical tests, individual assignments, group projects, etc.). Students not achieving 50% for a learning module will be given one additional assessment opportunity to reach 50%.

BACCALAUREUS TECHNOLOGIAE (B TECH) CONSUMER SCIENCE: FOOD AND NUTRITION

Duration: Full-time: One year
Part-time: Two years

Venue: Cape Town Campus

Course Aim

The aim of the B Tech in Consumer Science: Food and Nutrition is to deliver graduates who would be able to develop food products based on knowledge of food science principles, food product development theory and practice and sound nutritional concepts.

Purpose and rationale of the qualification

The purpose is to enhance the quality of life of the consumer. Graduates will be able to work as part of a food and nutrition research team applying the principles of research methodology in a food or food-related field.

Career opportunities

Former students are employed as food product developers, product/technical representatives, food promotion consultants and positions in food research and development. Further career prospects are similar to those of the National Diploma but with better opportunities for advancement in research and managerial positions.

Admission requirements

For the minimum admission requirements, see admission requirements.

B TECH SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Food and Food Science 4

Pre-requisites: Food and Food Science 3

Course outline: The theory of product development, with specific emphasis on sensory evaluation, is studied. Quality management systems are also emphasised.

Assessment: All assessments are compulsory.

Nutrition 4

Pre-requisites: Nutrition 3

Course outline: The subject covers specific nutrient deficiencies that affect the South African population, considering the impact on health status and potential strategies to reduce the development of nutrient deficiencies. It also focuses on bioactive food ingredients usage to reduce the risk of non-communicable diseases and specific dietary-related disorders.

Assessment: All assessments are compulsory.

Research Methodology: Natural Sciences

Pre-requisites: None

Course outline: The basic principles of research are covered to equip students with the ability to plan and undertake a research project, collect and analyse data and apply a scientific style of writing in the presentation of research..

Assessment: All assessments are compulsory.

Food and Nutrition Project 4

Pre-requisites: Research Methodology: Natural Sciences, Food and Food Science 3 and Nutrition 3

Course outline: Students undertake a food/food-related research project individually or in groups under guidance in the field of consumer science: food and nutrition.

Assessment: All assessments are compulsory.

Marketing 1

Pre-requisites: None

Course outline: The fundamentals of marketing are introduced.

Assessment: All assessments are compulsory.

Assessment: In all subjects a system of continuous assessment comprising regular formative and summative assessment opportunities is used. Formative assessments take place during the process of teaching and learning and have as its purpose the development of students' abilities. Summative assessment is used to determine if the subject learning outcomes have been achieved. Subject content, based on outcomes, is divided into learning modules. Each learning module is assessed by two or more moderated, summative assessment opportunities (e.g. theory tests, practical tests, individual assignments, group projects, etc.). Students not achieving 50% for a learning module will be given one additional assessment opportunity to reach 50%.

The teaching and learning strategy of the B Tech year is mainly focused on facilitated independent self-study, self-directed learning of standard texts and references, contact teaching and mentoring. Assignments and projects, accompanied by class presentations of the individual and structured group work, are the major assessment procedures.

NATIONAL DIPLOMA CONSUMER SCIENCE: FOOD AND NUTRITION

QUALIFICATION CODE: NDCSFN

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NOF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	Year	COM101S	Communication 1	C		6	18	0,150	Continuous	Yes
1	Year	FAH100S	Food And Food Science 1	C		6	36	0,300	Continuous	Yes
1	Year	NUT100S	Nutrition 1	C		6	12	0,100	Continuous	Yes
1	Year	PHA100S	Applied Sciences 1	C		6	18	0,150	Continuous	Yes
1	Year	KOR101S	Computer Skills 1	C		6	12	0,100	Continuous	Yes
1	Year	FIV100S	Physiology: Food 1	C		6	12	0,100	Continuous	Yes
2	Year	BMA100S	Business Management 1	C		6	12	0,100	Continuous	Yes
2	Year	FAH200S	Food And Food Science 2	C	FAH100S	6	36	0,300	Continuous	Yes
2	Year	FOD200S	Food Communication 2	C		6	18	0,150	Continuous	Yes
2	Year	NUT200S	Nutrition 2	C	NUT100S	6	13.2	0,110	Continuous	Yes
2	Year	FOM100S	Food Microbiology 1	C		6	10.8	0,090	Continuous	Yes
2	Year	VDT100S	Food Production Management 1	C		6	30	0,250	Continuous	Yes
1	Year	COU100S	Consumer Behavior 1	C		6	12	0,100	Continuous	Yes
3	Sem 1	FAH300S	Food And Food Science 3	C	FAH200S	6	36	0,300	Continuous	Yes
3	Sem 1	BSF100S	Workplace Relations 1	C		6	13.2	0,110	Continuous	Yes
3	Sem 1	FOD300S	Food Communication 3	C	FOD200S	6	18	0,150	Continuous	Yes
3	Sem 1	NUT300S	Nutrition 3	C	NUT200S	6	22.8	0,190	Continuous	Yes
3	Sem 2	FDP200S	Food Practice 2	C		6	30	0,250	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE CONSUMER SCIENCE: FOOD AND NUTRITION

QUALIFICATION CODE: BTCSFN

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	MAK100S	Marketing 1	C		7	12	0.100	Continuous	Yes
4	Year	FNP400S	Food And Nutrition Project 4	C		7	36	0.300	Continuous	Yes
4	Year	RMN200S	Research Methodology: Natural Sciences 1	C		7	12	0.100	Continuous	Yes
4	Year	FAH400S	Food And Food Science 4	C	FAH300S	7	36	0.300	Continuous	Yes
4	Year	NUT400S	Nutrition 4	C	NUT300S	7	24	0.200	Continuous	Yes

MAGISTER TECHNOLOGIAE CONSUMER SCIENCE: FOOD AND NUTRITION

QUALIFICATION CODE: MTCSFR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5032	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Dr JI Kioko	Head of Department	021 460 3213	021 460 3217	Kioko.J@cput.ac.za
Mrs F Adams	Administrative Assistant	021 460 3190	021 460 3217	AdamsF@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Dr JI Kioko	BSc Hons (Forestry), BScHons (Cell Biology), PhD
Associate Professor	
Prof RG Snyman	BSc (Agriculture), BSc Hons (Zoology), MSc (Zoology), PhD (Zoology)
Senior Lecturer	
Dr CA Sparks	BSc (Education), BSc Hons, MSc Zoology, D Tech Environmental Health
Dr S Geerts	BSc, BSc Hons, MSc, PhD
Lecturers	
Dr B McKenzie	BSc, BSc Hons, MSc, PhD
Dr FGT Radloff	BSc (Agriculture), BSc Hons (Wildlife Management), MSc (Mammalogy), PhD (Botany)
Dr R Toefy	BSc (Zoology), HDE, BSc Hons, MSc, PhD
Dr DR Walker	BSc, BSc Hons, HDE, MSc, PhD
Junior Lecturer	
Mr S Ntuli	BSc, BSc Hons, MSc

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDNCNS	ND: Nature Conservation	Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTNCNS	BTech: Nature Conservation	Cape Town	2	
Postgrad	Magister Technologiae	MTNCNR	MTech: Nature Conservation	Cape Town	2	
Undergrad	National Diploma	NDOCNG	ND: Oceanography	Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTOCNG	BTech: Oceanography	Cape Town	2	
Postgrad	Magister Technologiae	MTOCNR	MTech: Oceanography	Cape Town	2	

NATIONAL DIPLOMA: NATURE CONSERVATION

Duration: Full-time: Three years, including one year of Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Cape Town Campus

Course Aim

The aim of this course is to provide students with the skills to succeed in a rapidly-changing nature conservation environment where innovation is key. Graduates are equipped with a comprehensive range of technical, managerial, research, communication and life skills for employment in the field of nature conservation. The ND Nature Conservation lays the foundation for further study towards the B Tech Nature Conservation and ultimately the M Tech Nature Conservation.

Purpose and rationale of the qualification

The purpose of this qualification is to supply the nature conservation industry with people who can competently contribute to the conservation of biodiversity and provide knowledgeable assistance to natural resource managers. The graduates will have the requisite knowledge of the natural environment and its dynamic relationship with humans, various approaches to conservation and sustainable use, and competence in research and monitoring techniques.

Career opportunities

Graduates can pursue careers in the areas of management of natural resources/ protected areas, alien species control, environmental policy compliance, environmental education, research, field guiding, and Ecotourism.

Admission requirements

For the minimum admission requirements, see admission requirements.

English level 4 ($\geq 50\%$); Mathematics level 3 ($\geq 40\%$) OR Mathematical Literacy level 5 ($\geq 60\%$); Life Sciences level 4 ($\geq 50\%$); Two of the following at level 3 ($\geq 40\%$): Physical Sciences/Agricultural Sciences/ Information Technology/Hospitality Studies/Geography.

Professional registration

Not applicable

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Plant Studies 1

Pre-requisites: None

Course outline: Histology: Typical structure of plant cells, with emphasis on the different organelles within them, their structure and function. Internal Morphology (Anatomy): Structures and functions of primary tissues (meristematic tissues); (permanent) simple tissues (sclerenchyma, collenchyma and parenchyma); complex vascular tissues (xylem, phloem and cambium). External Morphology: External structures, functions and modifications of leaves, stems and roots. Physiology: Transpiration and photosynthesis. Systematics of the Plant Kingdom: Plant taxonomy dealing with external structure, life cycles and adaptations to the ecosystem and the ecological importance of bacteria, fungi, bryophytes, ferns and algae

Assessment: All assessments are compulsory; class and practical tests; FISA

Plant Studies 2

Pre-requisites: Plant Studies 1

Course outline: Plant community classification: vegetation community description, classification and principles of botanical surveying; veld evaluation; vegetation monitoring techniques for biodiversity and productivity. Alien invasive plant species: history, conflicts of interest, impacts, legislation and control; fire as a management tool; management of rare and threatened plant species

Assessment: All assessments are compulsory; class and practical tests; herbarium project; FISA

Plant Studies 3

Pre-requisites: Plant Studies 1 & 2

Course outline: Basic computer mathematics, Functions and equations, Trigonometry and Geometry, Quantitative techniques.

Assessment: All assessments are compulsory; class tests and assignments; FISA

Animal Studies 1

Pre-requisites: None

Course outline: History of life: origin of the earth and life on earth, development of the cell and organelles, prokaryotic and eukaryotic cells. Principles of taxonomy and classification: domain, kingdom, phylum; scientific naming system. Evolutionary theory: mutations, variation, natural selection, speciation, Darwin. Review of the Invertebrata: general morphology, feeding, life-cycle and ecology of viruses, bacteria, Archaea, Protista Porifera, Cnidaria, Platyhelminthes, Nematoda/ Aschelminthes, Mollusca, Annelida, Arthropoda, Echinodermata

Assessment: All assessments are compulsory; class and practical tests; FISA

Animal Studies 2

Pre-requisites: Animal Studies 1

Course outline: Origin of Phylum Chordata and evolutionary links to other animal phyla; evolution, anatomy, physiology, reproduction, biology and ecological role of the vertebrate classes: fish, amphibians, reptiles, birds and mammals; identification, description, habitat and conservation status of selected local examples of each vertebrate class

Assessment: All assessments are compulsory; class and practical tests and assignments; FISA

Animal Studies 3

Pre-requisites: Animal Studies 1 & 2

Course outline: The theory and basis of Ethology; predator and prey interactions; territoriality; mating systems; sexual selection; parental care; habitat selection; food habit analyses; plant characteristics and palatability; estimating food consumption; physical features of herbivores; digestibility; selective grazing; limiting competition amongst herbivores; Ecophysiology

Assessment: All assessments are compulsory; class tests and tutorials; FISA

Conservation Ecology 1

Pre-requisites: None

Course outline: Dynamics of natural populations of animals and plants; life table analysis and population growth models; regulation of population size; different life history strategies as adaptations for population persistence; interactions between species in ecological communities; competition between species within trophic levels; predator-prey, parasite host, plant herbivore interactions across trophic levels; communities, food webs as flows of energy and nutrients; ecosystem structure and function

Assessment: All assessments are compulsory; class tests, practical reports and project; FISA

Conservation Ecology 2

Pre-requisites: Conservation Ecology 1

Course outline: The physical environment (light, temperature, water, wind); limiting factors in the ecosystem – adaptations of plant and animals to the environment; community analysis, speciation, species diversity, species niche, habitat fragmentation, meta-populations, co-evolution, commensalism, mutualism and parasitism in terrestrial and marine systems; ecological succession and the role of disturbance; introduction to population genetics, genotype frequency, genetic drift, effective population size, gene flow and natural selection

Assessment: All assessments are compulsory; class tests, projects and practical reports; FISA

Conservation Ecology 3

Pre-requisites: Conservation Ecology 1 & 2

Course outline: Marine ecology: introduction to the marine environment, various marine ecosystems (using South African examples) of rocky shores, sandy beaches, kelp beds, estuaries, the open sea, man and the sea. Functioning of each of the ecosystems and adaptations and examples of organisms in each of these environments. Freshwater ecosystems: lotic and lentic systems – physical structure, nutrient cycling, decomposition, primary production, freshwater decomposers, human threats and effects on functioning. Terrestrial ecology – biomes of the world and the RSA – biomes of the world, major factors responsible for global biome distribution, most prominent biotic and abiotic features of the 8 major biomes of the world, brief introduction to an additional 6 recognised biomes. Biomes, bioregions and vegetation types of South Africa – difference in terminology and classification, major factors responsible for biome distribution and characteristics in South Africa. Biotic and abiotic features as well as status of the 9 biomes comprising spatial distribution, climate, topography and geology, vegetation structure and dynamics, vegetation-animal dynamics, economic uses, conservation status, bioregions

Assessment: All assessments are compulsory; class tests and project; FISA

Resource Management 1

Pre-requisites: None

Course outline: Introduction to the scientific approach and statistics; community structure and analysis; frequency distribution of variables; introduction to descriptive statistics in relation to biological counts; relationships – sampling and analysis, sampling methods, animal counts, comparisons between two samples; population variables and census

Assessment: All assessments are compulsory; class tests, practical and assignments; FISA

Resource Management 2

Pre-requisites: Resource Management 1

Course outline: River management (threats, monitoring and management of rivers). Aquaculture: introduction to aquaculture, species biology, water quality parameters, diversity of systems. Ecotoxicology: types and origins of pollutants, routes of exposure, important terms/concepts used in ecotoxicology (e.g. bioaccumulation), toxic effects, biomarkers and other toxicological endpoints, biomonitoring. Coastal management: Integrated Coastal Management Act, coastal zone assessment, management, pelagic and demersal fisheries, stock assessment, control measures for sustainable fishing. Environmental Impact **Assessment:** legal framework – National Environmental Management Act (NEMA), government regulations and authorities, environmental impact assessment (EIA) process, basic assessment, scoping, full EIA, environmental management plan, monitoring, public participation

Assessment: All assessments are compulsory; class tests, individual and group assignments; FISA.

Resource Management 3

Pre-requisites: Resource Management 1 & 2

Course outline: Biodiversity: components, composition, structure and function. Wildlife management: the philosophy of wildlife management, decision making in wildlife/game farm management, principles of adaptive management. Protected area planning and management: habitat fragmentation, non-equilibrium vs. equilibrium theory of management, protected area purpose. Ecological considerations: size, heterogeneity and dynamics, landscape context, connectivity, natural and modified landscape elements, buffer zones, anthropological and cultural implications, political and economic constraints, dealing with certain change and uncertain direction. The game farm/ranch industry: history and background, game farm and conservation interface. Wildlife nutrition and carrying capacity: ruminants vs. non-ruminants and consequences for management, classification and identification of grazers, browsers and mixed feeders and consequences for management, food quality difference between graze and browse, carrying capacity, stocking rate, overgrazing and related concepts. Water provision: structures and design of water points, theory of water point placement, the biosphere effect and other impacts. Game census: rationale behind counting, principles of game counting, methods and best practice. Game removal strategies: principles of mechanical and chemical capture, methods and equipment used in game capture, stress-inducing factors during game capture, game harvesting techniques and carcass handling, culling as management option. Infrastructure: factors influencing game fence construction, prerequisites and principles for good game fencing, principles involved in the planning and positioning of roads, advantages and disadvantages of fencing as a management tool. Geographic Information Systems (GIS): maps, map reading and spatial information, Google Earth, site survey/primary data collection, co-ordinate systems, using a Global Positioning System (GPS), fundamentals of GIS, GIS data models, using vector data in ArcGIS, using raster data in ArcGIS, map production using ArcGIS; introduction to quantum GIS – principles and use of free software

Assessment: All assessments are compulsory; class tests, project and practical tests; FISA

Computer Usage 1

Pre-requisites: None

Course outline: Introduction to computers; introduction to MS Office

Assessment: All assessments are compulsory; practical assessments and assignments

Conservation Communication 1

Pre-requisites: None

Course outline: Communication theory; oral presentation skills; small group communication; intercultural communication; reading skills; writing skills; workplace written communication (e.g. referencing); media: exhibits, CVs

Assessment: All assessments are compulsory; class tests, presentations and written assignments; FISA

Conservation Communication 2

Pre-requisites: Conservation Communication 1

Course outline: Environmental education, community and urban conservation, diversity management, field guiding

Assessment: All assessments are compulsory; class tests, presentations and written assignments; FISA

Conservation Development 1

Pre-requisites: None

Course outline: History of humans: evolution from primates, dispersal of humans across the world, history of hunter-gatherer, agrarian and industrial societies and their impacts (with particular reference to the western Cape), origin of the environmental conservation movement. Importance of, and reasons for, biodiversity conservation (intrinsic, aesthetic, cultural and spiritual) and products (medicine, crops, ecosystem, services). Conservation in RSA: biodiversity, biomes, network of protected areas, threats to biodiversity, classification of protected areas, national parks. Conservation in other parts of Africa: protected areas, motivation for proclamation, problems faced by resource managers. International environmental governance: objectives and contribution of international conservation treaties and conventions, e.g. CBD, RAMSAR, IUCN, CITES, TRAFFIC, WWF, WORLD HERITAGE LIST, world conservation strategy

Assessment: All assessments are compulsory; class tests, presentations, reports and assignments; FISA

Soil Science 1

Pre-requisites: None

Course outline: Geomorphology: structure of the earth, plate tectonics, types of rocks, rock cycle and its processes, weathering; soil formation, soil texture, soil structure, nutrient and water retention in soil, CEC and factors affecting it; soil profiles, soil erosion, soil analysis, soil rehabilitation; soil biodiversity; soil erosion; designing, construction and maintenance of hiking trails

Assessment: All assessments are compulsory; class tests, presentations, written assignments and reports; FISA

Conservation Administration 1

Pre-requisites: None

Course outline: Introduction to Labour law: Basic Conditions of Employment Act, individual contract of employment. Effective supervision: effective team building, effective supervision, delegation, case studies from conservation. Law enforcement (compliance): investigation and information gathering, permits and permit compliance, patrols and patrol management, compliance management, administration and understanding the relevant acts, inspections. Project management: introduction to project management, project, programme and portfolio selection, initiating projects, planning projects: integration, scope, time, cost, quality, risk, procurement, human resources, communication, monitoring and control, closing projects

Assessment: All assessments are compulsory; class tests, presentations, written assignments and reports; FISA

Nature conservation Application 1 and 2

Pre-requisites: None

Course outline: Students are expected to work for 10 consecutive months in an appropriate workplace, e.g. protected area, nature conservation orientated farm or industry. During their tenure they need to identify, plan and execute a research project. They also need to expose themselves to, and participate in, activities related to resource management, general administration and maintenance, conservation compliance and conservation communication. The level of involvement must be of such a nature that the student can demonstrate insight and understanding by providing a critical written assessment of the actions executed.

Assessment: All assessments are compulsory, monitoring students' competency and progress. Final Integrated Summative Assessment (FISA) is based on a portfolio of evidence containing: 1) A scientific research report on the research project conducted, 2) Detailed account of the resource management activities conducted, 3) Detailed account of the general administration and maintenance activities conducted, 4) Detailed account of the conservation communication activities conducted, 5) Detailed account of the conservation compliance activities conducted.

NATIONAL DIPLOMA: NATURE CONSERVATION

QUALIFICATION CODE: NDCNS

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CNC100S	Conservation Communication 1	C		6	15	0.125	Continuous	Yes
1	1 st Sem	ANS100S	Animal Studies 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	BOT100S	Plant Studies 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	NCE100S	Conservation Ecology 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	COF100S	Computer Usage 1	C		6	12	0.100	Continuous	Yes
1	2 ND Sem	NCD100S	Conservation Development 1	C		6	12	0.100	Continuous	Yes
1	2 ND Sem	REM100S	Resource Management 1	C		6	12	0.100	Continuous	Yes
1	2 ND Sem	ANS200S	Animal Studies 2	C	ANS100S	6	15	0.125	Continuous	Yes
1	2 ND Sem	BOT200S	Plant Studies 2	C	BOT100S	6	15	0.125	Continuous	Yes
1	2 ND Sem	NCE200S	Conservation Ecology 2	C	NCE100S	6	12	0.100	Continuous	Yes
2	1 st Sem	REM200S	Resource Management 2	C	REM100S	6	15	0.125	Continuous	Yes
2	1 st Sem	NCE300S	Conservation Ecology 3	C	NCE200S	6	15	0.125	Continuous	Yes
2	1 st Sem	SSC101S	Soil Science 1	C		6	12	0.100	Continuous	Yes
2	1 st Sem	BOT300S	Plant Studies 3	C	BOT200S	6	15	0.125	Continuous	Yes
2	2 ND Sem	NCA100S	Conservation Administration 1	C		6	12	0.100	Continuous	Yes
2	2 ND Sem	CNC200S	Conservation Communication 2	C	CNC100S	6	15	0.125	Continuous	Yes
2	2 ND Sem	ANS300S	Animal Studies 3	C	ANS200S	6	15	0.125	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	2 ND Sem	REM300S	Resource Management 3	C	REM200S	6	15	0.125	Continuous	Yes
3	Year	BEW100S	Nature Cons. Application 1	C		6	60	0.500	Continuous	Project
3	Year	BEW200S	Nature Cons. Application 2	C		6	60	0.500	Continuous	Project

BACCALAUREUS TECHNOLOGIAE: NATURE CONSERVATION

QUALIFICATION CODE: BTNCNS

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	BOT400S	Plant Studies 4	C		7	36	0.300	Continuous	Yes
4	Year	REM400S	Resource Management 4	C		7	36	0.300	Continuous	Yes
4	Year	REA101S	Research Methodology 1	C		7	12	0.100	Continuous	Yes
4	Year	BBE100S	Conservation Management 1	C		7	12	0.100	Continuous	Yes
4	Year	BBS100S	Principles of Management 1	C		7	12	0.100	Continuous	Yes
4	Year	KMB100S	Coastal and Marine Management 1	C		7	12	0.100	Continuous	Yes

MAGISTER TECHNOLOGIAE: NATURE CONSERVATION

QUALIFICATION CODE: MTNCR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SACA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5059	Research Project and Dissertation	C		8	240	1.000	Project	Thesis

DIPLOMA MARINE SCIENCE

Duration: Full-time: Three years, including Work Integrated Learning

Venue: Cape Town Campus

Course Aim

This qualification intends to empower students to acquire knowledge, skills, attitudes and values required to operate confidently in the workplace. Graduates will have the requisite levels of theoretical knowledge, understanding and practical proficiency to establish a successful career in the marine and related industries/sectors.

Purpose and rationale of the qualification

Graduates of this qualification will be skilled with competencies in marine science and technology. Applications of theoretical and practical knowledge in marine science impact various aspects of the workplace in business, applied sciences and industries related to the marine sector. Rapid changes in the workplace, where new technologies are embraced for the industry to be more globally competitive, have increased the demand for technical skills where knowledge is applied to processes and operations across a number of marine-based disciplines. The qualification in marine science seeks to bridge the skills gap in the marine sector, and addresses the shortage of marine technicians and conservationists in the country. This qualification helps to forge links between academia on the one hand and

Career opportunities

Graduates in Marine Science can pursue technical careers in climate change, marine aquaculture, oceanography, environmental (marine and coastal) management, fisheries management, marine ecotourism, environmental education, marine pollution control, estuarine management and marine conservation.

Admission requirements

Minimum requirements: Physical Sciences 4, English 4, Mathematics 4, Life Sciences 4

Professional registration

Not applicable

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Marine Science I

Pre-requisites: None

Course outline: Understanding the earth and its environments: An ocean world; history of marine science; the timeline of life on earth; earth structure and plate tectonics; the origin and movement of water on earth between the land, ocean and atmosphere; tidal forces; continental margins and ocean basins; basic concepts of natural hydrologic systems (rivers, lakes, estuaries, ice and groundwater); nutrient cycling; basic seamanship

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Ecology I

Pre-requisites: None

Course outline: Introduction to ecology, components of an ecosystem, energy in the ecosystem, ecological interactions, productivity in the ecosystem, population dynamics

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Communication Skills I

Pre-requisites: None

Course outline: Communication theory, information gathering, non-verbal communication, aural and oral skills, reading and writing skills

Assessment: Continuous: tests, assignments, tutorials

Biomathematics

Pre-requisites: None

Course outline: Mathematical calculations, trigonometry, algebra, graphs, statistical calculations, correlation and regression, probability, calculus

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Computer Skills I

Pre-requisites: None

Course outline: Introduction to computers, computer utilisation (word-processing skills, spreadsheet skills, presentation software), data management

Assessment: Continuous: tests, assignments, tutorials

Marine Biology I

Pre-requisites: None

Course outline: Basic biochemistry, cell biology, genetics, cellular processes, embryogeny, introduction to biodiversity and taxonomy, algae and protists

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Chemistry

Pre-requisites: None

Course outline: Chemical reactivity, REDOX reactions, structure of atoms, chemical bond,; inorganic chemistry, gases, equilibrium, thermodynamics, electrochemistry, organic chemistry, functional group chemistry

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Physics I

Pre-requisites: None

Course outline: Motion and forces, energy, electric fields, magnetic fields, physics and ecology, physics of biofluid mechanics, physics of light and vision

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Ecology II

Pre-requisites: Ecology I

Course outline: Marine habitats, marine communities and systems, ecological processes in marine environments

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Project Management I

Pre-requisites: None

Course outline: Change context, project management fundamentals, change and configuration management, managing people, initial planning for projects, project monitoring and control

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Coastal Management I

Pre-requisites: None

Course outline: Introduction to environmental science, environmental variables, climate change

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Law I

Pre-requisites: None

Course outline: South African Common Law, principles of law, principles of environmental law, local environmental legislation, principles of criminal law

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Aquaculture I

Pre-requisites: None

Course outline: Introduction to aquaculture, including aquaculture operations, managing aquaculture operations, principles, animal physiology, culture systems

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Resource Management I

Pre-requisites: None

Course outline: Fisheries management, fishing policy and regulations, ecosystem approach to fisheries management, regulation of fishing activities, MCS

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Pollution I

Pre-requisites: Marine Chemistry, Ecology I, Biomathematics

Course outline: Assessment of toxicity, biochemical mechanisms of toxicity, effects of toxicity, special subjects in toxicity

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Computer Skills II

Pre-requisites: Computer Skills I

Course outline: Processing, analysis and modelling of data, manipulating data sets, interpretation of data, mapping and other applicable software, MATLAB

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Coastal Management II

Pre-requisites: Coastal management I, Project Management, Marine Law I

Course outline: Environmental issues, principles of environmental impact assessment (EIA), environmental management system (EMS), economic approach to environmental management, risk assessment, environmental auditing, environmental monitoring and performance

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Biology II

Pre-requisites: Marine Biology I

Course outline: Marine invertebrate biology, phytoplankton and zooplankton

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Science II

Pre-requisites: Marine Science I, Marine Physics I, Marine Chemistry I, Biomathematics

Course outline: Ocean currents, physical oceanography, ocean data

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Technology

Pre-requisites: Biomathematics

Course outline: Ocean data, oceanographic equipment, hydrographic mapping, ADCP' fishing equipment technology, ocean measurements

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Ecology III

Pre-requisites: Ecology II, Biomathematics

Course outline: Marine communities, population dynamics of marine communities

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Biology III

Pre-requisites: Marine Biology II

Course outline: Vertebrate biology, marine ecophysiology

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Business Principles

Pre-requisites: None

Course outline: Small business: business administration, enterprise planning and entrepreneurship, start-up, small business operations and problems, personnel supervision, capitalisation and investment, taxation, business law and regulations, e-commerce, home business operations, and applications to marine sectors, products and services.

Assessment: Continuous: theory examination (50%); 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Aquaculture II

Pre-requisites: Marine Aquaculture I

Course outline: Applied marine aquaculture systems, feeding, brood stock, parasitology, System design, setup, maintenance & improvement

Assessment: Continuous: theory examination (50%); 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Law II

Pre-requisites: Marine Law I

Course outline: International law, law of climate change, UNCLOS, fisheries management, NEMA, applicable marine/maritime acts

Assessment: Continuous: theory examination (50%); 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Coastal Management III

Pre-requisites: Coastal management II

Course outline: Applied environmental impact assessment (EIA)

Assessment: All assessments are compulsory.

Marine Science III

Pre-requisites: Marine Science II

Course outline: Remote sensing, application of oceanographic instrumentation, ocean & marine data processing & data processing technology, software & applications thereof

Assessment: Continuous: theory examination (50%): 2 X 25% FSA written examination, tests, assignments, practical assessments, tutorials

Marine Science Industry Practice I

Pre-requisites: Any 2 level 3 subjects; subject to approval from the programme co-ordinator

Students are expected to work for 6 months in an appropriate workplace, i.e. marine protected area, marine company, research institution or laboratory. The techniques utilised at the workplace must be from any one of the following fields: marine aquaculture, marine conservation, marine environmental consultancies, oceanography or marine companies.

Assessment: Project, presentation and oral evaluation

DIPLOMA: MARINE SCIENCE QUALIFICATION CODE: DPMARC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	MAS150S	Marine Science I	C		5	12	0.100	Continuous	Yes
1	1 st Sem	ECL150S	Ecology I	C		5	12	0.100	Continuous	Yes
1	1 st Sem	KOT150S	Communication Skills I	C		5	12	0.100	Continuous	Yes
1	1 st Sem	BMA150S	Biomathematics	C		5	12	0.100	Continuous	Yes
1	1 st Sem	KOR151S	Computer Skills I	C		5	12	0.100	Continuous	Yes
1	2 ND Sem	MAB150S	Marine Biology I	C		5	12	0.100	Continuous	Yes
1	2 ND Sem	MAC150S	Marine Chemistry I	C		5	12	0.100	Continuous	Yes
1	2 ND Sem	MPH150S	Marine Physics I	C		5	12	0.100	Continuous	Yes
1	2 ND Sem	ECL160S	Ecology 2	C	CO: ECL150S	5	12	0.100	Continuous	Yes
1	2 ND Sem	PRM160S	Project Management I	C		5	12	0.100	Continuous	Yes
2	1 st Sem	CSM250S	Coastal Management I	C		5	12	0.100	Continuous	Yes
2	1 st Sem	MAL260S	Marine Law I	C		5	12	0.100	Continuous	Yes
2	1 st Sem	MAQ250S	Marine Aquaculture I	C		5	12	0.100	Continuous	Yes
2	1 st Sem	MRS260S	Marine Resource Man I	C		5	12	0.100	Continuous	Yes
2	1 st Sem	MAP260S	Marine Pollution I	C		5	12	0.100	Continuous	Yes
2	2 ND Sem	KOR260S	Computer Skills 2	C	PRE: KOR151S	6	12	0.100	Continuous	Yes
2	2 ND Sem	CSM260S	Coastal Management 2	C	CO: CSM250S	6	12	0.100	Continuous	Yes
2	2 ND Sem	MAB260S	Marine Biology 2	C	PRE: MAB150S	6	12	0.100	Continuous	Yes
2	2 ND Sem	MAS260S	Marine Science 2	C	PRE: MAS150S	6	12	0.100	Continuous	Yes
2	2 ND Sem	MAT260S	Marine Technology	C	PRE: BMA150S	5	12	0.100	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
3	1 st Sem	ECL370S	Ecology 3	C	PRE: ECL160S	5	15	0.125	Continuous	Yes
3	1 st Sem	MAB370S	Marine Biology 3	C	PRE: MAB260S	7	15	0.125	Continuous	Yes
3	1 st Sem	BUS360S	Business Principles	C		5	12	0.125	Continuous	Yes
3	1 st Sem	MAQ370S	Marine Aquaculture 2	E	PRE: MAQ250S	6	15	0.125	Continuous	Yes
3	1 st Sem	MAL370S	Marine Law 2	E	PRE: MAL260S	6	15	0.125	Continuous	Yes
3	1 st Sem	CSM370S	Coastal Management 3	E	PRE: CSM260S	7	15	0.125	Continuous	Yes
3	1 st Sem	MAS370S	Marine Science 3	E	PRE: MAS260S	7	15	0.125	Continuous	Yes
3	2 ND Sem	MSI360S	Marine Science Indus. Prac I	C	TBC	5	48	0.400	Project	Yes

BACCALAUREUS TECHNOLOGIAE: OCEANOGRAPHY
QUALIFICATION CODE: BTOCNG

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	RMN201S	Research Methodology: Natural Sciences	C		7	18	0.150	Continuous	Yes
4	Year	ECS100S	Economics 1	C		7	15	0.125	Continuous	Yes
4	Year	AMY400S	Applied Marine Biology 4	C		7	45	0.375	Continuous	Yes
4	Year	FIE400S	Fisheries Environment 4	C		7	45	0.375	Continuous	Yes

MAGISTER TECHNOLOGIAE: OCEANOGRAPHY
QUALIFICATION CODE: MTOCNR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5087	Research Project and Dissertation	C		7	240	1.000	Project	Thesis

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Dr BJ Ximba	Head of Department	021 959 6193	021 959 6165	XimbaB@cput.ac.za
Mrs I George	Administrative Assistant	021 460 3174	021 460 3854	GeorgeT@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Dr B J Ximba	MSc, PhD (Chemistry)
Associate Professor	
Dr A Jacobs	BSc, BSc Hons, PhD (Chemistry)
Researcher	
Dr NB Bathori	PhD (Chemistry)
Senior Lecturer	
Dr MC Matoetoe	PhD (Chemistry)
Mrs MM Wicht	BSc, BSc Hons, M Tech (Chemistry)
Lecturers	
Mrs S Adonis	ND (Analytical Chemistry), B Tech (Chemistry), MSc (Chemistry)
Mr LC Anthony	BSc, NHD (Chemistry)
Mr ML Benjamin	BA, BA Hons, University Education Diploma
Mrs AD Jordaan	BSc
Mrs STR le Roux	ND (Analytical Chemistry), NHD (Chemistry), M Tech (Chemistry)
Dr ZA Sam	BSc, BSc Hons, MSc, PhD (Chemistry)
Mr A Solomon	ND (Analytical Chemistry), NHD (Chemistry)
Mr ARL Spies	BSc, B Tech (Chemistry)

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDANCH	ND: Analytical Chemistry	Bellville Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTCHER	BTech: Chemistry	Bellville	1	
Postgrad	Magister Technologiae	MTCHER	MTech: Chemistry	Bellville Cape Town	2	
Postgrad	Doctor Technologiae	DTCHER	DTech: Chemistry	Bellville Cape Town	2	

NATIONAL DIPLOMA: ANALYTICAL CHEMISTRY

QUALIFICATION CODE: NDANCH

Duration: Full-time: Three years, including Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department
Extended programme: Full-time: Four years (the S1 subjects are full-year courses instead of a semester courses)

Venue: Bellville and Cape Town Campus

Course Aim

The course is structured to provide applied analytical chemistry, thus preparing students for technician level of employment in industries, quality control laboratories, research and development laboratories, educational institutions and allied industries' chemical laboratories. The programme lays a foundation in scientific principles, quality assurance, quantitative and qualitative analysis. The ND is a foundation for further study towards a B Tech in analytical chemistry as well as other higher education studies in other related science subjects.

Purpose and rationale of the qualification

This is a broad-based qualification intended to prepare students for supervisory and middle management levels of employment in the chemical laboratory field and for technical and support levels in the chemistry profession. Graduates will be competent to support technicians, supervisors, managers, technologists and chemists.

Career opportunities

Graduates practise as chemical technicians or analysts. Industries such as detergent, petroleum, plastics, food, pharmaceuticals, mining, environment, metallurgy and educational institutions employ graduates from this course. They may be employed in laboratory or production work. Duties include quality control, quality assurance, routine analysis of raw materials, products or environmental samples, preparation of basic chemical compounds, data analysis and rep

Admission requirements

Compulsory: English 4 (E4), Mathematics 4 (M4), Physical Science 4 (PS4)

Recommended: One of the following: Life sciences 4 (LS3), Economics 3 (Econ3), Information technology 3 (IT3),

Professional registration

The ND Analytical Chemistry is accredited by the South African Qualification Authority (SAQA). All ND students can join the South African Chemistry Institute (SACI) free as honorary members and they can become full members of the organisation after successful completion of the Baccalaureus Technologiae (B Tech)(Chemistry).

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

SEMESTER 1 (S1)

Communication Skills (CSK100S)

Pre-requisites: None

Course outline: Academic literacy, information literacy, written communication, spoken communication, small group communication

Assessment: All assessments are compulsory. Assignments and tests

Computer Skills 1 (CPS100S)

Pre-requisites: None

Course outline: Computer basics, the internet and the World Wide Web, introduction to presentations, introduction to word processing, file management, Microsoft Excel, databases

Assessment: All assessments are compulsory; class and practical tests; herbarium project; FISA

Analytical Chemistry 1 (ACH100S)

Pre-requisites: None

Course outline: Introduction to quantitative and qualitative chemical analysis, titrimetric and gravimetric methods, laboratory practice and safety, analysis of real samples, aqueous solution chemistry, introduction to electro analytical chemistry, statistics, sampling and sample handling, decomposing and dissolving samples, solution preparations, measurements conversion

Assessment: All Assessments are compulsory. Tutorials, assignments, tests and FISA

Physics 1 (PHY100S)

Pre-requisites: None

Course outline: Introduction to physics principles: vectors, motion on straight line, Newton's laws, work and energy, impulse and momentum; equilibrium: statics, elasticity, static fluids, heat, temperature and expansion, heat transfer, ideal gas laws and kinetic theory electrostatics, electricity, nature and propagation of light mirrors; lenses, prisms, interferences diffraction of polarisation

Assessment: All assessments are compulsory. Tutorials, assignments, tests, FISA and practical reports

Mathematics 1 (MAT100S)

Pre-requisites: None

Course outline: Trigonometry calculations (data manipulation), algebra, binomial expansion, graphs, differential calculus, integral calculus, complex numbers

Assessment: All assessments are compulsory. Tutorials, assignments, tests and FISA

Chemistry 1 Theory (Module A) (CHE101A)

Pre-requisites: None

Course outline: Fundamentals of chemistry; measurements, moles, reactions, periodic table, equilibrium and electrochemistry; introductory to organic (nomenclature and reactions)

Assessment: All assessments are compulsory. Assignments, tutorials, tests and FISA

Chemistry 1 Practical (Module B) (CHE101B)

Pre-requisites: None

Course outline: Practical and theory on the following: Statistics, techniques in titrations, weighing and solution preparation, titrations, ion identification and report writing

Assessment: Practical tests and weekly practical sessions

Chemistry 1 (Mother subject) (CHE101M)

Pre-requisites: None

Not credit-bearing

Assessment: Chemistry 1, both theory (CHE101A) and Practical (CHE101B), must be passed

SEMESTER 2 (S2)

Analytical Chemistry 2 (ACH200S) & Practical (ACP200S)

Pre-requisites: CHE101M / ACH100S

Course outline: Revision of fundamental calculations concepts, gravimetric concepts and calculations, titrimetric theory and calculations (acid base, precipitation, redox, and complexometric); understanding of acid base equilibrium constants (K_b , K_a , and buffer solutions); polarimetry, refractometry, introduction to separations and chromatography

Assessment: All assessments are compulsory. Tutorials, assignments, tests and FISA

Analytical Chemistry 2 Practical (ACP200S)

Pre-requisites: CHE101M / ACH100S

Course outline: Practical on quantitative analysis using different types of titrimetric methods (acid base, precipitation, redox and complexometric); gravimetric analysis; pH and potentiometric titrations; introduction to apparatus usage: polarimetry; refractometry; thin layer chromatography (TLC) and ion chromatography

Assessment: All assessments are compulsory. Tests and practical reports

Assessment: All assessments are compulsory. Tutorials, assignments, tests and FISA

Inorganic Chemistry 2 (INC200S)

Pre-requisites: CHE101M / ACH100S

Course outline: Advanced theory of chemical bonds, chemical geometry, extraction and uses of selected elements and metals; industrial processing of compounds and descriptive inorganic chemistry

Assessment: All assessments are compulsory. Assignments, tests and FISA

Organic Chemistry 2 (ORG200S)

Pre-requisites: CHE101M / ACH100S

Course outline: Structural features, as well as the physical and chemical properties (reactions) of organic molecules, structural representations, Nucleophiles and electrophiles, nomenclature, and types of reactions for the following compounds: alkynes, alkenes, cycloalkanes, alcohols, phenols, esters, ethers, aromatic compounds, amines and amides

Assessment: All assessments are compulsory. Tutorials, assignments, tests, FISA and practical reports

Physical Chemistry 2 (PCH200S)

Pre-requisites: CHE101M / ACH100S

Course outline: Advanced theory of equilibrium, solubility product, acids and bases; complex ions, physical electrochemistry, gases, liquids, colligative properties of solutions, colloids, reaction kinetics

Assessment: All assessments are compulsory. Tutorials, assignments, tests, FISA and practical reports

Analytical Chemistry Practical 3 (ACP300S)

Pre-requisites: ACP200S/ACH200S and co- requisite ACH3A/B/C/D

Course outline: Practical on instrumental analysis, involving the use of the following instruments: gas chromatography (GC), high performance liquid chromatography (HPLC), electroanalytical techniques (Karl Fisher titration, coulometric, potentiometric titration, electrogravimetric and polarography), UV-visible spectroscopy, fluorescence spectroscopy, infra-red spectroscopy (IR) and atomic absorption spectroscopy (AAS) and inductively coupled plasma (ICP) instrumentation

Assessment: All assessments are compulsory. Tests and practical reports

SEMESTER 3 (S3)

Chromatography (Module A) (ACH300A)

Pre-requisites: ACH200S, PCH200S

Course outline: Introduction to instrumental analytical separation techniques. Topics covered are the following: theory, types, principles, instrumentation (columns, detectors, stationary phase) and application of gas chromatography and liquid chromatography (high performance liquid chromatography)

Assessment: All assessments are compulsory. Assignments and tests

Molecular Spectroscopy (Module B) (ACH300B)

Pre-requisites: ACH200S, PCH200S

Course outline: Introduction to spectrochemical methods, with the emphasis on molecular spectroscopy. Topics covered are the following: fundamentals of light, properties of electromagnetic radiation, instrumentation for optical spectroscopy (sources, wavelength selectors (monochromators, gratings, filters, prisms), photon detectors (phototube, photomultiplier, diode-array, charge transfer), molecular absorption spectroscopy (ultraviolet and visible spectroscopy), type of instruments (single beam, double beam, multichannel), infra-red absorption spectroscopy (types dispersive, fourier transform), spectra interpretation and application in qualitative and quantitative techniques (Beer's law, standard addition, calibration graph, one standard method and analysis of mixtures), factors that affect absorption (pH, isobestic points)

Assessment: All assessments are compulsory. Assignments and tests

Inorganic Chemistry 3 (INC300S)

Pre-requisites: INC200S

Course outline: Theoretical background to covalent bond formation, energy levels in molecules, shapes of molecules and the formation of co-ordination compounds, its nomenclature and theories of bonding. This is followed by a detailed study of transition elements to give a good perspective on these industrially important elements, their occurrence, extraction, reactions and use. Topics covered are bonding theories, co-ordination chemistry, Crystal and Ligand Field Theory; descriptive chemistry (chemistry of the first row transition metals, chemistry of the group IA and IB metals) and nuclear chemistry

Assessment: All assessments are compulsory: Assignments, tests, FISA and practical reports

Physical Chemistry 3 (PCH300S)

Pre-requisites: PHY100S, PCH200S and MAT100S

Course outline: The course expands on topics covered in Physical Chemistry 2. The course covers the following topics: Thermodynamics (first, second and third law), Electrochemistry (Faradays laws, electrochemical cells, molar conductivity, strong and weak electrolytes, ion conductivity, transport numbers and application), phase changes (phase rules, phase diagrams, ideal solutions, one and binary component systems), solid state and diffraction, quantum chemistry and spectroscopy, kinetics and surface chemistry

Assessment: All assessments are compulsory: Tests, FISA and practical reports

Bio-Organic Chemistry (Module A) (ORG300A)

Pre-requisites: ORG200S

Course outline: Structure and biosynthetic routes of chemistry of natural products (lipids and terpenes): classification, structure and reactions of carbohydrates; identification, reactions, stereochemistry, nomenclature of amino acids and peptides and the acid base properties of amino acids and proteins

Assessment: All assessments are compulsory: Assignments, tests, FISA and practical reports

Mathematics 2

Elective; pre-requisite for B Tech

Pre-requisites: MAT100S

Course outline: Hyperbolic functions, differentiation 2, integration, matrix algebra, first order differential equations

Assessment: All assessments are compulsory: Assignments, tests and FISA

SEMESTER 4 (S4)

Electrochemistry (Module C) (ACH300C)

Pre-requisites: ACH200S, PCH200S

Course outline: Introduction to electroanalytical techniques. Topics are the following: Electrodes (reference and indicator electrodes), mass transport, potential calculations and factors that influence current and potential; potentiometric techniques: pH, potentiometric titration, error calculations in potentiometric determinations; quantitative analysis techniques: standard addition, one standard analysis and titration methods; introduction to polarographic instrument, mercury electrode and polarographic calculations, coulometric and electrogravimetric procedures

Assessment: All assessments are compulsory: Assignments and tests

Atomic Spectroscopy (Module D) (ACH300D)

Pre-requisites: CH200S, PCH200S

Course outline: Signal and noise in instrumental methods; introduction to atomic spectroscopy; principles, theory, instrumentation and application of atomic spectroscopy (atomic absorption spectroscopy and inductively coupled plasma); atomisation techniques (flame, furnace, plasma and hydride generation); introduction to X-ray spectroscopy

Assessment: All assessments are compulsory: Assignments and tests

Chemical Quality Assurance (CQA200S)

Pre-requisites: ACH200S, PCH200S

Co-requisites: ACH300A, B, C, D

Course outline: Quality assurance in analytical chemistry, quality management and ISO systems; sampling importance, plans and statistics, validation of systems, methods and laboratory; errors (systematic and random); evaluation of data; determination of analytical parameters (calibration graph, regression correlation, linear range, sensitivity, limit of detection, limit of quantitation); variation using ANOVA statistics; collaborative trials; introduction to microbiology and practical work (setting up of SOPs, instrumental validation, microbiological techniques)

Assessment: All assessments are compulsory: Assignments, tests, FISA and practical reports

Organic Chemistry (Module B) (ORG300B)

Pre-requisites: ORG200S

Course outline: Introduction to organic synthesis, structural orientation drug synthesis and spectroscopy structural elucidation. Topic are the follows: stereochemistry, organic reactions, aromatic chemistry, reaction mechanisms, drug synthesis and organic spectroscopy, introduction to structural elucidation and characterisation of molecules, 13th rule hydrogen deficiency index (HDI), theory, principles and interpretation of the following spectroscopy techniques: UV visible spectroscopy, infra-red spectroscopy, mass spectroscopy, nuclear magnetic spectroscopy (1H) and combined spectroscopy

Assessment: All assessments are compulsory: Assignments, tests, FISA and practical reports

Organic Chemistry 3 (Mother subject) (ORG300M)

This course is not credit-bearing

This course's mark is the average of the two Organic Chemistry 3 courses (A and B)

Assessment: Must pass Organic Chemistry 3A and Organic Chemistry 3B

Analytical Chemistry 3 (Mother subject) (ACH300M)

This course is not credit-bearing

This course's mark is the average of all the Analytical Chemistry 3 modules (A, B, C and D)

Assessment: Average of marks for Analytical Chemistry 3 modules (A, B, C and D) – 50% or above with a subminimum of 40% for each four modules

Physics 2 (PHY201S)

An elective that is a pre-requisite for B Tech

Pre-requisites: PHY100S

Course outline: [See faculty for more information](#)

SEMESTER 5 and 6 (S5 and S6)

Pre requisite: All S3 and S4 subjects must be passed before a student is allowed to register for any of the S5 and S6 subjects.

Work Integrated Learning (WIL) is an integral part of the National Diploma in Analytical Chemistry. Therefore industrial attachment for in-service training is followed after all theory and practical courses in the diploma are passed.

Chemical Industry: Practical (CIP200S)

Pre-requisites: Workplace orientation

Assessment: Reports: health and safety and lecturer's visits' reports (supervisor, lecturer and student)

Chemistry Project (CPJ300S)

Assessment: Proposal and mini research thesis with oral presentation

BACHELOR OF TECHNOLOGY (CHEMISTRY) (BTCHEM) B TECH (CHEMISTRY)

Duration: Full-time: One year
Part-time: Two years

Venue: Bellville Campus

Purpose and rationale of the qualification

Graduates of this course are able to devise and apply specialised strategies and relevant management principles in quality control (QC) and research and development (R&D). Opportunities exist for graduates to pursue further educational qualifications.

Career opportunities

Graduates can work as chemists, supervising technicians and technologists in product and process development and quality control. Employment may be in a laboratory, or production or sales environments. Industries such as petrochemical, pharmaceuticals, mining, metallurgy and educational institutions employ graduates from this course.

Admission requirements

National Diploma in Analytical Chemistry or equivalent, i.e. BSc in Chemistry, with a 60% average

Professional registration

The Baccalaureus Technologiae (B Tech) (Chemistry) is accredited by the South African Qualification Authority (SAQA). Graduates may apply for full membership of SACI (South African Chemical Institute) and professional registration as national science technologists with the South African Council for Natural Scientific Professions (SACNASP).

B TECH SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Analytical Chemistry 4 (ACH400S)

Pre-requisites: ACH300S

Course outline: Topics include advanced spectroscopy and separation methods; atomic spectroscopy (AAS, ICP and hyphenated spectroscopy); review of chromatography; hyphenated chromatography, i.e. gas-chromatography-mass spectrometry (GC-MS); advanced electrochemical techniques (voltammetry) (linear and pulse); cyclic voltammetry; amperometric titration; crono-techniques; molecular spectroscopy and thermal analytical techniques (thermal gravimetric (TGA))

Assessment: All assessments are compulsory. Assignments, class tests, FISA and practical

Inorganic chemistry 4 (INC400S)

Pre-requisites: INC300S

Course outline: Topics include atomic theory, i.e. atomic states and term symbols, molecular symmetry and group theory, Ligand field theory and Ligand field spectra and organometallic chemistry and catalysis

Assessment: All assessments are compulsory. Assignments, class tests, FISA, problem sets and practical

Organic chemistry 4 (ORG400S)

Pre-requisites: ORG300S

Course outline: Topics include molecular spectroscopy for structure determination, i.e. nuclear magnetic resonance (¹³C, COSY, 2D), infra-red, Raman and mass spectroscopic techniques (fragmentation patterns), synthetic organic chemistry mechanisms and natural product chemistry

Assessment: All assessments are compulsory. Class tests, FISA and practical

Physical Chemistry 4 (PCH400S)

Pre-requisites: PCH300S

Course outline: Topics include introduction to surface chemistry (structure of solids, adsorption of molecules, Langmuir isotherm, UHV and effects, surface analysis, over layers and diffraction imaging and depth profiling), electrochemistry (fundamentals of physical electrochemistry processes (thermodynamics) and advanced kinetics (rates and mechanisms) and corrosion.

Assessment: All assessments are compulsory. Class tests, FISA and practical

Chemistry Project 4 (CPJ400S)

Pre-requisites: CPJ300S

Course outline: Students conduct a research study in a given field of chemistry

Assessment: Reports, i.e. proposal, written report, oral presentations and research poster

MASTER IN TECHNOLOGY: CHEMISTRY / M TECH (CHEMISTRY)

Duration: Full-time: Minimum of one calendar year
Part-time: Minimum of two consecutive calendar years

Venue: Bellville and Cape Town Campus

Course description

Research and Dissertation (R1M5044)

Admission requirements

Admission is granted for candidates who completed a B Tech (Chemistry) or equivalent, i.e. BSc (Hons), SAQA level 7, with an aggregate of 60%

Course

Research and Dissertation (RIM5044)

DOCTOR OF TECHNOLOGY: CHEMISTRY / D TECH (CHEMISTRY)

Duration: Full-time: Minimum of two calendar years
Part-time: Minimum of four consecutive calendar years

Venue: Bellville and Cape Town Campus

Course description

Research and Dissertation (R1M6044)

Admission requirements

Admission is granted for candidates who have completed a Master in Chemistry or equivalent, i.e. M Tech, MSc in Chemistry with an aggregate of 60%

NATIONAL DIPLOMA: ANALYTICAL CHEMISTRY

QUALIFICATION CODE: NDANCH

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CHE101M	Chemistry 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	CHE101A	Chemistry 1 Theory (Module A)	C		6	10.68	0.089	Continuous	Yes
1	1 st Sem	CHE101B	Chemistry 1 Practical (Module B)	C		6	4.56	0.038	Continuous	Yes
1	1 st Sem	ACH100S	Analytical Chemistry 1	C		6	15	0.125	Continuous	Yes
1	1 st Sem	MAT100S	Mathematics 1	C		6	10.68	0.083	Continuous	Yes
1	1 st Sem	PHY100S	Physics 1	C		6	9.96	0.083	Continuous	Yes
1	Year	CSK100S	Communication Skills 1	C		6	9.96	0.083	Continuous	Yes
1	Year	CPS100S	Computer Skills 1	C		6	9.96	0.083	Continuous	Yes
1	2 nd Sem	ACH200S	Analytical Chemistry 2	C	CHE101M/ ACH100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	ACP200S	Analytical Chemistry: Practical 2	C	CHE101M/ ACH100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	INC200S	Inorganic Chemistry 2	C	CHE101M/ ACH100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	ORG200S	Organic Chemistry 2	C	CHE101M/ ACH100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	PCH200S	Physical Chemistry 2	C	CHE101M/ ACH100S	6	12	0.100	Continuous	Yes
2	1 st Sem	ACP300S	Analytical Chemistry: Practical 3	C	ACP200S ACH300M (C)	6	24	0.200	Continuous	Yes
2	1 st Sem	ACH300M	Analytical Chemistry 3 (Mother Subject)	C	ACH200S	6	0	0.000	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	ACH300A	Chromatography (Module A)	C		6	6	0.050	Continuous	Yes
2	1 st Sem	ACH300B	Spectroscopy (Module B)	C		6	6	0.050	Continuous	Yes
2	1 st Sem	ORG300M	Organic Chemistry 3 (Mother Subject)	C	ORG200S	6	0	0.000	Continuous	Yes
2	1 st Sem	ORG300A	Bio-Organic Chemistry (Module A)	C		6	5.52	0.046	Continuous	Yes
2	1 st Sem	PCH300S	Physical Chemistry 3	C	PCH200S/ MAT100S	6	16.68	0.139	Continuous	Yes
2	1 st Sem	INC300S	Inorganic Chemistry 3	C	INC200S	6	12	0.100	Continuous	Yes
2	1 st Sem	MAT201S	Mathematics 2	E	MAT100S	6	12	0.100	Continuous	Yes
2	2 nd Sem	ACH300C	Electrochemistry (Module C)	C		6	48	0.050	Continuous	Yes
2	2 nd Sem	ACH300D	Atomic (Module D)	C		6	6	0.050	Continuous	Yes
2	2 nd Sem	CQA200S	Chemical Quality Assurance	C	ACP200S	6	8.4	0.100	Continuous	Yes
2	2 nd Sem	ORG300B	Organic Chemistry 3 (Module B)	C		6	11.16	0.093	Continuous	Yes
2	2 nd Sem	PHY201S	Physics 2	E	PHY100S/ MAT100S	6	12	0.100	Continuous	Yes
3	1 st Sem	CIP200S	Chemical Industry: Practical	C	All S3 Subjects Passed	6	60	0.500	Project	Yes
3	2 nd Sem	CPJ300S	Chemistry Project 3	C	All S3 Subjects Passed	6	60	0.500	Project	Yes

MAGISTER TECHNOLOGIAE: CHEMISTRY**QUALIFICATION CODE: MTCHER**

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5044	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

MAGISTER TECHNOLOGIAE: CHEMISTRY**QUALIFICATION CODE: DTCHER**

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
6	Year	R1M6044	Research Project and Dissertation	C		9	240	2.000	Continuous	Thesis

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Mr HWJ Van Der WestWesthuizen	Head of Department	021 460 3420	021 460 3193	vanderwesthuizenh@cput.ac.za
Ms V Ntapane	Administrative Assistant	021 460 9068	021 460 3193	NtapaneV@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Mr HWJ van der Westhuizen	MSc
Associate Professor	
Prof De W Schutte	BA, BA Hons, MA, D Phil
Prof IS Human	MTech (Env Man) (UFS), D Tech (Env Health) (CUT)
Prof JP Odendaal	BSc, BSc Hons, MSc, PhD (Zoology)
Senior Lecturer	
Mr ML Kalis	ND, NHD, M Dip Tech (Public Health)
Mrs MM Wicht	BSc, BSc Hons, M Tech (Chemistry)
Lecturers	
Mr M Agenbag	M Tech (Environmental Health)
Ms R Baatjies	M Tech (Env. Health)
Mr JP Bronkhorst	ND, NHD, DipEd, M Tech (Env. Health)
Mrs LM Daries	ND (Public Health), NHD (Public Health),
Mr BA Delcarme	ND (Public Health), NHD (Public Health), B Admin, M Sc (International Studies), M Sc (Env. Man), PhD (Information Technology and Development)
Mr RN Domoney	MSc
Mrs BS Kleyn-Magolie	B Sc, B Sc (Hons), MSc
Ms CP Mniki	A, PGDE, BA (Hons), MEd
Dr Y Owusu-Asante	BSc Hons (Eng), BSc Hons (Geohydrology), MSc (Geohydrology), MEng (Water & Env. Eng), PhD (Water & Env. Eng)
Mr A Rand	MSc
Mr VM Zungu	Masters (Env. Management)

BACCALAUREUS TECHNOLOGIAE: ENVIRONMENTAL HEALTH

Duration: Full-time: Four years, including Work Integrated Learning (WIL), followed by one year of community service with the Department of Health. For further information regarding WIL and community service, please contact the Department.

Venue: Cape Town Campus

Course aim

What is Environmental Health? 'Environmental Health comprises those aspects of human health, including quality of life, that are determined by chemical, physical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially adversely affect the health of present and future generations' (World Health Organisation). Environmental Health Practitioners (EHPs) are concerned with the administration, inspection, monitoring, education and regulation as prescribed in Environmental Health legislation. They act as a public arbiter of environmental health standards, maintaining close contact with the community. They develop professional standards and apply them in environmental health. A vital function is to maintain effective liaison with other professional groups (inter-sectoral) who have a contribution to make in the promotion of environmental health in its widest sense. The other professionals with whom liaison is appropriate include physicians, microbiologists, public analysts, civil building and sanitary engineers, veterinarians, health and safety enforcement professionals, environmental management professionals, architects, housing officials, water engineers, scientists, town planners, building control officers, prosecutors, etc.

Purpose and rationale of the qualification

Environmental health is primarily concerned with the identification, evaluation, control and prevention through education of factors in the environment that have a detrimental effect on individual physical, mental and social well-being and development. It also implies continuous efforts to educate and prevent individuals from adversely affecting the environment so that it in turn becomes detrimental to them. The advent of new challenges such as rapid urbanisation and industrialisation need to be addressed simultaneously, using a holistic approach, to achieve aims such as the improvement of living conditions (especially in underdeveloped areas). If the EHP is to make a significant contribution in providing healthy cities, then cognisance needs to be taken of the vital role the EHP must play with regard to cost effective preventative aspects of primary health, as opposed to expensive curative aspects. The functions of the EHP within the primary health system are diverse, and are listed in the Health Professions Act, Act 56 of 1974 in Regulation 698 of 2009 (Scope of Environmental Health Practitioners). The Baccalaureus Technologiae qualification is a pre-requisite for a student to continue with the Masters in Environmental Health (depending on entrance requirements).

Career opportunities

Environmental Health Practitioners (EHPs) operate within the district health system of South Africa. Local authorities are the guardians of environmental health and are the main employers. Other employment opportunities exist in national government departments, e.g. the Department of Health, Water Affairs, Agriculture, Environmental Affairs, Labour, Provincial Health Departments and the SA National Defence Force. Further career opportunities exist in industry, including environmental health consultants in food hygiene and safety as well as in occupational health and safety. Environmental health practitioners are not office bound. The majority of work is often in an outdoor environment. It is an extremely diverse career.

Admission requirements

A National Diploma in Environmental Health (or an equivalent qualification). An average of 60% in the final year of the National Diploma will be a recommendation.

Professional registration

The EHP is not only qualified at graduate level but must also have completed a period of compulsory practical training in the environmental health profession. EHPs are also required to be registered with the Health Professional Council of South Africa as Environmental Health Practitioners and are also required to develop skills through a Continued Professional Development programme in order to maintain their level of professional competency.

B TECH SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Also note that Research Methodology and Management Practice are compulsory subjects, while the remainder of the subjects are Electives (of which 2 must be chosen) and are presented according to availability of subject lecturers.

Research Methodology I (Compulsory)

Pre-requisites: None

Course outline: Methodology: research methods, collection of data, criteria and errors of measurement, research reporting, interaction between students and study leaders, writing of research articles

Statistical methods: scales of measurement, tabling, graphical representation, central values and dispersion measures, correlation and regression analyses, arrays, grouping, normal distribution curves, and standardisation of data, measurement of differences, testing of hypothesis, analysis of variance

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Management Practice IV (Compulsory)

Pre-requisites: Management Practice III

Course outline: Provision of health services. advanced management, advanced personnel management, public relations, contemporary health matters

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Occupational Health and Safety IV (Elective)

Pre-requisites: Occupational Health and Safety III

Course outline: Control of physical environmental factors, control of biological environmental factors, control of psychological environmental factors, control of chemical environmental factors, control of ergonomic environmental factors, occupational health and safety audits, legislation: occupational health and safety, management in occupational health and safety

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Food Hygiene IV (Elective)

Pre-requisites: Food & Meat Hygiene III

Course outline: Food poisoning, biochemistry, food preservation, processing, contamination, putrefaction and inspection, food microbiology, food engineering (design of equipment), design of food premises, evaluation/assessment, laboratory practical

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Air Pollution Management IV (Elective)

Pre-requisites: Environmental Pollution III

Course outline: Sources, methods of control and apparatus, legislation, measurement of air pollution, incineration, climatology, odour control, radio activity

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Waste Management IV (Elective)

Pre-requisites: Environmental Pollution III

Course outline: Waste sources, composition and analysis of waste, quantifying of waste and nuisances, dumping, treatment methods for waste, indicators in identifying health risks, techno-economic studies, safety, health risks for man as associated with waste, legislation

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Environmental Epidemiology IV (Elective)

Pre-requisites: Epidemiology III

Course outline: Introduction to ecotoxicology, analysis of risk factors, case studies, practical (research project)

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Water Quality Management IV (Elective)

Pre-requisites: Environmental Pollution III

Course outline: Water quality parameters and standards, standards for water sources, water pollution, endemic health problems, standards for treatment and disposal, water analyses, legal requirements

Assessment: All assessments are compulsory. Assignments, practical, assessments, tutorials

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDENVH	ND: Environmental Health	Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTENVH	BTech: Environmental Health	Cape Town	2	
Postgrad	Magister Technologiae	MTENVR	MTech: Environmental Health	Cape Town	2	
Postgrad	Doctor Technologiae	DTENVR	DTech: Environmental Health	Cape Town	2	
Undergrad	National Diploma	NDEVMN	ND: Environmental Management	Cape Town	3	6 Months
Postgrad	Baccalaureus Technologiae	BTEVMN	BTech: Environmental Management	Cape Town	1	
Postgrad	Magister Technologiae	MTEVMC	MTech: Environmental Management	Cape Town	2	

NATIONAL DIPLOMA: ENVIRONMENTAL HEALTH QUALIFICATION CODE: NDENVH

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	Year	AEF100S	Anatomy & Physiology 1	C		6	24	0.200	Continuous	Yes
1	Year	EVP100S	Environmental Planning 1	C		6	24	0.200	Continuous	Yes
1	Year	MIY100S	Microbiology 1	C		6	24	0.200	Continuous	Yes
1	Year	GON100S	Community Development 1	C		6	24	0.200	Continuous	Yes
1	Year	FIC100M	Health Physics & Chemistry 1 (Mother Subject)	C		6	0	0,000	Continuous	Yes
1	1 st Sem	FIC100A	Health Chemistry 1a (Module A)	C		6	14.4	0.120	Continuous	Yes
1	2 nd Sem	FIC100B	Health Physics 1b (Module B)	C		6	9.6	0.080	Continuous	Yes
2	Year	PHE200S	Epidemiology 2	C	MIY100S	6	24	0.200	Continuous	Yes
2	Year	EPW200S	Environ. Pollution: Waste & Water 2	C	EVP100S	6	24	0.200	Continuous	Yes
2	Year	OHS200S	Occupational Health & Safety 2	C	AEF100S / FIC100M	6	24	0.200	Continuous	Yes
2	Year	FMH200S	Food & Meat Hygiene 2	C	MIY100S	6	24	0.200	Continuous	Yes
2	Year	GON200S	Community Development 2	C	GON100S	6	24	0.200	Continuous	Yes
3	Year	MPC300S	Management Practice 3	C	GON210C	6	24	0.200	Continuous	Yes
3	Year	PHE300S	Epidemiology 3	C	EPI221C	6	24	0.200	Continuous	Yes
3	Year	EPA300S	Environmental Pollution: Air & Noise 3	C	EPW220C	6	24	0.200	Continuous	Yes
3	Year	OHS300S	Occupational Health & Safety 3	C	OHS220C	6	24	0.200	Continuous	Yes
3	Year	GMH300S	Food & Meat Hygiene 3	C	FMH220C	6	24	0.200	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE: ENVIRONMENTAL QUALIFICATION CODE: BTENVH

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	NMT100S	Research Methodology 1	C		7	21.6	0.180	Continuous	Yes
4	Year	MPC400S	Management Practice 4	C		7	26.4	0.220	Continuous	Yes
4	Year	AIP400S	Air Pollution 4	C		7	36	0.300	Continuous	Yes
4	Year	OHS400S	Occupational Health & Safety 4	E		7	36	0.300	Continuous	Yes
4	Year	WQM400S	Water Quality Management 4	E		7	36	0.300	Continuous	Yes
4	Year	EEY400S	Environmental Epidemiology 4	E		7	36	0.300	Continuous	Yes
4	Year	WMA400S	Waste Management 4	E		7	36	0.300	Continuous	Yes
4	Year	FOH400S	Food Hygiene 4	E		7	36	0.300	Continuous	Yes
4	Year	MHY400S	Meat Hygiene 4	E		7	36	0.300	Continuous	Yes

MAGISTER TECHNOLOGIAE: ENVIRONMENTAL HEALTH

QUALIFICATION CODE: MTENVR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R1M5021	Research Project & Dissertation	C		8	240	1.000	Continuous	Thesis

MAGISTER TECHNOLOGIAE: ENVIRONMENTAL HEALTH

QUALIFICATION CODE: DTENVR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
6	Year	R1M6021	Research Project & Dissertation	C		9	240	2.000	Continuous	Thesis

ND: ENVIRONMENTAL MANAGEMENT

Duration: Full-time: Three years, including six months of Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Cape Town Campus

Course aim

Graduates will be equipped to identify, evaluate and manage environmental impacts using the appropriate environmental legislation, tools and technologies.

Purpose and rationale of the qualification

Environmental sustainability is high on the South African government agenda. The importance of protecting the environment for future generations is embedded in the constitution of South Africa (Constitution of the Republic of South Africa, 1996: Chapter 2). All types of development must be socially, environmentally and economically sustainable. This highlights the need for qualified environmental management practitioners. The purpose of the National Diploma in Environmental Management is to supply industry with functional environmental practitioners with the relevant skills, knowledge and understanding to analyse, evaluate and manage current and future environmental management issues. The National Diploma in Environmental Management provides an articulation pathway towards post-graduate studies.

Career opportunities

Employment opportunities exist in government departments such as the Department of Environmental Affairs and Planning, Water Affairs and Forestry, metropolitan municipalities, industry and consulting companies. Graduates are employed as environmental officers, junior environmental scientists, environmental consultants, environmental educators, GIS technicians and health and safety or risk officers.

Admission requirements

For the minimum admission requirements, see admission requirements.

B TECH: ENVIRONMENTAL MANAGEMENT

Duration: Full time: One year
Part time: Two years

Venue: Cape Town Campus

Course aim

The aim of the course is to produce environmental management professionals with a deeper and systematic understanding of the current thinking, practice, theory and methodology within the field of environmental management with the ability to apply these skills in a range of environmental management perspectives.

Purpose and rationale of the qualification

The principles of sustainable development are entrenched in the legislation of South Africa, which highlights the increasing need for trained professionals who can provide leadership within the field. The academic rationale of the B Tech is to supply the workplace with functional environmental professionals with the relevant skills, knowledge and understanding to analyse and evaluate complex and interrelated environmental issues both nationally and internationally. The qualification is designed, firstly, to prepare students for continuing their academic development towards an M Tech and D Tech qualification and secondly, to provide advanced education and training to students who aim to progress in their professional careers within industry.

Career opportunities

Employment opportunities exist in government departments such as the Department of Environmental Affairs and Planning, Water Affairs and Forestry, metropolitan municipalities, industry and consultancy companies. Graduates are employed as Environmental Officers, Senior Environmental Officers, Environmental Consultants, GIS Technicians and Risk Administrators.

Admission requirements

A National Diploma in Environmental Management or an equivalent qualification with a minimum average of 60% is required. Work experience in the field of environmental management will also be taken into account in the admission process. A limited number of students are admitted to the course.

NATIONAL DIPLOMA: ENVIRONMENTAL MANAGEMENT

QUALIFICATION CODE: NDEVMN

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	COM100S	Communication Skills 1	C		6	10.2	0.085	Continuous	Yes
1	1 st Sem	CPS101S	Computer Skills 1	C		6	6	0.050	Continuous	Yes
1	1 st Sem	EVM100M	Environ. Management 1 (Mother Subject)	C		6	0	0,000	Continuous	Yes
1	1 st Sem	EVM100A	Environ. Management General 1A (Module A)	C		6	9	0.075	Continuous	Yes
1	1 st Sem	EVR100M	Environ. Resources 1 (Mother Subject)	C		6	0	0,000	Continuous	Yes
1	1 st Sem	EVR100A	Env. Res. Ecosystem Eco (Mod B)	C		6	9	0.075	Continuous	Yes
1	1 st Sem	EGE100S	Geology 1	C		6	12	0.100	Continuous	Yes
1	1 st Sem	CST100S	Calculations & Statistics 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	CHM100S	Chemistry 1	C		6	12	0.100	Continuous	Yes
1	2 nd Sem	APG100S	Applied Geology 1	C	EGE100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	GTY100S	Geotechnology 1	C	EGE100S	6	12	0.100	Continuous	Yes
1	2 nd Sem	EVM100B	Environ. Management App 1B (Module B)	C	EVM100A	6	9	0.075	Continuous	Yes
1	2 nd Sem	EVR100B	Environ. Res Population Eco 1B (Module B)	C	EVR100A	6	9	0.075	Continuous	Yes
1	2 nd Sem	MBY100S	Microbiology 1	C		6	12	0.100	Continuous	Yes
2	1 st Sem	ESE200S	Environmental Chemistry 2	C	CHM100S	6	12	0.100	Continuous	Yes
2	1 st Sem	AGP200S	Applied Geology 2	C	APG100S	6	12	0.100	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	EVL100S	Environmental Legislation	C		6	12	0.100	Continuous	Yes
2	1 st Sem	EVM200S	Environmental Management 2	C	EVM100B	6	12	0.100	Continuous	Yes
2	1 st Sem	ENS100S	Entrepreneurial Skills	C		6	6	0.050	Continuous	Yes
2	1 st Sem	GTY200S	Geotechnology 2	C	GTY100S	6	12	0.100	Continuous	Yes
2	2 ND Sem	EVE200S	Environmental Economy	C		6	12	0.100	Continuous	Yes
2	2 ND Sem	EBT200S	Environmental Biotechnology 2	C	MBY100S	6	12	0.100	Continuous	Yes
2	2 ND Sem	EVG200S	Environmental Geology 2	C	APG100S	6	12	0.100	Continuous	Yes
2	2 ND Sem	ERS200S	Environmental Resources 2	C	EVR100B	6	12	0.100	Continuous	Yes
2	2 ND Sem	EVS200S	Environmental Management Systems	C	EVM200S	6	12	0.100	Continuous	Yes
3	1 st Sem	EVM300S	Environmental Management 3	C	EVS200S	6	18	0.150	Continuous	Yes
3	1 st Sem	ERS300S	Environmental Resources 3	C	ERS200S	6	18	0.150	Continuous	Yes
3	1 st Sem	EGH300S	Environmental Geohydrology 3	C	EVG200S	6	18	0.150	Continuous	Yes
3	1 st Sem	ESP300S	Industrial Processes 3	C		6	18	0.150	Continuous	Yes
3	1 st Sem	GMH300S	Food & Meat Hygiene 3	C		6	18	0.150	Continuous	Yes
3	1 st Sem	ESE300S	Environmental Chemistry 3	E	ESE200S	6	18	0.150	Continuous	Yes
3	1 st Sem	EVG300S	Environmental Geology 3	E	EVG200S	6	18	0.150	Continuous	Yes
3	1 st Sem	GTY300S	Geotechnology 3	E	GTY200S	6	18	0.150	Continuous	Yes
3	2 nd Sem	IEP300S	Industrial Environ. Practice Reports	E		6	24	0.200	Project	Yes

BACCALAUREUS TECHNOLOGIAE: ENVIRONMENTAL MANAGEMENT

QUALIFICATION CODE: BTEUMN

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	PEY400S	Project: Environmental Technology 4	C		7	36	0.300	Continuous	Project

Choose four of the following subjects:

4	Year	EMG400S	Environmental Management 4	E		7	30	0.250	Continuous	Yes
4	Year	ERS400S	Environmental Resources 4	E		7	30	0.250	Continuous	Yes
4	Year	EVC400S	Environmental Chemistry 4	E		7	24	0.200	Continuous	Yes
4	Year	EVG400S	Environmental Geohydrology 4	E		7	24	0.200	Continuous	Yes
4	Year	EGT400S	Geotechnology 4	E		7	24	0.200	Continuous	Yes
4	Year	EWQ400S	Water Quality Management 4	E		7	24	0.200	Continuous	Yes

MAGISTER TECHNOLOGIAE: ENVIRONMENTAL MANAGEMENT

QUALIFICATION CODE: MTEVMC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	AIQ500S	Air Quality Management	C		8	6.72	0.056	Continuous	Yes
5	Year	ERK500S	Environmental Risk Assessment	C		8	6.72	0.056	Continuous	Yes
5	Year	ENR501S	Environmental Resource Economics	C		8	6.72	0.056	Continuous	Yes
5	Year	SDL500S	Sustainability & Environmental Law 5	C		8	6.72	0.056	Continuous	Yes
5	Year	TFS501S	Tools For Sustainable Development	C		8	6.72	0.056	Continuous	Yes
5	Year	WTS500S	Water And Sanitation	C		8	6.6	0.055	Continuous	Yes
5	Year	R1MC502	Mini Dissertation	C		8	60	0.500	Continuous	Thesis

Choose three of the following subjects:

5	Year	EHA501S	Environ. Occupational Health & Safety	E		8	6.6	0.055	Continuous	Yes
5	Year	EMS501S	Environmental Management Systems	E		8	6.6	0.055	Continuous	Yes
5	Year	ENP500S	Environmental Planning (GIS)	E		8	6.6	0.055	Continuous	Yes
5	Year	MRC500S	Marine And Coastal Management	E		8	6.6	0.055	Continuous	Yes
5	Year	RAD501S	Research And Advance Data Analysis	E		8	6.6	0.055	Continuous	Yes
5	Year	URA500S	Urbanisation And Development	E		8	6.6	0.055	Continuous	Yes

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Academic staff (permanent)

Surname	Qualifications
Head of Department	
Prof J van Wyk	PhD, BSc Hons, MSc
Associate Professor	
Prof VA Jideani	BSc, M Phys, PhD (Food Science)
Manager	
Mr L Dolley	Sc, BSc Hons, M Phys
Senior Lecturer	
Mr KM Woolward	ND (Medical Technology), BSc, BSc Hons, MSc
Lecturers	
Mrs EEJ Buys	BSc
Mrs JV Felix-Minnaar	MSc
Mr LG Fisher	NHD (Food Technology), B Tech (Food Technology)
Ms SS Henning	MSc
Ms C Hunlun	MSc (Food Science)
Mr Z Keyser	BSc, BSc Hons, MSc
Dr M Krugel	PhD
Mr AO Obilana	BSc Hons, MSc (Food Science)
Junior Lecturer (Khula Project)	
Ms LN Vhangani	B Tech

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDFDTC	ND: Food Technology	Bellville	3	1 Year
Postgrad	Baccalaureus Technologiae	BTFDTC	BTech: Food Technology	Bellville	2	
Postgrad	Magister Technologiae	MTFDTR	MTech: Food Technology	Bellville	2	

ND: FOOD TECHNOLOGY

Duration: Full-time: Three years, including on year of Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Bellville Campus

Course aim

Food technology is the scientific study of the large-scale production and preservation of foods as well as the development and analysis of foodstuffs in industrial food processing facilities. Food technologists are involved in the following areas of food manufacture: quality assurance, processing technology, chemistry and microbiology. In addition, they are trained to ensure that both legal and industrial food standards are monitored and maintained prior to marketing. They are also part of research teams and have to solve technical problems when raw materials are converted to preserved foods in factories. Training takes place in modern, on-campus food processing facilities and well-equipped laboratories with motivated and well-qualified staff with a wealth of industrial and teaching experience. This facilitates the training of analytically-orientated graduates for a role in the development, production and analysis of better, safer, nutritious and more satisfying food products. The course also provides the opportunity for further study – completion of an additional year (fourth year) culminates in a B Tech in Food Technology.

Purpose and rationale of the qualification

The qualifying student will be able to perform and organise operations in laboratories and factories of food processing organisations in compliance with statutory requirements for ethics, safety and quality assurance. Supervisory, management and research skills are developed.

Career opportunities

With population growth, new scientific and technological challenges present themselves daily in a career that can lead to rich rewards and excellent job opportunities, for both men and women. Graduates apply proven techniques and procedures to the production, analysis, development and packaging of safe, nutritious and innovative food products involving a range of technical, engineering and managerial problems and solutions. Qualified food technologists are employed in industrial food manufacturing concerns, such as bakeries, beverage manufacturers (soft drinks, beer and wine), bottling plants, canning companies, dairies, fish and meat processors. They are involved in production, quality assurance, and product development. Research opportunities exist in companies, as well as in research institutions. The ND Food Technology also encourages an entrepreneurial spirit through the integration of appropriate business skills and incentives within the mainstream programme. The technical skills acquired should enable entrepreneurially-minded individuals to identify and develop viable business opportunities.

Admission requirements

For the minimum admission requirements, see admission requirements.

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Chemistry 1

Pre-requisites: None

Course outline: Chemistry is a fundamental part of the science curriculum. This course provides a general description of chemistry. It builds on the knowledge that students have acquired in school. The course provides students with knowledge relating to basic concepts of chemistry, the opportunity to learn relevant principles and theory in chemistry and the theoretical background necessary to fully appreciate and understand the prescribed practical work.

Assessment: Theory and practical assessments, practical reports and assignments, small class tests and library assignments

Physics 1

Pre-requisites: None

Course outline: Physics I provides a broad introduction to physics at first-year level. It is assumed that the students have a basic understanding and working knowledge of matrix algebra and linear trigonometry, as well as having been exposed to physics and chemistry at matric level. Primary emphasis is placed on the understanding of basic principles and the development of problem-solving skills.

The subject Physics I is divided into five main sections: (1) Mechanics is divided into kinematics and dynamics. Kinematics consists of the ideas needed to describe motion. Dynamics deals with the way in which forces cause the motion to change. Both Rigid-body Mechanics and Fluid Mechanics will be considered. (2) Thermal Physics is mainly concerned with the relationship between temperature and heat. The effect of temperature change is investigated as well as the relationship between work done and heat change. The latter portion of Thermal Physics is referred to as thermodynamics. (3) Electricity and Magnetism is a subject with consequences throughout the physical world. Electromagnetic forces control the structure of atoms and of all materials, and light and other electromagnetic waves are wide-ranging. Understanding of these made a significant contribution to the understanding of science. The electric charge and interactions between electrically charged particles will be dealt with first. This will be followed by a discussion of charges in motion, followed by an introduction to magnetism. Many applications of electricity and magnetism occur in the form of electric circuits. These circuits will be investigated both from a basic principles and applications point of view. (4) Optics is the study of the nature of light, the applications thereof in optical instruments, and its interaction with matter. This section is divided into two main parts: the first deals with geometrical optics (light rays) and the second with physical optics (wave treatment). (5) Nuclear Physics is the study of the basic building blocks of the atomic nucleus and its associated nuclear transformations such as fission and fusion.

Assessment: Theory and practical assessments, weekly problem sets and practical reports

Quantitative Methods 1

Pre-requisites: None

Course outline: This subject is intended to provide a general introduction to mathematics at first-year level. It is assumed that students have a basic understanding and working knowledge of matric algebra and trigonometry. The following main topics are covered: exponents and logarithms, graphs, statistics, probability, correlation and regression, sampling, calculus.

Assessment: Theory assessments, class tests and tutorials

Microbiology 1

Pre-requisites: None

Course outline: Microbiology 1 will serve as a foundation for the two subsequent microbiology courses. In this course, students learn about the history of microbiology, the principles of microbial nutrition, the theory and practice of sterilisation, the nature of the microbial world and microscopy. Many of the techniques covered in the theory classes will be applied in the laboratory.

Assessment: Theory and practical assessments, online tests and assignments

Food Technology 1

Pre-requisites: None

Course outline: The primary objective of the subject is to introduce the student to the food manufacturing processes as applied in the food industry at large. The subject matter will expose the student to the factors that need to be considered when processing foods and is complemented by appropriate practical work. Unit operations, being a key element of the subject, are discussed at great length.

Assessment: Theory assessments, assignments and practical reports

Analytical Chemistry 2

Pre-requisites: Chemistry 1

Course outline: This course provides a detailed description in specific areas of analytical chemistry. It builds on the knowledge that students have acquired in Chemistry I. The course deals with methods for the identification of one or more of the components in a sample of matter and the determination of the relative amounts of each. The course also provides students with the theoretical background needed to perform the experiments that form part of the subject.

Assessment: Theory and practical assessments, assignments and practical reports

Food Process Engineering 1

Pre-requisites: Attendance of Quantitative Methods 1 and Physics 1

Course outline: Food process engineering is the quantitative measurement of a food technology process. It embraces the food processing plant and engineering principles employed in food processing and provides the food technologist with an understanding of the basic engineering principles and terminology required to successfully handle, convert and preserve foods of many kinds and to communicate with factory engineers. The subject introduces the basic engineering principles describing the behaviour of food processing machinery and operations. Emphasis is placed on problem-solving skills and quantitative problem analysis. It is not intended to teach the student food machinery design. The food technologist needs to know much about the product and the process and less about the plant, while the food process engineer needs to know much about the plant and less about the process and the product.

Assessment: Theory assessments, assignments and practical reports

Food Legislation 1

Pre-requisites: None

Course outline: The primary objective of the subject is to introduce the student to legal aspects applied in the food industry at large. The secondary objective is to make students aware of the complexities of the acts and regulations through exposure to the various acts and regulations that are applicable to the food industry.

Assessment: Theory assessments and case studies

Food Technology 2

Pre-requisites: Food Technology 1

Course outline: The primary objective of the subject is to introduce the student to the food manufacturing processes as applied in the food industry at large. The subject matter will expose the student to the factors that need to be considered when processing foods and is complemented by appropriate practical work. Unit operations, being a key element of the subject, are discussed at great length.

Assessment: Theory and practical assessments, assignments and practical reports

Microbiology 2

Pre-requisites: Microbiology 1

Course outline: Microbiology 2 will serve as a foundation course for Food Microbiology 3. Mycology section: This part of the course consists of an introduction to fungal morphology and physiology and an introduction to the classification of the fungi, with special emphasis on the Zygomycetes, the Euascomycetes, the Basidiomycetes and the Deuteromycetes.

Assessment: Theory and practical assessments, online tests and assignments

Food Quality Assurance 1

Pre-requisites: None

Course outline: The primary objective of the subject is to introduce students to quality concepts applied in the food industry at large. Students are taken on a journey visiting quality concepts such as total quality management, ISO Quality Standards and HACCP. The secondary objective is to make students aware of the concepts of quality measurements through exposure to the various tools used in industry by both quality assurance and production operations.

Assessment: Theory assessments and assignments

Food Chemistry 2

Pre-requisites: Analytical Chemistry 2

Course outline: Food Chemistry 2 may be considered as complementary to the so-called major subjects of the diploma, i.e. Food Technology and Food Microbiology. It deals with the basic biological molecules which are components of foods and how they react under different conditions and also what their exact role is in foods. Elements covered include food, water, proteins, carbohydrates, lipids, vitamins, nucleotides and enzymes. In addition, the thermodynamics associated with some reactions will be addressed.

Assessment: Theory and practical assessments, as well as online or class quizzes, tutorial sessions and discussion groups

Food Industry Training Practice 3 (Work Integrated Learning) Food Project 3 (Work Integrated Learning)

Pre-requisites: None

Course outline: One year of structured training in the food industry

Assessment: Log sheets, a written scientific project and a PowerPoint presentation

Food Technology 3

Pre-requisites: Food Technology 2

Course outline: The primary objective of the subject is to introduce students to the food manufacturing processes as applied in the food industry at large. The subject matter will expose students to the factors that need to be considered when processing foods and is complemented by appropriate practical work. Unit operations, being a key element of the subject, are discussed at great length. The knowledge gained is applied to develop a product from the concept phase to the final launch of the product.

Assessment: Theory assessments, practical assessment and practical reports

Food Chemistry 3

Pre-requisites: Food Chemistry 2

Course outline: The primary objective of the subject is to introduce students to the food manufacturing processes as applied in the food industry at large. The subject matter will expose students to the factors that need to be considered when processing foods and is complemented by appropriate practical work. Unit operations, being a key element of the subject, are discussed at great length. The knowledge gained is applied to develop a product from the concept phase to the final launch of the product.

Assessment: Theory and practical assessments, as well as online or class quizzes, tutorial sessions and discussion groups

Food Microbiology 3

Pre-requisites: Microbiology 2

Course outline: Food Microbiology 3 is a final semester subject and serves as a foundation course for Food Microbial Assurance at the B Tech level

Assessment: Theory and practical assessments, online tests and assignments

Food Industry Management 1

Pre-requisites: None

Course outline: As one of the requirements of the diploma programme, this course is designed to provide a sound conceptual understanding of the basic tools and techniques related to food production and purchasing management, also known as operations management. Advanced procedures and application of major techniques, together with theoretical principles of production and operations management, will be examined extensively.

The course includes a blend of topics, such as accounting, industrial engineering, operations management, management science, and statistics related to the manufacturing industry. Operations management jobs can be challenging, important and rewarding, and can lead to successful careers. The concepts can also be applied to other disciplines in the industry.

Assessment: Theory assessments, online quizzes, assignments and presentations

B TECH: FOOD TECHNOLOGY

Duration: Full-time: One year

Venue: Bellville Campus

Course aim

The course produces competent technologists capable of decision making at an intellectual level requiring mature judgement. Graduates are able to conceive, identify and optimise technical solutions for the design and production of food products.

Purpose and rationale of the qualification

Graduates will be able to apply and integrate advanced knowledge and skills of food technology in the food manufacturing and associated industries, including the environments of food production, food quality assurance and food product development for a safe, cost-efficient and cost-effective food industry. They will also integrate laboratory tests and knowledge of foods to conduct research. Management skills are developed with a view to encourage entrepreneurial development and business management. Compliance with statutory requirements for quality, ethics and safety underpin all exit levels. A focus area in this qualification is food product development. This focus involves the development and analysis of new food products and includes application of appropriate food legislation to labels and packaging. Students also conduct research under the guidance of experienced research professionals (senior academics).

Career opportunities

Career opportunities are similar to those for the ND Food Technology, with enhanced opportunities for promotion, as well as research and managerial positions.

Admission requirements

A National Diploma: Food Technology or equivalent, with an aggregate of 60% in the final year

B TECH SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Food Components 4

Pre-requisites: None

Course outline: Food Components 4 covers selected food ingredients from the following points of view: the nature of the substance, chemical and physical properties and chemical reactions, food applications, and food safety aspects. During the practical sessions, students are given the opportunity to apply selected food ingredients.

Assessment: Theory assessments, group work, tutorials, practical, reports and assignments

Food Product Development 4

Pre-requisites: None

Course outline: Food Product Development 4 covers all the facets of product development, including product design from a market perspective (including project management techniques such as PERT charts), consumer research, the origin of ideas, the R&D process, the manufacturing and engineering interface, the role of packaging, logistics as a tool in new product development, sensory evaluation, consumer panels, design of experiments, quality function deployment, the generation of new ideas, integration of the aforementioned by developing a new product, development of product specifications, compilation and management of a business plan, defining the role of a manager, and development of leadership skills. Practical sessions are conducted to enable students to develop leadership skills. Students will participate in sensory evaluation training sessions, a brainstorming exercise and will develop a new food product, culminating in the submission of a final report.

Assessment: Theory assessments, group work, tutorials, practical, reports, assignments, peer review assessment, product launch and oral assessment

Food Technology 4

Pre-requisites: Food Technology 3

Course outline: Food Technology 4 covers the following aspects: nutrition w.r.t food technology, food analysis and food product development, functional foods, Basic Conditions of Employment Act, texturisation of proteins, emulsions, the kinetics for alternative food processing technologies (ranging from microwaves to X-rays), application of GMP, GHP, best practice, SOP, as well as defining the role of a manager and the development of leadership skills.

Assessment: Theory assessments, oral presentations, assignments and group work

Food Microbial Assurance 4

Pre-requisites: Food Microbiology 3

Course outline: Food Microbial Assurance expands on many of the concepts that were covered in Food Microbiology in the final year at the diploma level. In addition to microbiology, related issues such as assessment of plant manufacturing operations, buildings, sanitation, personnel, management philosophy and attitudes, quality audits and the establishment of HACCP are covered in detail. Pathogenicity and pathogen profiles of both established and emerging pathogens will be examined together with viruses and protozoa responsible for food-borne illness. Some attention will be given to the spoilage, testing and calculation of heat processing times and temperatures of canned foods. Students will acquire requisite knowledge of the safest processing methods and some insight into management skills to ensure that knowledge is continuously applied in order to improve the safety and quality of foods.

Assessment: All assessments are compulsory.

Food Analysis 4

Pre-requisites: None

Course outline: Food Analysis 4 covers aspects of analysis in three different areas. The first section looks at traceability, sample plans, sampling and sample preparation. The second covers an overall view of analytical techniques, i.e. official methods prescribed for the food industry as well as other techniques associated with general biological analyses. The intention of this is to ensure that the analyst has a good working knowledge of these methods, their specific uses and how to employ them in specific situations. The third section covers specific techniques such as chromatography, polymerase chain reaction, electrophoresis, electrochemical techniques, near-infrared spectroscopy and scanning electron microscopy.

Assessment: Theory assessments, online quizzes, assignments and presentations

Food Project 4

Pre-requisites: None

Course outline: Students make a guided to complete all the facets of a scientific research project systematically. It may entail fundamental research, the development of an original food product, facets of food products or food processor quality control methods. The research problem or topic may be proposed by the student or may be selected from a list prepared by the lecturing staff. The final topic will be decided only after extensive discussion between supervisor (identified on basis of expertise) and student. Students will also be encouraged to investigate research topics that have been suggested by or that will be supported by the local food industry.

A staff member in the Department of Food Technology will be appointed as supervisor. The respective work load of the faculty, as well as their fields of expertise, will determine the choice of supervisor. An external supervisor or moderator will also be appointed. The external supervisor will be a faculty member from another tertiary institution or an individual from the industry with the appropriate qualifications and expertise. Close co-operation between the (internal) supervisor and the student will be maintained through regular meetings (formal and informal), reviewing appropriate technical literature, presenting prioritised plans of action and various status reports, and a final presentation to peers. This will ensure that the educational aims as well as the objectives of the investigation are kept in view. The student will be expected to submit a research proposal prior to commencing with the experimental work. The student will be expected to work within reasonable constraints of time, facilities and finance. Preparation of the final report will be under the guidance of the supervisor to ensure that the results of the investigation are effectively communicated. It is imperative that, from the outset, i.e. the proposal stage, the student and supervisor arrange regular meetings to discuss the project. It is strongly recommended that these meetings occur on a weekly basis and at a fixed time.

Besides a final written report, the student will also prepare a verbal presentation, supported by a PowerPoint presentation, and an appropriate poster presentation. These will form the basis of the evaluation method for this subject. There will be no theory examination, this being a practical subject. Two theory assessments will be written (see below).

The student will be expected to complete a course in Research Methodology during the first semester of any given year – either prior to registering for the project, or in tandem with the project. Two assessments will be written during this period, one on basic statistics and the second on basic research methodology. An assignment on proposal writing will constitute a third mark in this section.

Assessment: Research workshop: proposal, statistics, research report, oral and poster presentation

M TECH: FOOD TECHNOLOGY

Duration: Full-time: Two years

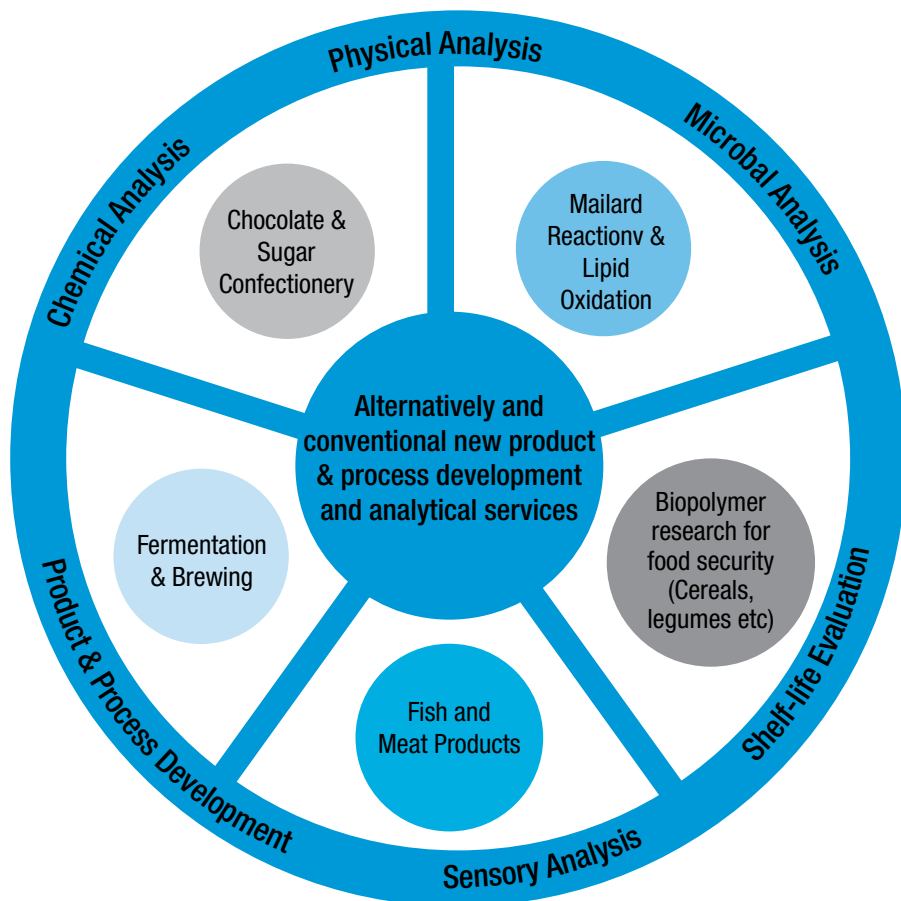
Venue: Bellville Campus

Course aim

M Tech graduates can conduct research under guidance in a chosen field, and contribute to knowledge production in that field. The research problem, its justification, process and outcome are reported in a dissertation that complies with the generally accepted norms for research at that level.

Purpose and rationale of the qualification

The primary purpose of the M Tech in Food Technology is to educate and train researchers who will be able to reflect critically on food technology theory and practice and their application at an advanced level. Graduates will be able to handle complex food science and technology related problems, both systematically and creatively, design and critically appraise the research, make sound judgements using data information and communicate their findings clearly to specialist and non-specialists audiences. They will be able to conduct independent planning and implementation of research projects with a theoretical scientific underpinning. In addition, due to the complexity of and the rapid scientific and technological advances in the field of food science and technology, as well as the requirement for safe and sustainable food commodities, there is a need for qualified food technologists who can identify and resolve problems at the cognitive level commensurate with SAQA level 9, i.e. the Masters level. Students conduct research under the guidance of experienced research professionals (senior academics) and attend structured workshops around research methodology and statistics. The research culminates in a dissertation that is examined by two external experts. The research focus areas are depicted in the diagram below:



Career opportunities

Career opportunities are similar to the ND and B Tech: Food Technology, with enhanced opportunities for promotion, as well as the capacity to conduct and lead research and managerial positions at middle to top management levels.

Admission requirements

A B Tech: Food Technology or equivalent, with an aggregate of 60% in the final year

M TECH STRUCTURE

Research Project and Dissertation (R5FT101R)

Course outline: A research topic is agreed with one of the research professionals (senior academic), followed by formulation of the proposal (including the research problem and the research objectives), conducting the benchwork, completion of the research dissertation and submission of an original research article to an accredited peer-reviewed journal.

Formative Assessment: Workshops, seminars and interviews
Summative Assessment: Research dissertation

Contact details

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NATIONAL DIPLOMA: FOOD TECHNOLOGY

QUALIFICATION CODE: NDFDTC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CHE102M	Chemistry 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	CHE102A	Chemistry 1 Theory (Module A)	C		6	12.48	0.104	Continuous	Yes
1	1 st Sem	CHE102B	Chemistry 1 Practical (Module B)	C		6	5.28	0.044	Continuous	Yes
1	1 st Sem	QUM100M	Quantitative Methods (Mother subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	QUM100A	Quantitative Methods (Module A)	C		6	10.68	0.089	Continuous	Yes
1	2 ND Sem	QUM100B	Quant Meth Com. Skill:MsWord (ModB)	C		6	2.16	0.018	Continuous	Yes
1	2 ND Sem	PHB101S	Physics 1 B	C		6	15	0.125	Continuous	Yes
1	2 ND Sem	MIY101S	Microbiology 1	C		6	17.76	0.148	Continuous	Yes
1	2 ND Sem	QUM100C	Computer Skills: Excel (Module C)	C		6	2.16	0.018	Continuous	Yes
1	2 ND Sem	FOT100S	Food Technology 1	C		6	18	0.150	Continuous	Yes
1	2 ND Sem	FLE100S	Food Legislation 1	C		6	13.2	0,110	Continuous	Yes
1	2 ND Sem	ACL200S	Analytical Chemistry: Bio 2	C	CHE102A/B (Co)	6	15	0.125	Continuous	Yes
1	2 ND Sem	FPE100S	Food Process Engineering 1	C	(E-exp) PHB101S	6	18	0.150	Continuous	Yes
2	1 st Sem	FOT200S	Food Technology 2	C	FOT100S (Pr)	6	19.2	0.160	Continuous	Yes
2	1 st Sem	FQA100S	Food Quality Assurance 1	C	(E-exp) QUM100A	6	12	0.100	Continuous	Yes
2	1 st Sem	FCH200S	Food Chemistry 2	C	ACL200S (Pr)	6	15	0.125	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	MIY200S	Microbiology 2	C	MIY101S (Pr)	6	15	0.125	Continuous	Yes
2	2 ND Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	1 st Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	2 ND Sem	FOT300S	Food Technology 3	C	FOT200S (Pr)	6	19.2	0.160	Continuous	Yes
3	2 ND Sem	FCH300S	Food Chemistry 3	C	FPE200S (Pr)	6	16.8	0.140	Continuous	Yes
3	2 ND Sem	FMT100S	Food Industry Management 1	C		6	9.6	0.080	Continuous	Yes
3	2 ND Sem	FMG300S	Food Microbiology 3	C	MIY200S (Pr)	6	16.8	0.140	Continuous	Yes

NATIONAL DIPLOMA: FOOD TECHNOLOGY

QUALIFICATION CODE: NDFDTC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	CHE102M	Chemistry 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	CHE102A	Chemistry 1 Theory (Module A)	C		6	12.48	0.104	Continuous	Yes
1	1 st Sem	CHE102B	Chemistry 1 Practical (Module B)	C		6	5.28	0.044	Continuous	Yes
1	1 st Sem	QUM100M	Quantitative Methods (Mother subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	QUM100A	Quantitative Methods (Module A)	C		6	10.68	0.089	Continuous	Yes
1	2 ND Sem	QUM100B	Quant Meth Com. Skill:MsWord (ModB)	C		6	2.16	0.018	Continuous	Yes
1	2 ND Sem	PHB101S	Physics 1 B	C		6	15	0.125	Continuous	Yes
1	2 ND Sem	MIY101S	Microbiology 1	C		6	17.76	0.148	Continuous	Yes
1	2 ND Sem	QUM100C	Computer Skills: Excel (Module C)	C		6	2.16	0.018	Continuous	Yes
1	2 ND Sem	FOT100S	Food Technology 1	C		6	18	0.150	Continuous	Yes
1	2 ND Sem	FLE100S	Food Legislation 1	C		6	13.2	0,110	Continuous	Yes
1	2 ND Sem	ACL200S	Analytical Chemistry: Bio 2	C	CHE102A/B (Co)	6	15	0.125	Continuous	Yes
1	2 ND Sem	FPE100S	Food Process Engineering 1	C	(E-exp) PHB101S	6	18	0.150	Continuous	Yes
2	1 st Sem	FOT200S	Food Technology 2	C	FOT100S (Pr)	6	19.2	0.160	Continuous	Yes
2	1 st Sem	FQA100S	Food Quality Assurance 1	C	(E-exp) QUM100A	6	12	0.100	Continuous	Yes
2	1 st Sem	FCH200S	Food Chemistry 2	C	ACL200S (Pr)	6	15	0.125	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	MIY200S	Microbiology 2	C	MIY101S (Pr)	6	15	0.125	Continuous	Yes
2	2 ND Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	1 st Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	2 ND Sem	FOT300S	Food Technology 3	C	FOT200S (Pr)	6	19.2	0.160	Continuous	Yes
3	2 ND Sem	FCH300S	Food Chemistry 3	C	FPE200S (Pr)	6	16.8	0.140	Continuous	Yes
3	2 ND Sem	FMT100S	Food Industry Management 1	C		6	9.6	0.080	Continuous	Yes
3	2 ND Sem	FMG300S	Food Microbiology 3	C	MIY200S (Pr)	6	16.8	0.140	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE: FOOD TECHNOLOGY

QUALIFICATION CODE: BTFDTC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	FMP400S	Food Components 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FTE400S	Food Technology 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FNA400S	Food Analysis 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FPJ400S	Food Project 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FPD400S	Food Product Development 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FMI400S	Food Microbial Assurance 4	C		7	20.16	0.168	Continuous	Yes

MAGISTER TECHNOLOGIAE: FOOD TECHNOLOGY

QUALIFICATION CODE: MTFDTR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R5FT01R	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	1 st Sem	MIY200S	Microbiology 2	C	MIY101S (Pr)	6	15	0.125	Continuous	Yes
2	2 ND Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	1 st Sem	FIT300S	Food Industry Training Prac 3	C		6	60	0.500	Continuous	Project
3	2 ND Sem	FOT300S	Food Technology 3	C	FOT200S (Pr)	6	19.2	0.160	Continuous	Yes
3	2 ND Sem	FCH300S	Food Chemistry 3	C	FPE200S (Pr)	6	16.8	0.140	Continuous	Yes
3	2 ND Sem	FMT100S	Food Industry Management 1	C		6	9.6	0.080	Continuous	Yes
3	2 ND Sem	FMG300S	Food Microbiology 3	C	MIY200S (Pr)	6	16.8	0.140	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE: FOOD TECHNOLOGY

QUALIFICATION CODE: BTFDTC

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	FMP400S	Food Components 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FTE400S	Food Technology 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FNA400S	Food Analysis 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FPJ400S	Food Project 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FPD400S	Food Product Development 4	C		7	20.16	0.168	Continuous	Yes
4	Year	FMI400S	Food Microbial Assurance 4	C		7	20.16	0.168	Continuous	Yes

MAGISTER TECHNOLOGIAE: FOOD TECHNOLOGY

QUALIFICATION CODE: MTFDTR

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R5FT01R	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Prof C Laubscher	Head of Department	021 959 5805		LaubscherC@cput.ac.za
Mrs D Daniels	Administrative Assistant	021 959 6512		DanielsD@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Prof CP Laubscher	ND, NHD, D Tech (Tourism and Hospitality Management)
Associate Professor	
Prof JC Coetzee	BSc, BSc Hons, MSc, PhD
Senior Lecturer	
Dr L Kambizi	D Sc
Lecturers	
Mr CW Daniels	ND, M Tech (Horticulture)
Mr GP Dreyer	ND (Horticulture), NHD (Horticulture)
Dr F Nchu	PhD
Mr JRV October	ND (Horticulture), B Tech (Horticulture), M Tech (Horticulture)
Mr JM van Rooyen	Master (Landscape Architecture)
Junior Lecturer	
Mrs JFC Theunissen	B Tech (Horticulture)

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDHRCT	ND: Horticulture	Bellville Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTHRCT	BTech: Horticulture	Cape Town	2	
Postgrad	Magister Technologiae	MTHRCR	MTech: Horticulture	Cape Town	2	
Undergrad	National Diploma	NDLSCT	ND: Landscape Technology	Cape Town	3	1 Year
Postgrad	Baccalaureus Technologiae	BTLSCT	BTech: Landscape Technology	Cape Town	2	

ND: HORTICULTURE

Duration: Full-time: Three years, including Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Bellville Campus

Course aim

Horticulture is the science of the propagation, cultivation and maintenance of plants and the use of plant material for the improvement of the urban environment. With continuing population growth and urbanisation, and the new scientific and technological challenges presenting themselves daily, this course may lead to a career rich in rewards and with excellent job opportunities. Training takes place in modern, on-campus growing facilities under the guidance of motivated and well-qualified staff with a wealth of industrial and teaching experience. This facilitates the training of practically oriented graduates for a role in the development, production and maintenance of plants in environmentally friendly and aesthetically pleasing gardens, playing fields and commercial retail garden centres.

Purpose and rationale of the qualification

Graduates apply proven techniques and procedures to the production, propagation, displaying, marketing and application of appropriate plant material for the commercial market. This involves a range of technological and managerial techniques appropriate to the industry.

Career opportunities

Graduates may find work in production nurseries, garden centres, landscape maintenance enterprises, parastatals and municipalities. In addition, for those students with a desire to do research, the SA National Biodiversity Institute and the Agricultural Research Council are important employers. Whilst the demand for horticulture graduates is high, the University encourages an entrepreneurial spirit amongst its students through the integration of appropriate business skills and incentives within the mainstream programme. The technical skills acquired should enable entrepreneurially minded graduates to identify and develop viable business entities.

Admission requirements

For the minimum admission requirements, see admission requirements.

Purpose and rationale of the qualification

Not applicable.

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Horticulture 1

Pre-requisites: None

Course outline: Propagation and growing media, sexual propagation, indoor and outdoor cuttings, budding and grafting, layering, propagation of specialised storage organs, introduction to tissue culture

Assessment: All assessments are compulsory.

Plant Material Studies 1

Pre-requisites: None

Course outline: **Plant Material Studies 1A (Botany):** The external morphology of plants: roots; stems; leaves; the flower; fruit; seed and seed germination. **Plant Material Studies 1B (Plant Utilisation):** The influence of growth habits, forms and shapes of ornamental plants and their impact on the selection for use in the landscape. The planting and maintenance requirements needed for ornamental plants. The emphasis is on trees, shrubs and groundcovers.

Assessment: All assessments are compulsory. Tests and practical

Growth Media Technology 1

Pre-requisites: None

Course outline: Soil as a growth medium, texture and structure (physical properties), water and air relationships, soil air and soil temperature relationships, soil colloids – their nature and practical significance, soil reaction – acidity and alkalinity, soil organisms, growth media components/amendments, nutrient management, practical nutrient management

Assessment: All assessments are compulsory. Three written assessments, one practical and one project

Site Planning 1

Pre-requisites: None

Course outline: History of landscape, map reading, landscape architect and landscape designer, legislation, preservation and conservation of our built environment, elementary site survey, aspects of design, principles of design, landscape engineering drawing, site construction, materials and embellishments

Assessment: All assessments are compulsory. Three written assessments and three drawing practical lessons

Supervisory Management 1

Pre-requisites: None

Course outline: Global economics, the role of business in society, entrepreneurship; establishing a business, management (planning, leading, organising and control) and business communication (conflict, formal letters, agenda, minutes, CVs), computer literacy

Assessment: All assessments are compulsory. Tests, assignments and exam

Horticulture 2

Pre-requisites: Horticulture 1

Course outline: Greenhouse management, design and construction, nursery types, specialised nursery structures, nursery sanitation, temperature and light control systems, nursery irrigation systems, CO₂ enrichment systems, hydroculture

Assessment: All assessments are compulsory. Assignments

Plant Material Studies 2

Pre-requisites: Plant Material Studies 1

Course outline: **Plant Material Studies 2A (Botany):** The cell; cell division; plant histology; plant anatomy; introductory aspects of plant physiology; introduction to the bacteria. **Plant Material Studies 2B (Plant Utilisation):** The difference types of vegetation found in the world. The influence of growth habits, forms and shapes of ornamental plants and their impact on the selection for use in the landscape. The planting and maintenance requirements needed for ornamental plants. The emphasis is on cacti, succulents, and ornamental grasses.

Assessment: All assessments are compulsory. Tutorials, assignments and tests

Horticultural Management 2

Pre-requisites: Supervisory Management 1

Course outline: Introduction to the South African legal system, labour legislation (various acts), contracts, marketing computer literacy

Assessment: All assessments are compulsory. Tutorials, assignments, tests and exam. Students must also attend a computer class.

Horticultural Mechanisation 1

Pre-requisites: None

Course outline: Tractors and power units, engines, transmission systems, steering, wheels and tyres, tractor hydraulic systems, tractor maintenance, fertiliser distributors, spraying machinery, grass cutting machinery, glasshouse equipment, irrigation, arboriculture equipment, workshop hand tools

Assessment: All assessments are compulsory. Three written and one practical assessment

Environmental Studies 1

Pre-requisites: None

Course outline: Natural systems such as geology, soils, climate, hydrology, carbon cycle, ecology and ecosystems

Assessment: All assessments are compulsory. Assignments, tutorials, tests and exam

Horticultural Practice 2 (Module A)

Pre-requisites: First year theory subjects

Course outline: Six months' work experience in the horticultural industry

Assessment: All assessments are compulsory. Log book reports, projects, assignments and a poster presentation

Horticulture 3 (Module A)

Pre-requisites: Horticulture 2

Course outline: General plant production systems, plant growth regulators, seedling production, pot plant production

Assessment: All assessments are compulsory. Assignments and tests

Plant Material Studies 3 (Module A)

Pre-requisites: Plant Material Studies 2

Course outline: Introduction to plant taxonomy, introduction to the taxonomy of the algae, fungi, mosses, ferns, gymnosperms and flowering plants

Assessment: All assessments are compulsory. Tests (theoretical and practical)

Horticultural Production Management 3 (Module A)

Pre-requisites: Horticultural Management 2

Course outline: Financial management topics covered include financial concepts and how they relate to business, capital sourcing and gearing, basic accounting processes and source documents, accounting equation and general ledger, financial statements (income statement, balance sheet), ratio analysis, break-even analysis and basic costing, salaries and wages, taxation and budgeting namely exposure, lighting, grips and sound.

Assessment: All assessments are compulsory. Tutorials, assignments and tests

Plant Protection 2 (Module A)

Pre-requisites: None

Course outline: Introduction to the Phylum Arthropoda, introduction to the Class Insecta and insect classification, insect structure and function, insect life cycle, chemical communication, insect physiology, degree days, surveillance and sampling, insect collection and identification, introduction to the Phylum Nematoda, basic knowledge of snails and slugs, rodents, economic decision levels for pest populations, pest management theory and practice, natural enemies of insects, chemical insecticides, calibration of insecticide sprayer, guidelines for use of insecticides in South Africa, common phytophagous pests in South Africa

Assessment: All assessments are compulsory. Assignments

Environmental Studies 2 (Module A)

Pre-requisites: Environmental Studies 1

Course outline: Environmental protection practices, the greenhouse effect and global warming, National Environmental Management: Biodiversity Act, National Red List of South African Plants: categories, wetland and river ecosystems/conservation, biopiracy, SANBI-BALL Agreement, biofuel and its effect on ecosystems, agriculture and mankind, environmental rehabilitation and plant re-establishment, alien plant control

Assessment: All assessments are compulsory. Project and three written assessments

Turfgrass Culture 1

Pre-requisites: None

Course outline: Turfgrass terminology, primary cultural practices, post-planting culture, supplementary practices, cricket pitches, bowling greens, golf courses, sportsfields, irrigation, drainage

Assessment: All assessments are compulsory. Three written and one practical assessment, one project

Horticulture 3 (Module B)

Pre-requisites: Horticulture 2

Course outline: Cut flower production, bulbous plant production, herb and medicinal plant production, tree production

Assessment: All assessments are compulsory. Tutorials and tests

Plant Material Studies 3 (Module B)

Pre-requisites: Plant Material Studies 2

Course outline: Plant identification, with the emphasis on indoor plants, vegetables and herbs and fruit trees. The selection, use, planting and maintenance of the above-mentioned plants are also covered. Pruning of ornamental plants, with the emphasis on trees, shrubs and climbers, as well as fruit trees

Assessment: All assessments are compulsory. Tutorials and tests (practical and theory)

Horticultural Production Management 3 (Module B)

Pre-requisites: Horticultural Management 2

Course outline: The following aspects are covered: entrepreneurship, with the emphasis on developing a business plan, marketing, with the emphasis on garden centres and horticultural production management

Assessment: All assessments are compulsory. Tutorials and tests

Plant Protection 2 (Module B)

Pre-requisites: Plant Material Studies 3A

Course outline: Introduction to plant pathology, symptomatology, non-infectious diseases, viruses as plant pathogens, bacteria as plant pathogens, fungi as plant pathogens, nematodes as plant pathogens, resistance; methods of plant disease control, selected examples of common and important plant diseases, weeds and weed control, weed identification

Assessment: All assessments are compulsory. Tests, project and practical assessment

Environmental Studies 2 (Module B)

Pre-requisites: Environmental Studies 1

Course outline: Introduction to environmental impact assessment, introduction to strategic environmental management, framework for conducting environmental impact assessment in South Africa, introduction to Geographic Information Systems and its application to horticulture and landscape management, introduction to and use of QGIS open software & GPS data collection equipment, chemical analysis of soil and water, introduction to community engagement and its role in the training of students and community, energy sources, energy consumption and management, carbon accounting, carbon sequestration, energy conservation, managing energy in garden centres or nurseries, enviroblog

Assessment: All assessments are compulsory. Assignments, projects, reports and tests

Horticultural Practice 2 (Module B)

Pre-requisites: Horticultural Practice 2A

Course outline: Six months' work experience in the horticultural industry

Assessment: All assessments are compulsory. Log book reports, projects, assignments and a PowerPoint presentation

B TECH: HORTICULTURE

Duration: Full-time: One year

Venue: Bellville Campus

Course aim

The aim of the course is to produce a competent horticulturist who will be capable of decision making at an intellectual level requiring mature judgement, and who will have the ability to conceive, identify and optimise technology for the propagation, production and maintenance or application of plants in a horticultural and landscaping setting.

Purpose and rationale of the qualification

Global warming, loss of habitat, erosion, de-forestation, urban sprawls and pollution are concerns we are all faced with. Sustainability, eco-tourism and greening the planet have become major topics that have resulted in specialised fields of study. With the horticulture industries meeting a number of the UN's Millennium Developmental Goals, the career and moral value of entering this field of study will undoubtedly add great value to your quality of life. Horticulture is the science of propagation, cultivation and maintenance of plants to improve the urban environment. With an increase in population and urbanisation, a scope of new scientific and technological challenges means this course will offer a career rich in rewards, with exciting job and research opportunities. Students are trained in modern on-campus growing facilities under the guidance of motivated and well-qualified staff with a wealth of industrial and teaching experience. Within the South African and horticultural industry, emphasis in the course is placed on indigenous species and research on medicinal plants. Horticulture graduates may find work in production nurseries, garden centres, landscape maintenance companies and research centres. Entrepreneurial skills are offered to encourage self-employment.

Career opportunities

Career opportunities are similar to those for the ND Horticulture, but this qualification opens possibilities for research positions or advanced positions in the management of horticultural establishments.

Admission requirements

A National Diploma in Horticulture (or an equivalent qualification) is required. Preference will be given to students with an average of 60% in the final year of study of the National Diploma. Senior Certificate Mathematics (at least 50% or an approved equivalent) is also required.

Purpose and rationale of the qualification

Not applicable.

BACCALAUREUS TECHNOLOGIAE SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Horticultural Production Technology 4

Pre-requisites: Horticultural Production Technology 3

Course outline:

Production Technology: Advanced plant production techniques; greenhouse climate control, including active and passive heating and cooling, with a focus on both high- and low-tech; CO₂ supplementation system design and implementation; greenhouse lighting system selection, installation and management, including new lighting technologies such as light emitting diode (LED) lighting; advanced fertilisation techniques, including formulation of custom formulas; hydroponic production systems, focusing on design of systems for specific purposes as well as running, management and maintenance of such systems.

Assessment: All assessments are compulsory. Four theory assessments and two projects

Tissue Culture: History of plant tissue culture, the process of tissue culture, advantages and disadvantages of tissue culture over traditional methods of propagation, factors influencing the success of tissue culture, medium ingredients and the preparation thereof, the culture environment, quality control, culture types, the tissue culture laboratory, chemicals and stock solutions, business ventures/commercial applications

Assessment: All assessments are compulsory. Three practical assessments, two theory assessments and one written report

Genetics: Important terminologies in genetics, basic genetics, Mendel's Laws, DNA transcription and translation, Hardy-Weinberg principle, Mendelian genetics, variation in plants, quantitative: description of quantitative traits, epistasis, variations (genetic, phenotypic and environmental), genetics within the context of horticulture and estimating heritability, five tutorial sessions on quantitative and qualitative genetics

Assessment: All assessments are compulsory. Two written tests on the theories of genetics

Horticultural Production Technology 4

Plant Breeding: Pollination and reproduction in plants, Breeder's kit, selfing and crossing techniques in different crops, pollination demonstration (practical), natural genetic variation, breeding objectives, types of breeding systems (bulk breeding, pedigree breeding, backcrossing breeding, recurrent selection and synthetic varieties, hybrid breeding, mutation breeding), plant cell and tissue culture, principles of recombinant DNA technology, polymerase chain reaction, genetic engineering in higher plants, genetic engineering and bio-safety issues, community engagement service learning project (horticulture-related project).

Assessments: All assessments are compulsory. Two written assignments, one on community engagement participation and the other on plant breeding; one problem-based theoretical assessment on plant breeding

Plant Nomenclature for Horticulturists: Brief history of plant classification, principles of nomenclature of 'wild' plants according to the International Code of Nomenclature for algae, fungi and plants, the nomenclature of hybrid plants, principles of nomenclature of cultivated plants according to the International Code of Nomenclature for Cultivated Plants

Assessment: All assessments are compulsory. Two problem-based theoretical assessments

Plant Physiology: Water balance of plants: sources of water to plants, how water is absorbed and transported within plants, germination studies, plant tissue analysis, solute transport and phloem translocation; regulation of plant development: role of hormones and their biochemistry; relevance of biotechnology to modern society; stress physiology: various abiotic stresses on plant growth and development, yield and productivity, including acclimation and adaptation techniques; secondary metabolites: importance of secondary metabolites (applications in society and industry); trade in medicinal plants; conservation of indigenous plants through various techniques

Assessment: All assessments are compulsory. Two written tests, one presentation and two assignments

Horticultural Production Management 4

Pre-requisites: Horticultural Production Management 3

Course outline: Project management, management information systems, computer as a management tool, management of communication systems, environmental aspects or systems influencing the Green Industry, macro and micro economical environmental systems, mentoring, management of consultants, organisational structure and behaviour, creative problem solving, commercial and retail horticultural management or production horticultural management

Assessment: All assessments are compulsory.

Research Methodology 1

Pre-requisites: ND Horticulture

Course outline:

Research Methodology 1A: writing a research proposal – the statement of the research problem, the sub-problems, the hypotheses, delimitations, assumptions, definition of terms, statement of the importance of the project; writing a literature review – sources of information, reading and interpreting research papers, basic principles of scientific writing, referencing techniques; research planning, research ethics, introductory statistics – variables, control groups, sampling, experimental designs, statistical measures (reliability and validity), graphical presentation of data, linear regression, normal distribution, estimation, testing hypothesis

Assessment: All assessments are compulsory. Assignments, problem-based statistics test and research proposal

Research Methodology 1B: Research project

Assessment: Research report

NATIONAL DIPLOMA: HORTICULTURE

QUALIFICATION CODE: NDHRCT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	HOK100S	Horticulture 1	C		6	10.8	0.090	Continuous	Yes
1	1 st Sem	SUM100S	Supervisory Management 1	C		6	10.8	0.090	Continuous	Yes
1	1 st Sem	PTS100M	Plant Material Studies 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	PTS100A	Plant Material Studies 1A (Module A)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	PTS100B	Plant Material Studies 1B (Module B)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	EVS100S	Environmental Studies 1	C		6	10.8	0.090	Continuous	Yes
1	1 st Sem	SPL100S	Site Planning 1	C		6	8.4	0.070	Continuous	Yes
1	2 nd Sem	HOK200S	Horticulture 2	C	HOK100S	6	15.96	0.133	Continuous	Yes
1	2 nd Sem	HOM200S	Horticultural Management 2	C	SUM100S	6	15.96	0.133	Continuous	Yes
1	2 nd Sem	PTS200M	Plant Material Studies 2 (Mother Subject)	C	PTS100M	6	0	0.00	Continuous	Yes
1	2 nd Sem	PTS200A	Plant Material Studies 2A (Module A)	C		6	5.76	0.048	Continuous	Yes
1	2 nd Sem	PTS200B	Plant Material Studies 2B (Module B)	C		6	5.76	0.048	Continuous	Yes
1	2 nd Sem	GMT100S	Growth Media Technology 1	C		6	8.4	0.070	Continuous	Yes
1	2 nd Sem	HMC100S	Horticultural Mechanisation 1	C		6	8.4	0.070	Continuous	Yes
2	1 st Sem	HPR200S	Horticultural Practice 2A	C		6	6	0.050	Continuous	Project
2	2 nd Sem	TGC100S	Turfgrass Culture 1	C		6	8.4	0.070	Continuous	Yes
2	2 nd Sem	HOK300A	Horticulture 3A (Module A)	C	HOK200S	6	18	0.150	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	2 ND Sem	HPM300A	Hort. Production Man 3A (Mod A)	C	HOM200S	6	18	0.150	Continuous	Yes
2	2 ND Sem	PTS300A	Plant Material Studies 3A (Module A)	C		6	9	0.075	Continuous	Yes
2	2 ND Sem	EVS200A	Environmental Studies 2A (Module A)	C	EVS100S	6	7.56	0.063	Continuous	Yes
2	2 ND Sem	PLT200A	Plant Protection 2A (Module A)	C		6	7.56	0.063	Continuous	Yes
3	1 ST Sem	HOK300M	Horticulture 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	HOK300B	Horticulture 3B (Module B)	C	HOK200S	6	18	0.150	Continuous	Yes
3	1 ST Sem	HPM300M	Hort. Production Man. 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	HPM300B	Hort. Production Man 3B (Module B)	C	HOM200S	6	18	0.150	Continuous	Yes
3	1 ST Sem	PTS300M	Plant Material Studies 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	PTS300B	Plant Material Studies 3B (Module B)	C	PTS200M	6	9	0.075	Continuous	Yes
3	1 ST Sem	EVS200M	Environmental Studies 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	EVS200B	Environmental Studies 2B (Module B)	C	EVS100S	6	7.44	0.062	Continuous	Yes
3	1 ST Sem	PLT200M	Plant Protection 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	PLT200B	Plant Protection 2B (Module B)	C		6	7.44	0.062	Continuous	Yes
3	2 ND Sem	HPR201S	Horticultural Practice 2B	C		6	60	0.500	Continuous	Project

BACCALAUREUS TECHNOLOGIAE: HORTICULTURE QUALIFICATION CODE: BTHRCT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	RMY100M	Research Methodology 1 (Mother Subject)	C		7	0	0.000	Continuous	Yes
4	Year	RMY100A	Research Methodology 1A (Module A)	C		7	12	0.100	Continuous	Yes
4	Year	RMY100B	Research Methodology 1B (Module B)	C		7	12	0.100	Continuous	Yes
4	Year	HPM400M	Hort. Production Management 4 (Mother Subject)	C		7	0	0.000	Continuous	Yes
4	Year	HPM400A	Hort. Production Management 4A (Module A)	C		7	24	0.200	Continuous	Yes
4	Year	HPM400B	Hort. Production Management 4B (Module B)	C		7	24	0.200	Continuous	Yes
4	Year	HPT401M	Hort. Production Technology 4 (Mother Subject)	C		7	0	0.000	Continuous	Yes
4	Year	HPT401A	Hort. Production Technology 4A (Module A)	C		7	24	0.200	Continuous	Yes
4	Year	HPT401B	Hort. Production Technology 4B (Module B)	C		7	24	0.200	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE: HORTICULTURE QUALIFICATION CODE: BTHRCT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
5	Year	R5HC01R	Research Project and Dissertation	C		8	240	1.000	Continuous	Thesis

ND: LANDSCAPE TECHNOLOGY

Duration: Full-time: Three years, including Work Integrated Learning. For further information regarding Work Integrated Learning, please contact the Department.

Venue: Bellville Campus

Course aim

Landscape Technology aims to equip practice-orientated professionals with the required knowledge of design principles and procedures, the utilisation of ornamental plants and the proficiency to implement and manage landscape projects.

Purpose and rationale of the qualification

See faculty office for further information

Career opportunities

The increasing demand for environmental quality has led to the rapid expansion of landscape planning as a career, concentrating on the development of aesthetically pleasing, functional and ecologically stable landscape spaces for the community. Graduates will work in drafting in the offices of landscape architects, or on contract sites implementing landscape construction plans, either in private practice, municipal or parastatal entities.

Admission requirements

For the minimum admission requirements, see admission requirements.

Professional Registration

SACLAP: Statutory body

ILASA: Non-statutory body linking UCT, UP, TUT and CPUT

SALI: Representing the landscaping industry under SAGIC

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Landscape Technology 1

Pre-requisites: None

Course outline: Components of landscape design theory, history of gardens and modern trends, basic design and design concepts

Assessment: All assessments and portfolio

Plant Material Studies 1

Pre-requisites: None

Course outline: Plant Material Studies 1A (Botany): The external morphology of plants – roots, stems, leaves, the flower, fruit, seed and seed germination

Plant Material Studies 1B (Plant Utilisation): See faculty office for further information

Assessment: All assessments are compulsory. Tests and practical

Growth Media Technology 1

Pre-requisites: None

Course outline: Soil as a growth medium, texture and structure (physical properties), water and air relationships, soil air and soil temperature relationships, soil colloids (their nature and practical significance), soil reaction (acidity and alkalinity), soil organisms, growth media components/amendments, nutrient management, practical nutrient management

Assessment: All assessments are compulsory. Three written assessments, one practical and one project

Site Planning 1

Pre-requisites: None

Course outline: The course covers the aspects of technology related to the principles of digital video production, namely exposure, lighting, grips and sound.

Assessment: All assessments are compulsory.

Supervisory Management 1

Pre-requisites: None

Course outline: Global economics, the role of business in society, entrepreneurship, establishing a business, management (planning, leading, organising and control) and business communication (conflict, formal letters, agenda, minutes, CVs), computer literacy

Assessment: All assignments are compulsory. Tests, assignments and exam

Landscape Technology 2

Pre-requisites: Landscape Technology 1

Course outline: Design styles and themes, circulation design, planting design, grading design, landscape structures (walls, roofs), hard landscape construction, erosion control, storm water management, road alignment, grading, landscape structures and street furniture, detailed design of landscape projects, alternative design and presentation techniques, as well as Intermediate AutoCAD with emphasis on demonstrating AutoCAD skills in integrated design

Assessment: All assessments are compulsory. Assignments, detailed designs and portfolio

Plant Material Studies 2

Pre-requisites: Plant Material Studies 1

Course outline: Plant Material Studies 2A (Botany): The cell, cell division, plant histology, plant anatomy, introductory aspects of plant physiology, introduction to bacteria. Plant Material Studies 2B (Plant Utilisation):

[See faculty office for further information](#)

Assessment: All assessments are compulsory. Tutorials, assignments and tests

Landscape Management 2

Pre-requisites: Supervisory Management 1

Course outline: Establishing a business, introduction to law, SA legal system and constitution, labour legislation, introduction to contracts, introduction to bill of quantities, bill of quantities, specifications, cost estimates and basic marketing processes

Assessment: All assessments are compulsory. Tutorials, assignments, tests and exam. Students must also attend a computer class.

Horticultural Mechanisation 1

Pre-requisites: None

Course outline: Tractors and power units, engines, transmission systems, steering, wheels and tyres, tractor hydraulic systems, tractor maintenance, fertiliser distributors, spraying machinery, grass cutting machinery, irrigation, arboriculture equipment, workshop hand tools

Assessment: All assessments are compulsory. Three written and one practical assessment

Environmental Studies 1

Pre-requisites: None

Course outline: Natural systems such as geology, soils, climate, hydrology, carbon cycle, ecology and ecosystems

Assessment: All assessments are compulsory. Assignments, tutorials, tests and exam

Landscape Practice 2 (Module A)

Pre-requisites: First year theory subjects

Course outline: Six months' work experience in the landscape industry

Assessment: All assignments are compulsory. Log book reports, projects, assignments and a portfolio presentation

Landscape Technology 3 (Module A)

Pre-requisites: Landscape Technology 2

Course outline: Design philosophy, spatial design, environmental design, advanced design projects, studio project, irrigation, lighting, retaining walls, landscape structures as well as continuation of intermediate AutoCAD with emphasis on demonstrating AutoCAD skills in integrated design

Assessment: All assessments are compulsory. Assignments, studio work and portfolios

Plant Material Studies 3 (Module A)

Pre-requisites: Plant Material Studies 2

Course outline: Introduction to plant taxonomy, introduction to the taxonomy of algae, fungi, mosses, ferns, gymnosperms and flowering plants

Assessment: All assessments are compulsory. Tests (theoretical and practical)

Landscape Management 3 (Module A)

Pre-requisites: Landscape Management 2

Course outline: Financial management topics covered include financial concepts and how they relate to business, capital sourcing and gearing, basic accounting processes and source documents, accounting equation and general ledger, financial statements (income statement, balance sheet), ratio analysis, break-even analysis and basic costing, salaries and wages, taxation and budgeting, human resource management

Assessment: All assessments are compulsory. Tutorials, assignments and tests

Plant Protection 2 (Module A)

Pre-requisites: None

Course outline: Introduction to the Phylum Arthropoda, introduction to the Class Insecta and insect classification, insect structure and insect life cycle, chemical communication, insect physiology, degree days, surveillance and sampling, insect collection and identification, introduction to the Phylum Nematoda, basic knowledge of snails and slugs, rodents, economic decision levels for pest populations, pest management theory and practice, natural enemies of insects, chemical insecticides, calibration of insecticide sprayer, guidelines for use of insecticides in South Africa, common phytophagous pests in South Africa

Assessment: All assessments are compulsory. Assignments

Environmental Studies 2 (Module A)

Pre-requisites: Environmental Studies 1

Course outline: Environmental protection practices, the greenhouse effect and global warming, National Environmental Management Biodiversity Act, National Red List of South African Plants (Categories), wetland and river ecosystems/conservation, biopiracy, SANBI-BALL Agreement, biofuel and its effect on ecosystems, agriculture and mankind, environmental rehabilitation and plant re-establishment, alien plant control

Assessment: All assessments are compulsory. Project and three written assessments

Turf grass Culture 1

Pre-requisites: None

Course outline: Turf grass terminology, primary cultural practices, post-planting culture, supplementary practices, cricket pitches, bowling greens, golf courses, sports fields, irrigation, drainage function.

Assessment: All assessments are compulsory. Three written and one practical assessment plus one project

Landscape Technology 3 (Module B)

Pre-requisites: Landscape Technology 2

Course outline: Street furniture and ornaments, categories of urban street furniture, selection criteria for paving and street furniture, hard construction detailing, basic considerations and detailing, different types of paving, steps, ramps, retaining walls, planters, wooden decking, pergolas and water feature construction, the tender process, detailed costing (take-off and cost estimate), project management (site work sequencing, project scheduling, safety, project management), maintenance as part of contract, detailed specifications (for tender), AutoCAD

Assessment: All assessments are compulsory. Designs and portfolios

Plant Material Studies 3 (Module B)

Pre-requisites: Plant Material Studies 2

Course outline: Plant identification, with the emphasis placed on indoor plants, vegetables, herbs and fruit trees. The selection, use, planting and maintenance of the above-mentioned plants are covered, as well as pruning of ornamental plants, with the emphasis on trees, shrubs, climbers and fruit trees

Assessment: All assessments are compulsory. Tutorials and tests (practical and theory)

Landscape Management 3 (Module B)

Pre-requisites: Landscape Management 2

Course outline: Professional ethics

Assessment: All assessments are compulsory. Tutorials and tests

Plant Protection 2 (Module B)

Pre-requisites: Plant Material Studies 3A

Course outline: Introduction to plant pathology, symptomatology, non-infectious diseases, viruses as plant pathogens, bacteria as plant pathogens, fungi as plant pathogens, nematodes as plant pathogens, resistance, methods of plant disease control, selected examples of common and important plant diseases, weeds and weed control, weed identification

Assessment: All assessments are compulsory. Tests, project and practical assessment

Environmental Studies 2 (Module B)

Pre-requisites: Environmental Studies 1

Course outline: Introduction to environmental impact assessment, introduction to strategic environmental management, framework for conducting environmental impact assessment in South Africa, introduction to Geographic Information Systems and its application to horticulture and landscape management, introduction to and use of QGIS open software and GPS data collection equipment, chemical analysis of soil and water, introduction to community engagement and its role in the training of students and community, energy sources, energy consumption and management, carbon accounting, carbon sequestration, energy conservation, managing energy in garden centres or nurseries, enviroblog

Assessment: All assessments are compulsory. Assignments, projects, reports and tests

Landscape Practice 2 (Module B)

Pre-requisites: Landscape Practice 2A

Course outline: Six months' work experience in the landscape industry

Assessment: All assessments are compulsory. Log book reports, projects, assignments and a portfolio presentation

B TECH: LANDSCAPE TECHNOLOGY

Duration: Full-time: One year

Venue: Bellville Campus

Course aim

The professional course is controlled by the South African Council for the Landscape Architectural Profession (SACLAP) that now offers the opportunity for landscape diplomats to register as members according to the level of academic studies. The degree course has been structured to create a level of professionalism required for work opportunities in landscape architectural practices and open an opportunity for masters and level studies.

Purpose and rationale of the qualification

A BTech in Landscape technology will allow a candidate to complete his/her candidacy period in the Professional Landscape Technologist stream with SACLAP. The roles and responsibilities of a Professional Landscape Technologist are similar to those of a Professional Landscape Architect except that the projects would be less complex. This (level of complexity) is applicable to the site as well as to the design. The individual should have an overall basic understanding and proficiency of the profession. Furthermore, the Professional Landscape Technologist is expected to be able to communicate, coordinate and integrate with smaller teams (2-3) of other professionals that are appointed to realise a project. In terms of project complexity, Professional Landscape Technologists can participate in projects of medium and low complexity. The positioning of the courses within the Sciences faculty makes the programme unique in relation to other landscape qualification offered at other tertiary institutions, with a greater emphasis on plant sciences. Our students have an edge over other graduates using advance plant knowledge to inform spatial design projects. The course is aligned with current industry needs and include AutoCAD, computer draughting and presentation components. This ensures that our graduates are sought after and find work in landscape architectural practices and landscape contracting companies, as well as research-related posts.

Career opportunities

Work opportunities in professional landscape architectural practices in design, technical detailing and project management

Admission requirements

A National Diploma in Horticulture (or an equivalent qualification) is required. Preference will be given to students with an average of 60% in the final year of study of the National Diploma as well as 60% in Landscape Technology as a subject in the final year of study of the National Diploma. Senior Certificate Mathematics (at least 50%) is also required.

NATIONAL DIPLOMA SUBJECTS

Note that the information provided below is only a short summary – please refer to the respective Subject Guides for more detail.

Landscape Technology 4

Pre-requisites: Professional Practice 2

Course outline: Topics covered are Protecting your business: Insurance & legal issues, Taxes & government regulations, Managing expenses, credit, & cash flow, Managing production, distribution, & operations, Managing purchasing & inventory, How to value a business.

Assessment: Assessment on designs

Landscape Technology Management 4

Pre-requisites: Landscape Management 3

Course outline: Project management, management information systems, the computer as management tool, management of communication systems, environmental aspects or systems influencing the green industry, macro and micro environmental systems, mentoring, management of consultants, organisational structure and behaviour, creative problem solving, landscape financial management, documentation, computers in the landscape industry, functional procedures, relevant legislation, landscape maintenance management

Assessment: All assessments are compulsory.

Research Methodology 1

Pre-requisites: none

Research Methodology 1A: writing a research proposal – the statement of the research problem, the sub-problems, the hypotheses, delimitations, assumptions, definition of terms, statement of the importance of the project; writing a literature review – sources of information, reading and interpreting research papers, basic principles of scientific writing, referencing techniques; research planning, research ethics, introductory statistics – variables, control groups, sampling, experimental designs, statistical measures (reliability and validity), graphical presentation of data, linear regression, normal distribution, estimation, testing hypothesis

Assessment: All assessments are compulsory. Assignments, problem-based statistics test and research proposal

Research Methodology 1B: Research project and design

Assessment: Research design and report

NATIONAL DIPLOMA: LANDSCAPE TECHNOLOGY

QUALIFICATION CODE: NDLSCT

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	LAT100S	Landscape Technology 1	C		6	10.8	0.090	Continuous	Yes
1	1 st Sem	SUM100S	Supervisory Management 1	C		6	10.8	0.090	Continuous	Yes
1	1 st Sem	PTS100M	Plant Material Studies 1 (Mother Subject)	C		6	0	0.000	Continuous	Yes
1	1 st Sem	PTS100A	Plant Material Studies1A (Module A)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	PTS100B	Plant Material Studies 1B (Module B)	C		6	5.4	0.045	Continuous	Yes
1	1 st Sem	EVS100S	Environmental Studies 1	C		6	10.8	0.090	Continuous	Yes
1	2 ND Sem	SPL100S	Site Planning 1	C		6	8.4	0.070	Continuous	Yes
1	2 ND Sem	LAT200S	Landscape Technology 2	C	LAT100S	6	15.96	0.133	Continuous	Yes
1	2 ND Sem	LTM200S	Landscape Technology Management 2	C	SUM100S	6	15.96	0.133	Continuous	Yes
1	2 ND Sem	PTS200M	Plant Material Studies 2 (Mother Subject)	C	PTS100M	6	0	0.000	Continuous	Yes
1	2 ND Sem	PTS200A	Plant Material Studies 2B (Module A)	C		6	5.76	0.048	Continuous	Yes
1	2 ND Sem	PTS200B	Plant Material Studies 2P (Module B)	C		6	5.76	0.048	Continuous	Yes
1	2 ND Sem	GMT100S	Growth Media Technology 1	C		6	8.4	0.070	Continuous	Yes
1	2 ND Sem	HMC100S	Horticultural Mechanisation 1	C		6	8.4	0.070	Continuous	Yes
2	1 st Sem	LSP300S	Landscape Practice 3A	C		6	60	0.500	Continuous	Yes
2	2 ND Sem	TGC100S	Turfgrass Culture 1	C		6	8.4	0.070	Continuous	Yes
2	2 ND Sem	LAT300A	Landscape Technology 3A (Module A)	C	LAT200S	6	18	0.150	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	2 ND Sem	LTM300A	Landscape Tech. Management 3A (Module A)	C	LTM200S	6	18	0.150	Continuous	Yes
2	2 ND Sem	PTS300A	Plant Material Studies 3A (Module A)	C	PTS200M	6	9	0.075	Continuous	Yes
2	2 ND Sem	EVS200A	Environmental Studies 2A (Module A)	C	EVS100S	6	7.56	0.063	Continuous	Yes
2	2 ND Sem	PLT200A	Plant Protection 2A (Module A)	C		6	7.56	0.063	Continuous	Yes
3	1 ST Sem	LAT300M	Landscape Technology 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	LAT300B	Landscape Technology 3B (Module B)	C	LAT200S	6	18	0.150	Continuous	Yes
3	1 ST Sem	LTM300M	Landscape Technology Man. 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	LTM300B	Landscape Technology Man. 3B (Module B)	C	LTM200S	6	18	0.150	Continuous	Yes
3	1 ST Sem	PTS300M	Plant Material Studies 3 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	PTS300B	Plant Material Studies 3B (Module B)	C	PTS200M	6	9	0.075	Continuous	Yes
3	1 ST Sem	EVS200M	Environmental Studies 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	EVS200B	Environmental Studies 2B (Module B)	C	EVS100S	6	7.44	0.062	Continuous	Yes
3	1 ST Sem	PLT200M	Plant Protection 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
3	1 ST Sem	PLT200B	Plant Protection 2B (Module B)	C		6	7.44	0.062	Continuous	Yes
3	2 ND Sem	LSP301S	Landscape Practice 3B	C		6	60	0.500	Continuous	Yes

BACCALAUREUS TECHNOLOGIAE: LANDSCAPE QUALIFICATION CODE: BTLST

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
4	Year	RMY101S	Research Methodology	C		7	24	0.200	Continuous	Yes
4	Year	LTM400S	Landscape Technology Management 4	C		7	48	0.400	Continuous	Yes
4	Year	LAT400S	Landscape Technology 4	C		7	48	0.400	Continuous	Yes

DEPARTMENT OFFICE-BEARERS

Name	Position	Telephone	Fax	E-mail
Mr J Farmer	Head of Department	021 959 6224	021 959 6165	FarmerJ@cput.ac.za
Mr V Hess	Head of Department	021 959 6043	021 959 6165	Hessv@cput.ac.za
Mrs C Hansby	Administrative Assistant	021 959 6094	021 959 6165	HansbyC@cput.ac.za

Academic staff (permanent)

Surname	Qualifications
Head of Department	
Mr J Farmer	MSc, MBA
Head of Programme	
Mr VG Hess	MSc
Senior Lecturer	
Mr I Sheikh	B Ed, M Ed
Lecturers	
Mr LJ Cleophas	BA, B Ed, M Ed
Ms F Jaffer	BA, BA Hons
Mr I John	HED
Mr MT Kudinha	MSc
Dr G Makanda	MSc
DR MP Marais	PhD, HDE
Dr G Muchatibaya	PhD
Dr OA Osibote	PhD
DR MI Pienaar	MSc
Mr G Buzizi	MSc
Mr T Farrar	M.Math. in Statistics
Dr JY Semegni	PhD
Junior Lecturers	
Mr SA Makupula	MSc

Qualifications offered

Undergrad or Postgrad	Qualification Type	Qualification Code	Qualification Name	Campus Offered	Minimum Duration (Years)	Work Integrated Learning
Undergrad	National Diploma	NDMATH	ND: Mathematical Technology	Bellville	3	1 Year

ND: MATHEMATICAL TECHNOLOGY

QUALIFICATION CODE: NDMATH

Flow diagram: SAQA level, credit allocation and core/fundamental/elective (modules indicated)

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAQA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	1 st Sem	PHC100S	Physics 1 (AS/CI)	E		5	12	0.100	Continuous	Yes
1	1 st Sem	MTH100A	Mathematics 1 (Module A)	C		5	14.04	0.117	Continuous	Yes
1	1 st Sem	STA100A	Statistical Methods 1 (Module A)	C		5	12	0.100	Continuous	Yes
1	1 st Sem	CPL100S	Computer Skills 1	C		5	9	0.075	Continuous	Yes
1	1 st Sem	CLS100S	Communication Skills 1	C		5	9	0.075	Continuous	Yes
1	1 st Sem	MAR100S	Marketing 1	E		5	12	0.100	Continuous	Yes
1	2 ND Sem	CHE100S	Chemistry 1 (AS/CI)	E		5	12	0.100	Continuous	Yes
1	2 ND Sem	BSC100S	Biosciences 1 (AS)	E		5	12	0.100	Continuous	Yes
1	2 ND Sem	DTM100S	Data Management 1 (B)	E		5	12	0.100	Continuous	Yes
1	2 ND Sem	ECO100S	Economics 1 (B)	E		5	12	0.100	Continuous	Yes
1	2 ND Sem	APH100S	Applied Physics 1 (CI)	E	PHC100S	5	12	0.100	Continuous	Yes
1	2 ND Sem	MTH100B	Mathematics 1 (Module B)	C	MTH100A	5	14.04	0.117	Continuous	Yes
1	2 ND Sem	STA100B	Statistical Methods 1 (Module B)	C	STA100A	5	12	0.100	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
1	2 ND Sem	NUM100S	Numerical Methods 1	C	MTH100A	5	12	0.100	Continuous	Yes
2	1 st Sem	APS200A	Applied Science 2 (Module A) (AS)	E	BSC100S	6	9.96	0.083	Continuous	Yes
2	1 st Sem	ECO200S	Economics 2 (B)	E	ECO100S	6	9.96	0.083	Continuous	Yes
2	1 st Sem	MTH200M	Mathematics 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
2	1 st Sem	MTH200A	Mathematics 2 (Module A)	C	MTH100A/B	6	14.04	0.117	Continuous	Yes
2	1 st Sem	STA200M	Statistical Methods 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
2	1 st Sem	STA200A	Statistical Methods 2 (Module A)	C	STA100A/B	6	12	0.100	Continuous	Yes
2	1 st Sem	APS200M	Applied Science 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
2	1 st Sem	CMT200M	Chemical Industry 2 (Mother Subject)	C		6	0	0.000	Continuous	Yes
2	1 st Sem	CMT200A	Chemical Industry 2 (Module A)	C	CHE100S	6	9.96	0.083	Continuous	Yes
2	1 st Sem	PGM100S	Programming 1	C	MTH100A/B	6	12	0.100	Continuous	Yes
2	1 st Sem	ETR100S	Entrepreneurship 1	C		6	9.96	0.083	Continuous	Yes
2	2 ND Sem	APS200B	Applied Science 2 (Module B) (AS)	E	BSC100S	6	12	0.100	Continuous	Yes
2	2 ND Sem	FIN200S	Finance 2 (B)	E	MTH100A STA100B	6	12	0.100	Continuous	Yes
2	2 ND Sem	CMT200B	Chemical Industry 2 (Module B) (CI)	E	CHE100S	6	12	0.100	Continuous	Yes
2	2 ND Sem	MTH200B	Mathematics 2 (Module B)	C	MTH200A	6	14.04	0.117	Continuous	Yes
2	2 ND Sem	STA200B	Statistical Methods 2 (Module B)	C	STA200A	6	12	0.100	Continuous	Yes
2	2 ND Sem	NUM200S	Numerical Methods 2	C	NUM100S MTH100B	6	12	0.100	Continuous	Yes

Period of Study	Year/Sem Subject	Subject Code	Subject Name	Compulsory or Elective	Pre or Co-requisite Subject Codes	NQF Level	SAGA Credit	HEMIS Credit	Assessment Type	Summative Assessment
2	2 ND Sem	MDL300S	Modeling In Math & Statistics 3	C	MTH200A STA200A NUM100S	6	14.04	0.117	Continuous	Yes
3	1 st Sem	APS300M	Applied Science 3 (Mother Subject)(AS)	E		6	0	0.000	Continuous	Yes
3	1 st Sem	APS300A	Applied Science 3 (Module A) (AS)	E	APS200A/B	6	12	0.100	Continuous	Yes
3	1 st Sem	APS300B	Applied Science 3 (Module B) (AS)	E	APS200A/B	6	12	0.100	Continuous	Yes
3	1 st Sem	APS300C	Applied Science 3 (Module C) (AS)	E	APS200A/B	6	12	0.100	Continuous	Yes
3	1 st Sem	FMK300S	Financial Markets 3 (B)	E		6	12	0.100	Continuous	Yes
3	1 st Sem	ECN300S	Econometrics 3 (B)	E		6	12	0.100	Continuous	Yes
3	1 st Sem	OPR300S	Operations Research 3 (B)	E	MTH200A	6	12	0.100	Continuous	Yes
3	1 st Sem	MTH300S	Mathematics 3 (CI)	E	MTH200A	6	12	0.100	Continuous	Yes
3	1 st Sem	PGM200S	Programming 2 (CI)	E	PGM100S	6	12	0.100	Continuous	Yes
3	1 st Sem	CMT300S	Chemical Industry 3 (CI)	E	CMT200A	6	12	0.100	Continuous	Yes
3	1 st Sem	SQC300S	Statistical Quality Control 3	C	STA200A	6	12	0.100	Continuous	Yes
3	1 st Sem	PRJ200S	Project 2	C		6	12	0.100	Continuous	Yes
3	2 ND Sem	WIL300S	Work Integrated Learning	C		6	60	0.500	Continuous	Project

NATIONAL DIPLOMA: MATHEMATICAL TECHNOLOGY

FIRST YEAR FIRST SEMESTER

Mathematics 1 A (MTH100A)

Pre-requisites: None

Course outline: Sets and operations, functions, modelling with equations, algebra, analytical geometry, calculus 1 (differentiation and differential equations), calculus 2 (integration)

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: 3 Computer lab: 3

Assessment weights (%)::

Test 1: 15 Test 2: 15 FISA: 50 Assignment: 10 Tutorials/small tests: 10

Statistical Methods 1A (STA100A)

Pre-requisites: None

Course outline: Introduction to statistics, data and statistics, descriptive statistics (tabular and graphical methods), descriptive statistics (numerical methods), introduction to probability, probability distribution and random variable (discrete) correlation and simple linear regression

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%)::

Test 1: 10 Test 2: 10 FISA: 50 Project: 20 Tutorials/small tests: 10

Computer Skills 1 (CPL100S)

Pre-requisites: None

Course outline: Microsoft Windows, Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Mail and Internet

Contact time (No of 45-min periods per week):

Lectures: Tutorials: Practical: Computer lab: 6

Assessment weights (%)::

Test 1: 10 Test 2: 15 Test 3: 15 FISA: 40 Project: 20

Communication Skills 1 (CLS100S)

Pre-requisites: See faculty office for further information

Course outline: Academic literacy, information literacy, written communication, spoken communication, communication in the workplace

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 10 Test 2: 20 Project: 20 Written assignment: 30 Oral assignment: 20

Physics 1 (PHC100S)

Pre-requisites: INFO

Course outline: Mechanics, optics, temperature and heat studies, introduction to nuclear physics, electricity (DC)

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: 3 Practical: 3 Computer lab:

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 40 Small tests: 10 Practical: 20

Marketing 1 (MAR100S)

Pre-requisites: None

Course outline: Identify and define what marketing is, the marketing environment, market information and marketing research, integrated marketing, planning, implementation and control of the marketing strategy

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 10 Test 2: 10 FISA: 30 Tutorials: 20 Project: 30

Mathematics 1 B (MTH100B)

Pre-requisites: Mathematics 1A (MTH100A)

Course outline: Hyperbolic inverse trig and inverse hyperbolic functions, differentiation of inverse trig and hyperbolic functions, partial differentiation, matrices and linear programming, integration, differential equations, Laplace Transforms, vectors

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Mathematics 1 B (MTH100B)**Assessment weights (%):**

Test 1: 15	Test 2: 15	FISA: 50	Assignments: 10	Small tests/tutorials: 10
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Statistical Methods 1B (STA100B)**Pre-requisites:** Statistical Methods 1A (STA100A)

Course outline: Discrete random variables and probability distributions, continuous random variables, sampling distributions, estimation and confidence interval, one-sample test of hypothesis, two-sample test of hypothesis, nonparametric Methods: Chi-Square applications, analysis of variance, linear regression and correlation

Contact time (No of 45-min periods per week):

Lectures: 5	Tutorials:	Practical:	Computer Lab: 3
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Assessment weights (%):

Test 1: 10	Test 2: 10	FISA: 50	Project and lab work: 20	Small tests/tutorials: 10
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Numerical Methods 1 (NUM100S)**Pre-requisites:** Mathematics 1A (MTH100A)

Course outline: Error analysis, numerical solutions of non-linear algebraic equations, numerical solutions of linear algebraic equations, numerical differentiation, numerical integration

Contact time (No of 45-min periods per week):

Lectures: 5	Tutorials:	Practical:	Computer lab: 3
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Assessment weights (%):

Test 1: 10	Test 2: 10	FISA: 50	Lab assign & Project: 20	Tutorials: 10
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Chemistry 1 (CHE100S)**Pre-requisites:** None

Course outline: Measurement, matter and energy, chemical reactions, chemical equations and stoichiometry, solutions, acid-base equilibria, redox reactions, electro-chemistry, introduction to organic chemistry

Contact time (No of 45-min periods per week):

Lectures: 6	Tutorials:	Practical: 3	Computer lab:
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Assessment weights (%):

Test 1: 20	Test 2: 20	FISA:	Practical: 10	Small tests: 5	Tutorials & assignment: 5
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Data Management 1 (DTM100S)

Pre-requisites: None

Course outline: The need for a good data management system, topics within data management, data modeling, data warehousing, data movement, database administration and data mining, data types: discrete vs. continuous, scales of measurement, demographic data, geographic data, data cleaning techniques, data management in Excel, data management in Microsoft Access: data organisation, principles of good data organisation, basic concepts of relational database design, designing a simple database in Microsoft Access

Contact time (No of 45-min periods per week):

Lectures: 5	Tutorials:	Practical:	Computer lab: 3
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Assessment weights (%):

Test 1: 20	Test 2: 20	FISA: 30	Assignment: 20	Tutorials: 10
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Data Management 1 (DTM100S)

Pre-requisites: None

Course outline: The need for a good data management system, topics within data management, data modeling, data warehousing, data movement, database administration and data mining, data types: discrete vs. continuous, scales of measurement, demographic data, geographic data, data cleaning techniques, data management in Excel, data management in Microsoft Access: data organisation, principles of good data organisation, basic concepts of relational database design, designing a simple database in Microsoft Access

Contact time (No of 45-min periods per week):

Lectures: 5	Tutorials:	Practical:	Computer lab: 3
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Assessment weights (%):

Test 1: 20	Test 2: 20	FISA: 30	Assignment: 20	Tutorials: 10
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Economics 1 (EC0100S)

Pre-requisites: None

Course outline: Introduction to economics, micro- vs macro-economics, the tools of economics: graphs and simple equations, demand, supply, market equilibrium, demand and supply in action, theory of production and costs, perfect competition, monopoly, oligopoly, the monetary sector: money, financial intermediaries: the SARB, Bank, monetary policy

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 40 Assignment: 15 Case studies: 15

Biosciences 1 (BSC100S)

Pre-requisites: None

Course outline: Living system, biodiversity, evolutionary history, evolutionary history study methods, domains of life, bacteria, viruses, fungi, protozoa, viruses taxonomy, physiology and ecology, bacteria taxonomy, physiology and ecology, fungi taxonomy, physiology and ecology, protozoan taxonomy, physiology and ecology, naming organisms

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: 3 Computer Lab:

Assessment weights (%):

Test 1: 20 Test 2: 20 FISA: 40 Practical: 20

Applied Physics 1 (APH100S)

Pre-requisites: Physics 1 (PHC100S)

Course outline: Heat transfer: conduction, convection, radiation, fluid flow, psychrometry/hygrometry, nuclear physics, alternative forms of energy, alternating currents

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: 3 Computer Lab:

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Tutorials: 10 Practical: 10

SECOND YEAR FIRST SEMESTER

Mathematics 2A (MTH200A)

Pre-requisites: Mathematics 1A and B (MTH100A, B)

Course outline: Review of Math 1B work on matrices, differentiation, integration, partial differentiation and ordinary differential equations, vector algebra, vector differentiation, partial derivatives of vectors, applications of integration, double and triple integrals, combinatorics

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Lab reports: 10 Small tests/tutorials: 10

Statistical Methods 2A (STA200A)

Pre-requisites: Statistical Methods 1A, B (STA100A, B)

Course outline: Survey methods: survey initiation and planning, designing the sample, developing survey instruments, collecting and processing data, analysis, interpretation and reporting results; experimental design: basic principles, completely randomised design, randomised block design, post-hoc tests, Latin squares, introduction to factorial experiments; non-parametric tests: Wilcoxon rank sum test, sign test, Wilcoxon signed rank sum test, Kruskal Wallis test, Friedman test

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 10 Test 2: 10 FISA: 50 Assignment & Project: 20 Tutorials: 10

Applied Science 2A (APS200A)

Pre-requisites: Bioscience 1 (BSC100S)

Course outline: Microbes in health, food and nutrition, microbes in industry, role of microbes in soil, water and air, metabolism of micro-organisms, epidemiology of disease, types, causes, risk factors and spread, practical understanding of microorganisms

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: 2 Computer lab:

Assessment weights (%):

Test 1: 20 Test 2: 20 FISA: 40 Practical: 20

Chemical Industry 2A (CMT200A)

Pre-requisites: Chemistry 1 (CHE100S)

Course outline: An introduction to the following chemical industries: petrochemical refining, sulfuric acid, coal as feed for the Fischer-Tropsch process and the generation of heat, minerals processing, potable water and waste water

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: 2 Practical: Computer lab:

Assessment weights (%):

Test 1: 20 Test 2: 20 FISA: 50 Short tests: 10

Programming 1 (PGM100S)

Pre-requisites: Mathematics 1 A, B (MTH100A, B)

Course outline: Basic C++ concepts: data types and operators, control statements, pointers, references, arrays, functions, file input/output, introduction to C++ classes

Contact time (No of 45-min periods per week):

Lectures: Tutorials: Practical: Computer lab: 6

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Project: 20

Entrepreneurship 1 (ETR100S)

Pre-requisites: See faculty for more information

Course outline: Introduction to entrepreneurship, the environment of the entrepreneur, the entrepreneur, creating a business idea (practical), creativity and innovation (practical), the entrepreneurial process, creating a small business: a feasible small business idea (practical), goal setting and overcoming barriers (practical), creating a small business: a viable small business plan, entering the world of business (tendering and business registration), the business plan (practical), getting started, finance and proposal writing (practical)

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 20 FISA: 30 Case studies: 20 Project: 30

Economics 2 (EC0200S)

Pre-requisites: Economics 1 (EC0100S)

Course outline: Introduction to acro-economics, the world economic environment: economic systems, measuring the performance of the economy, monetary policy in South Africa, inflation, unemployment, taxation and fiscal policy, international trade and the foreign sector

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 40 Assignment: 15 Case studies: 15

Mathematics 2B (MTH200B)

Pre-requisites: Mathematics 2A (MTH200A)

Course outline: Fourier series, partial differential equations (PDEs), review: 2D & 3D co-ordinate systems, integral theorems, constrained optimisation, logic

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Lab sessions: 10 Small tests/tutorials: 10

Statistical Methods 2B (STA200B)

Pre-requisites: Statistical Methods 2 A (STA200A)

Course outline: Review of random variables and probability distributions, simple linear regression and correlation, multiple linear regression, logistic regression, Poisson regression

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 10 Test 2: 10 FISA: 50 Practical: 10 Project: 20

Numerical Methods 2 (NUM200S)

Pre-requisites: Numerical Methods 1 (NUM100S), Mathematics 1B (MTH100B)

Course outline: Interpolation and polynomial approximation, numerical differentiation, numerical solutions of ordinary differential equations (IVPs), numerical solutions of ordinary differential equations (BVPs), approximation of Eigen values of matrices

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 10 Test 2: 20 FISA: 50 Assign. & Small tests: 10 Project: 10

Finance 2 (FIN200S)

Pre-requisites: MTH100A, STA100B

finance: cost-benefit, risk-return, time-value-of-money, solvency and profitability ratios, financing capital needs: sources of short-term vs long-term financing, taxes and insurance, depreciation, investments, present value analysis

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 15 Test 2: 25 FISA: 50 Assignment: 5 Small tests: 5

Applied Science 2B (APS200B)

Pre-requisites: BSC100S

Course outline: Environmental management: sustainable development, the global partnership, business and sustainable development, biotechnology, overview of nucleotide and biosynthesis and translation and transcription, advantages and disadvantages of genetic modification, environmental hazards, introduction to bioprocessing and fermentation technology, agriculture: agricultural production, agro-eco systems management, nature conservation: defining biodiversity, the significance of biodiversity in SA, quantified biodiversity, applying quantitative biodiversity in resource management

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: 2 Computer lab:

Assessment weights (%):

Tests/assignments/projects: 60 FISA: 40

Chemical Industry 2B (CMT200B)

Pre-requisites: Chemistry 1 (CHE100S)

Course outline: Material balances related to physical processes and reactors, energy balances with emphasis on pumps and compressors, extensive calculations

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: 2 Practical: Computer lab:

Assessment weights (%):

Test 1: 20 Test 2: 20 FISA: 50 Short tests: 10

Modelling in Maths & Statistics (MDL300S)

Pre-requisites: Mathematics 2A (MTH200A), Statistical Methods 2A (STA200A), Numerical Methods 1 (NUM100S)

Course outline: Mathematical modelling: independent variables, state variables, consistency, open and closed systems, exponential growth or decline, logistic growth models, economic models, models in applied numerical area such as water pollution, heat flux through a uniform body, simple wave motion, linear programming, competing species, predator prey models, disease models; statistical modelling: introduction to statistical modelling, models for growth and decay, queuing models, introduction to time series models, introduction to simulation

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: Practical: Computer lab:

Assessment weights (%):

Test 1: 10 Test 2: 10 Test 3: 10 FISA: 50 Project 1: 5 Project 2: 5 Project 3: 10

THIRD YEAR FIRST SEMESTER

Applied Science 3A (APS300A)

Pre-requisites: Applied Science 2A, B (APS200A, B)

Course outline: General population modeling, population growth, exponential growth, logistic growth, introduction to nonlinear systems, equilibrium points, linearisation, stability analysis, phase plane analysis, predator prey models, limited growth with harvesting, bifurcations, age structured, stage structured models, numerical solutions to systems, Matlab simulations

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Practical assignment 1: 10 Practical assignment 2: 10

Applied Science 3B (APS300B)

Pre-requisites: Applied Science 2A, B (APS200A, B)

Course outline: Predator Prey models, non-dimensionalisation of models, competing species, mutualism and symbiosis, equilibrium points, linearisation, stability analysis, phase plane analysis in ecosystems, mixing problems, pollution of lakes and rivers, eutrophication of lakes

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Practical assignment 1: 10 Practical assignment 2: 10

Applied Science 3C (APS300C)

Pre-requisites: Applied Science 2A, B (APS200A, B)

Course outline: Basic disease models SIS,SIR,SEIR, model variables and parameters, assumptions of disease models, determination of basic reproduction number, equilibrium points, linearisation, stability analysis, phase plane analysis in diseases, vaccination, treatment, herd immunity, modeling immunology HIV and AIDS, modeling malaria, modeling sexually transmitted infections (STIs)

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Practical assignment 1: 10 Practical assignment 2: 10

Statistical Quality Control (SQC300S)

Pre-requisites: Statistical Methods 2A, B (STA200A, B)

Course outline: Introduction to quality, methods and philosophy of SPC, variable control charts, attribute control charts, process capability studies, lot-by-lot acceptance for attributes, acceptance sampling by variables, total quality management and advocates of quality, quality management systems

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Small tests: 10 Case study/Assignment: 10

Mathematics 3 (MTH300S)

Pre-requisites: Mathematics 2A, B (MTH200A, B)

Course outline: First order partial differential equations, higher order partial differential equations, Fourier Series and Fourier Analysis, Laplace Transform

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 15 Test 2: 25 FISA: 50 Assignment & class tests: 10

Programming 2 (PGM200S)

Pre-requisites: Programming 1 (PGM100S)

Course outline: Revision of basic C++ concepts of Programming 1, control statements, pointers, references arrays, functions, file input/output, C++ structures and classes

Contact time (No of 45-min periods per week):

Lectures: Tutorials: Practical: Computer lab: 6

Assessment weights (%):

Test 1: 15 Test 2: 15 FISA: 50 Project: 20

Financial Markets 3 (FMK300S)

Pre-requisites: Finance 2 (FIN200S)

Course outline: Overview of the financial environment, South African Reserve Bank and monetary policy, debt security markets, equity markets, derivative security markets, pricing of stock options using Black-Scholes Model, introduction to mathematical modeling

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: Practical: Computer lab: 3

Assessment weights (%):

Test 1: 10 Test 2: 30 FISA: 40 Project: 20

Chemical Industry 3 (CMT300S)

Pre-requisites: Chemical Industry 2A, B (CMT200A, B)

Course outline: Unit operations including binary distillation, absorption, stripping, heat exchangers, extensive calculations

Contact time (No of 45-min periods per week):

Lectures: 6 Tutorials: 2 Practical: Computer lab:

Assessment weights (%):

Test 1: 20 Test 2: 20 FISA: 50 Short tests: 10

Econometrics 3 (ECN300S)

Pre-requisites: Statistical Methods 2B (STA200B), Mathematics 2B (MTH200B)

Course outline: Multiple linear regression, relaxing the assumptions of the classical model, model specification and diagnostic testing, dynamic econometric models

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: 2 Practical: Computer lab:

Assessment weights (%):

Test 1: 10 Test 2: 10 FISA: 50 Practical: 10 Project: 20

Operations Research 3 (OPR300S)

Pre-requisites: Mathematics 2B (MTH200B)

Course outline: Introduction to operations research, simplex method, duality, transportation, network models, inventory management, integer programming, queuing theory

Contact time (No of 45-min periods per week):

Lectures: 5 Tutorials: 2 Practical: Computer lab:

Assessment weights (%):

Test 1: 10 Test 2: 10 FISA: 50 Small tests: 10 Case study/assignment: 20

Project 2 (PRJ200S)

Pre-requisites: Mathematics 2B (MTH200B), Statistical Methods 2B (STA200B), Numerical Methods 2 (NUM200S)

Course outline: The purpose of this course is to get the student to carry out guided individual research work, with the following outcomes: identifying a real life problem that can be solved using his/her subject knowledge, hypothesising/problem statement, literature review and/or data collection, identify and test best possible solutions, report writing, oral presentation & making recommendations, acknowledging sources through use of correct referencing

Contact time (No of 45-min periods per week):

Lectures: Tutorials: Practical: Computer lab:

Assessment weights (%):

Proposal, progress reports: 20 Written reports: 65 Oral presentation: 15

THIRD YEAR FIRST SEMESTER

Work Integrated Learning (WIL300S)

Pre-requisites: STA200B

Course outline: Six months in appropriate environment, three possible Work Integrated Learning (WIL) models applied; workplace learning (WPL): a placement is secured in an appropriate environment where the student works for period of six months; project-based learning (PBL): the student does a project that is substantial and sourced from a business, industry or laboratory; problem-based learning (PBL): the student conducts a substantial piece of research/inquiry where a real world open-ended multifaceted, complex problem is addressed; a practical or theoretical topic in Mathematics, Statistics or computing obtained from industry or business; the formulation, problem statement, theoretical and practical implications, solution and design aspects are done in consultation with industry or business. The following outcomes are expected: identifying a real life problem that can be solved using his/her subject knowledge, hypothesising/problem statement, literature review and/or data collection, identify and test best possible solutions, report writing, oral presentation & making recommendations, acknowledging sources through use of correct referencing

Contact time (No of 45-min periods per week):

Lectures: Tutorials: Practical: Computer lab:

Assessment weights (%):

Work-site visits/on-site assessment: 10 Project proposal: 10 Written report: 55 Oral presentation: 10
Portfolios: 15



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