



Stellenbosch

UNIVERSITY
IYUNIVESITHI
UNIVERSITEIT

SCIENCE

EYENZULULWAZI NGEZENDALO

NATUURWETENSKAPPE

BDE 341: Global and Climate Change Solutions

Short description

This module follows from BDE 311 (Global Change Challenges) and explores a range of solutions for managing and conserving biodiversity under changing climates.

BDE 341: Oplossings vir Klimaats-en-Globale verandering

Kort beskrywing

Hierdie module volg op BDE 311 (Global Change Challenges) en ondersoek 'n reeks oplossings vir die bestuur en bewaring van biodiversiteit onder veranderende klimaat.

Module summary

Name	BDE 341
Duration	2 nd semester
Type	Compulsory in BDE programme
Academic commitment*	16 credits 4.5 hours per week
Scheduled learning opportunities	3 lectures per week 1 practical per week
Assessment option	Flexible Assessment
Language option	7.1.5
Mode of offering	Face-2-Face
Corequisites/ Prerequisites/Pass prerequisite	No prerequisites

*Notional hours are the learning time that it would take an average learner to meet the outcomes of the module.

**The onus is on the students to ensure that they meet the prerequisites of the module.

Module-oorsig

Naam	BDE 341
Duur	2 ^{de} semester
Tipe	Verpligtend in BDE program
Akademiese verbintenis*	16 krediete 4.5 uur per week
Geskeduleerde leergeleenthede	3 lesings per week 1 prakties per week
Assesseringsopsie	Buigsame assessering
Taalopsie	7.1.5
Modus van aanbieding	In persoon
Newevereistes / Voorvereistes / Slaagvoorvereistes**	Geen voorvereistes

*Veronderstelde leerure is die tyd wat die gemiddelde leerder aan die module sal moet spandeer om aan die uitkomst van die module te voldoen.

**Die onus rus op die studente om te verseker dat hulle aan die voorvereistes van die module voldoen.

Outcomes

- Evaluate and compare climate and global pressures that impact both biological diversity and human well-being
- Apply the concepts of adaptation and mitigation within the context of climate change, both from a biological and sociological perspective
- Differentiate between resistance and resilience for biological systems within a climate and global context and discuss key concepts underpinning both
- Apply principles of ecological genomics to developing long-term conservation objectives
- Explain the concept of biological restoration within the context of marine, estuarine and terrestrial ecosystems
- Discuss the importance of ecosystem services and how these are fundamental for ecological restoration
- Assess the value of carbon sinks, with a focus on blue carbon and critique carbon trading and offsets as a driver for mitigation
- Describe the concepts of spatial conservation planning, with a focus on different environments
- Describe the roles of national and international policy and legislation in helping find solutions for the biodiversity loss and climate crises
- Apply tools for the control and management of invasive species in an African context and interpret output
- Construct models and collate data to measure and model impacts of climate and global change on biological diversity
- Discuss the importance of the holobiont for agriculture, human health and biodiversity
- Integrate diverse streams of knowledge to develop potential solutions to help combat global and climate changes

Uitkomst

- Evalueer en vergelyk klimaat en globale druk wat beide biologiese diversiteit en menslike welstand beïnvloed
- Pas die konsepte van aanpassing en versagting binne die konteks van klimaatsverandering toe, beide vanuit 'n biologiese en sosiologiese perspektief
- Onderskei tussen weerstand en veerkragtigheid vir biologiese sisteme binne 'n klimaat en globale konteks en bespreek sleutelkonsepte wat beide onderlê
- Pas beginsels van ekologiese genomika toe om langtermyn-bewaringsdoelwitte te ontwikkel
- Verduidelik die konsep van biologiese herstel binne die konteks van mariene, estuariene en terrestriële ekosisteme
- Bespreek die belangrikheid van ekosisteedienste en hoe dit fundamenteel is vir ekologiese herstel
- Evalueer die waarde van koolstofsinke, met 'n fokus op bloukoolstof en kritiseer koolstofhandel en -kompensasie as 'n dryfveer vir versagting
- Beskryf die konsepte van ruimtelike bewaringsbeplanning, met 'n fokus op verskillende omgewings
- Beskryf die rolle van nasionale en internasionale beleid en wetgewing om oplossings vir die verlies aan biodiversiteit en klimaatskrisisse te help vind
- Pas instrumente toe vir die beheer en bestuur van indringerspesies in 'n Afrika-konteks en interpreteer uitsette
- Konstrueer modelle en versamel data om die impak van klimaat en globale verandering op biologiese diversiteit te meet en te modelleer
- Bespreek die belangrikheid van die holobiont vir landbou, menslike gesondheid en biodiversiteit
- Integreer uiteenlopende kennisstrome om potensiële oplossings te ontwikkel om globale en klimaatsveranderinge te help bekamp

Scheduled learning opportunities

The official timetable indicating all scheduled learning opportunities and their allocated venues can be accessed via [My.SUN.](#)

Lectures

Face 2 face lectures are held on Monday (10h10-11h00), Tuesday (08h10-09h00) and Friday (11h10-12h00) in room 1030 Natural Science Building.

Practicals

Face 2 face practicals are held on Wednesdays (14h00-17h00) in Narga E and F. Note different venues! All practicals are compulsory. Without a valid excuse (see absenteeism) and if you miss a practical session, you will not be allowed exam admission.

Study material

There is no prescribed textbook. All learning materials, primarily in the form of research articles, will be made available on SUNLearn.

SUNLearn is the official learning management platform of Stellenbosch University. Each module has a dedicated page on this platform which can be accessed via this link: <https://learn.sun.ac.za/>

Geskeduleerde leergeleenthede

Die amptelike rooster wat al die geskeduleerde leergeleenthede en die toegewysde lokale aandui, is beskikbaar by [My.SUN.](#)

Lesings

In persoon lesings vind plaas op Maandae (10h10-11h00), Dinsdae (08h10-09h00) en Vrydae (11h0-12h00) in kamer 1030 Natuurwetenskappe Gebou.

Praktika

In persoon praktika vind plaas op Woensdae (14h00-17h00) in Narga E en Narga F. Let op verskillende lokale! Alle praktika is verpligtend. Sonder 'n geldige verskoning (sien afwesigheid) en as jy 'n praktiese sessie mis, sal jy nie eksamentoelating verkry nie.

Studiemateriaal

Daar is geen voorgeskrewe handboek nie. Alle leermateriaal, hoofsaaklik in die vorm van navorsingsartikels, sal op SUNLearn beskikbaar gestel word.

SUNLearn is die amptelike leerbestuursplatform van Stellenbosch Universiteit. Elke module het 'n toegewysde blad op hierdie platform met toegang via hierdie skakel: <https://learn.sun.ac.za/>

Lecturers

Course coordinator:

Prof. Sophie von der Heyden (SvdH)

svdh@sun.ac.za

Lecturers:

Dr Itumeleng Moroenyane (IM)

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Prof Tammy Robinson-Smythe (TBR)

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Course Assistant:

Mr. Jonathan Williams, room 2057 Natural Science Building

jpw@sun.ac.za

Dosente

Kursuskoördineerder:

Prof. Sophie von der Heyden (SvdH)

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Prof. Guy Midgley (GM)

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Kursus Assisantt:

Mr. Jonathan Williams, room 2057 Natural Science Building

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Assessment

The dates for all centrally scheduled assessments are published on [My.SUN](#). Any change of test dates and submission dates will be communicated at least three weeks prior to submission.

This module follows flexible assessment. Please see the [Faculty of Science's assessment guidelines](#) for more details.

Please see the assessments and promotion chapter in the [SU Calendar Part 1 \(General\)](#) for institutional rules regarding assessments.

Repeating students

Note that BDE 341 replaces BDE 264 (Conservation Biology). If you are a repeating student in 2024, please contact the course coordinator, Prof Sophie von der Heyden to discuss potential carry-over of marks from 2023.

	Description	#	Marks	Criteria	Dates
BDE 341 Portfolio	Complete portfolio submission	1	10%	Compulsory	Every Monday lecture
Practical report	Spatial planning/features	1	5%	Compulsory	31/07: 6pm
Practical report	Blue carbon	1	10%	Compulsory	TBD
Practical report	Communicating Science	1	15%	Compulsory	TBD
A1 assessment	Scheduled semester test	1	30%	40% subminimum for the 2 semester tests and final class mark of 50%	04 September 14h00
A2 assessment	Scheduled semester test	1	30%		06 November 14h00

Assesserings

Die datums van alle sentraal geskeduleerde assesserings word op [My.SUN](#) gepubliseer. Enige veranderings van toetsdatums en indieningsdatums sal minstens 3 weke voor indiening gekommunikeer word.

Hierdie module volg assesseringsopsie 4. Raadpleeg die [Fakulteit Natuurwetenskappe se assesseringsriglyne](#) vir meer besonderhede.

Raadpleeg die hoofstuk oor assessering en promovering in [Deel 1 \(Algemeen\) van die US Jaarboek](#) vir institusionele reëls oor assesserings.

Herhalers

Neem kennis dat BDE 341, BDE364 (Bewaringsbiologie) vervang. Indien jy 'n herhalende student in 2024 is, kontak asb. die kursuskoördineerder, Prof Sophie von der Heyden om potensieële oordrag van punte vanaf 2023 te bespreek.

	Beskrywing	#	Punte	Kriteria	Datums
BDE 341 Portefeulje	Voltooi portefeulje indiening	1	10%	Verpligtend	Elke Maandag lesing
Praktiese verslae	Ruimtelike beplanning/ kenmerke	1	5%	Verpligtend	31/07: 6pm
Praktiese verslae	Blou koolstof	1	10%	Verpligtend	TBD
Praktiese verslae	Kommunikering van die wetenskap	1	15%	Verpligtend	TBD
A1 assessering	Geskeduleerde semester toets	1	30%	40% subminimum vir die 2 semester toetse en 'n	04 September 14H00
A2 assessering	Geskeduleerde semester toets	1	30%	finale punt van 50%	06 November 14h00

<h3>Calculation of final marks</h3> <p>Practical reports: 30%</p> <p>Complete portfolio: 10%</p> <p>Class test 1: 30%</p> <p>Class test 2: 30%</p> <p>Total: 100%</p>	<h3>Berekening van finale punte</h3> <p>Practiese verslae: 30%</p> <p>Voltooide portefeulje: 10%</p> <p>Klastoets 1; 30%</p> <p>Klastoets 2: 30%</p> <p>Totaal: 100%</p>
<h3>Absenteeism (Missed opportunities)</h3> <p>Missing tests and deadlines: In instances where a test or deadline is missed a <u>valid doctor's certificate</u> is required <u>within one week</u> of the test or hand-in date. The certificate must be emailed to Mr Williams as well as Mrs Hutton (email: janette@sun.ac.za). We reserve the right to request a hardcopy of the certificate. Failure to submit a note will result in a <u>mark of zero</u>.</p> <p>Please see the section 11 of the SU Calendar Part 1 (General) for the institutional rules regarding absence from classes and or tests.</p> <p>Take note that for any absence from the university <i>for more than one</i> teaching, learning or assessment opportunity, for whatever reason, students need to apply for leave of absence from the Registrar's office. If you are absent for exactly one teaching, learning or assessment opportunity you need to consult your lecturer immediately and provide the appropriate evidence as stipulated in the calendar.</p>	<h3>Afwesigheid (Die misloop van 'n leergeleentheid)</h3> <p>Verpas toetse en sperdatums: In gevalle waar toetse en sperdatums gemis word, moet 'n geldige doktersertifikaat, binne 'n week van die toets of inhandigingsdatum, aan Mnr. Williams en ook Mev. Hutton (janette@sun.ac.za) per e-pos gestuur word. Ons behou die reg om 'n hardekopie van die sertifikaat aan te vra. Versuiming om 'n nota in te dien sal lei tot 'n <u>punt van nul</u>.</p> <p>Raadpleeg asseblief afdeling 11 in Deel 1 (Algemeen) van die US Jaarboek vir die institusionele reëls met betrekking tot afwesigheid van klasse en of toetse.</p> <p>Neem kennis dat studente by die Registrateur moet aansoek doen vir verlof tot afwesigheid, vir watter rede ook al, van <i>meer as een</i> onderrig-, leer-, of assesseringsgeleentheid. Indien jy afwesig is van presies een onderrig-, leer-, of assesseringsgeleentheid, moet jy die betrokke dosent onmiddellik kontak en die toepaslike bewys van rede tot afwesigheid inhandig, soos uiteengesit in die Jaarboek.</p>

<p>Communication</p> <p>The announcement forum on the SUNLearn module page is the only official platform that will be used to make announcements relevant to this module. Please check this regularly.</p> <p>For communication with individual students, lecturers, support staff and peer-to-peer facilitators will only use students' official SUN email addresses.</p> <p>Students are also requested to use their official SUN email addresses for all academic related communication to: svdh@sun.ac.za.</p>	<p>Kommunikasie</p> <p>Die aankondigingsforum op die SUNLearn moduleblad is die enigste amptelike platform wat gebruik sal word om aankondigings, wat relevant is vir hierdie module, te maak. Kontroleer dit asseblief gereeld.</p> <p>Vir kommunikasie met individuele studente, sal dosente, steunpersoneel en eweknie-fasiliteerders slegs studente se amptelike SUN-e-posadres gebruik.</p> <p>Studente word ook versoek om hul amptelike SUN-e-posadres vir alle akademiese verwante kommunikasie te gebruik: na svdh@sun.ac.za.</p>
<p>Addressing challenges</p> <p>For any complaints, the first port of call is the class representative or the lecturer. If not satisfactorily resolved, it can be escalated to the Head of Department or Coordinator: Academic and Student Affairs.</p>	<p>Hantering van uitdagings</p> <p>Vir enige klagtes, is die klasvertegenwoordiger of dosent die eerste plek om hulp te soek. Indien die probleem nie bevredigend opgelos word nie, kan dit na die Departementshoof of Koördineerder: Akademiese- en Studentesake verwys word.</p>
<p>Academic Misconduct</p> <p>Academic misconduct includes plagiarism, collusion, cheating and fabrication as stipulated in the Disciplinary code for students of Stellenbosch University.</p> <p>Plagiarism is regarded as a serious offence. More serious cases are handled as set out in the Stellenbosch University procedure for the investigation and management of allegations of plagiarism document. Less serious cases are dealt with by the module coordinator and respective department as set out by the procedures of the faculty.</p>	<p>Akademiese Wangedrag</p> <p>Akademiese wangedrag sluit plagiaat samespanning, bedrog en versinsel in, soos bepaal in die Disiplinêre kode vir studente van die Universiteit Stellenbosch.</p> <p>Plagiaat word as 'n ernstige oortreding beskou. Ernstiger gevalle word hanteer soos uiteengesit in Stellenbosch Universiteit se dokument oor die prosedure vir die ondersoek en bestuur van bewerings van plagiaat. Minder ernstige gevalle word deur die modulekoördineerder en betrokke departement hanteer soos uiteengesit in die fakulteitsprosedures.</p>

Lecture programme:

Week	Dates	Topics	Lecturer
1	22/07 MON	Module introduction and context: why a global climate solutions module?	SvdH
	23/07	Horizon scanning - identifying the big topics in conservation science	SvdH
	26/07	The evolution of conservation to nature-based and nature inclusive solutions and socio-ecological systems	SvdH
2	29/07 MON	What do we mean by resilience and resistance and their importance under changing climates	SvdH
	30/07	An introduction to systematic spatial planning: Margules & Pressey	SvdH
	02/08	Focussing on the system: can we apply SSP to terrestrial and marine ecosystems in the same way?	SvdH
3	05/08 MON (Fri Roster)	Shifting baselines in the sea: can we protect pelagic and even deep-sea benthic ecosystems?	SvdH
	06/08	Are static PA effective for conservation?: examples from the world of birds living in a changing climate	SvdH
	09/08	NATIONAL WOMEN'S DAY (yay!)	SvdH
4	12/08 MON	Being objective: what is the evidence that PAs are effective and will remain so under changing climates?	SvdH
	13/08	A different type of resilience: how important is genetic diversity?	SvdH
	16/08	Oh no - I am a clonal species... Are they doomed?: LESSONS FROM SEAGRASS (one of many)	SvdH
5	19/08 MON	Hidden agents of resilience: microbiomes	SvdH (AN)
	20/08	Loss and reorganisation of genetic diversity due to anthropogenic change: from mice to rhinos	SvdH (AN)
	23/08	Are cities reservoirs of pre-adapted individuals that do well under changing climates?	SvdH (AN)

6	26/08 MON	Biodiversity and Restoration: why and how do we restore ecosystems?	SvdH (AN)
	27/08	Biodiversity and Restoration: how restoration enhances biodiversity and ecosystem function and can increase resilience in coastal ecosystems	SvdH (AN)
	30/08	Biodiversity and Restoration: why restoring CVEs makes sense for BC - examples from the SA BC budget and national GHG inventory	SvdH (AN)
7	02/09 MON	Revision for Test (own time)	SvdH
	03/09	Revision for test (own time)	SvdH
	06/09	Phylogenetic diversity: covering the ToL from a genetic perspective	SvdH
RECESS (double yay)			
8	16/09 MON	Conservation Solutions stemming from PD: from corals to the wildlife trade	SvdH
	17/09	The invasive alien species management toolbox	DR
	20/09	Biological control of invasive alien plants: The South African experience	DR
9	23/09 MON	Working for Water: South Africa's ground-breaking programme for invasive alien species management	DR
	24/09	HERITAGE DAY	
	27/09	Managing biological invasions in urban areas (Guest lecture: Dr Luke Potgieter)	DR

10	30/09 MON	Alien plant invasions and native plant extinctions	DR
	01/10	Risk analysis for regulating invasive species (Guest lecture: Dr Sabrina Kumschick)	DR
	04/10	Foundations of Plant Holobiont Ecology	IM
11	07/10 MON	Holobiont Responses to Environmental Stress	IM
	08/10	Holobiont-Mediated Ecosystem Resilience	IM
	11/10	Holobiont-Inclusive Agriculture for Global Change	IM

12	14/10 MON	Holobionts in Restoration Ecology	IM
	15/10	Innovative Approaches: Holobiont-Based Global Change Solutions	IM
	18/10	Holobiont Engineering: Towards Resilient Crops	IM
13	21/10 MON	Human Health through Plant-Microbe Interactions	IM
	22/10	Policy and legislation from regional to international	TBR
	25/10	Evaluating the effectiveness of biodiversity and conservation policies under CC	TBR

Practical programme: The practical component of this course will take the form of face-to-face interactions. Pracs are scheduled for Wednesday afternoons 14h00-17h00 in NARGA E and F are compulsory. **Practicals in bold** are those that contribute towards your assignment marks. Please note that due to not having large NARGA venues available, we will need to split the classes across two venues (NARGA E and F).

Week	Date	Topic	Lecturer / Venuw
1	24/07	Exploring the IPCC Atlas for predicting future climates	Svdh / NARGA
2	31/07	IDENTIFYING FEATURES	SvdH / Own venue (submission is during practical)
3	07/08	Species Distribution Models I	KH/CG/SvdH / NARGA
4	14/08	Utilising eDNA metabarcoding to monitor (and predict) marine species distributions	SvdH /NARGA
5	21/08	Species Distribution Models II	KH/CG/SvdH / NARGA
6	28/08	Blue Carbon Practical I	AN / 2025
7	04/09	Test 1	SvdH / 2025
RECESS			
8	18/09	BLUE CARBON PRACTICAL II	AN / NARGA
09	25/09	Land Use change	GFM / NARGA
10	02/10	Land Use change	GFM / NARGA
11	09/10	Invasion prac	DM / 2025 or field
12	16/10	Conversations in Science (part 1)	IM / 2025
13	23/10	CONVERSATIONS IN SCIENCE (part 2)	IM / 2025

Lesings program:

Week	Dates	Topics	Lecturer
1	22/07 MON	Module-inleiding en konteks: waarom 'n globale klimaatoplossingsmodule?	SvdH
	23/07	Horisonkandering - identifisering van die groot onderwerpe in bewaringswetenskap	SvdH
	26/07	Die evolusie van bewaring na natuurgebaseerde en natuurinklusiewe oplossings en sosio-ekologiese stelsels	SvdH
2	29/07 MON	Wat bedoel ons met veerkragtigheid en weerstand en hul belangrikheid onder veranderende klimate	SvdH
	30/07	'n Inleiding tot sistematiese ruimtelike beplanning: Margules & Pressey	SvdH
	02/08	Fokus op die stelsel: kan ons SSP op dieselfde manier op land- en mariene ekosisteme toepas?	SvdH
3	05/08 MON (Fri Roster)	Verskuiwing van basislyne in die see: kan ons pelagiese en selfs diepsee bentiese ekosisteme beskerm?	SvdH
	06/08	Is statiese PA's effektief vir bewaring?: voorbeelde uit die wêreld van voëls wat in 'n veranderende klimaat leef	SvdH
	09/08	NATIONALE VROUE DAG (yay!)	SvdH
4	12/08 MON	Om objektief te wees: wat is die bewyse dat PA's doeltreffend is en so sal bly onder veranderende klimate?	SvdH
	13/08	n Ander soort veerkragtigheid: hoe belangrik is genetiese diversiteit?	SvdH
	16/08	Ag nee - ek is 'n klonale spesie... Is hulle gedoem?: LESSE VAN SEAGRASS (een van vele)	SvdH
5	19/08 MON	Verborgte agente van veerkragtigheid: mikrobiome	SvdH (AN)
	20/08	Verlies en herorganisasie van genetiese diversiteit as gevolg van antropogeniese verandering: van muise tot renosters	SvdH (AN)
	23/08	Is stede reservoors van vooraf-aangepaste individue wat goed vaar onder veranderende klimate?	SvdH (AN)
	26/08 MON	Biodiversiteit en herstel: hoekom en hoe herstel ons ekosisteme?	SvdH (AN)

6	27/08	Biodiversiteit en herstel: hoe herstel biodiversiteit en ekosisteenfunksie verbeter en veerkragtigheid in kus-ekosisteme kan verhoog	SvdH (AN)
	30/08	Biodiversiteit en herstel: waarom die herstel van CVE's sin maak vir BC - voorbeelde uit die SA BC-begroting en nasionale kweekhuisgasvoorraad	SvdH (AN)
7	02/09 MON	Hersiening vir toets (eie tyd)	SvdH
	03/09	Hersiening vir toets (eie tyd)	SvdH
	06/09	Filogenetiese diversiteit: dek die ToL vanuit 'n genetiese perspektief	SvdH
VAKANSIE (double yay)			
8	16/09 MON	Bewaringsoplossings wat voortspruit uit PD: van korale tot die wildhandel	SvdH
	17/09	Die indringer uitheemse spesie bestuur gereedskapkas	DR
	20/09	Biologiese beheer van uitheemse indringerplante: Die Suid-Afrikaanse ervaring	DR
9	23/09 MON	Werk vir Water: Suid-Afrika se baanbrekende program vir indringer-uitheemse spesiesbestuur	DR
	24/09	ERFENISDAG	
	27/09	Bestuur van biologiese invalle in stedelike gebiede (Gaslesing: Dr Luke Potgieter)	DR

10	30/09 MON	Uitheemse plant invalle en inheemse plant uitsterwing	DR
	01/10	Risiko-analise vir die regulering van indringerspesies (Gaslesing: Dr Sabrina Kumschick)	DR
	04/10	Grondslae van Plant Holobiont-ekologie	IM
11	07/10 MON	Holobiont-reaksies op omgewingstres	IM
	08/10	Holobiont-bemiddelde ekosisteen veerkragtigheid	IM
	11/10	Holobiont-inklusiewe landbou vir globale verandering	IM
12	14/10 MON	Holobionte in restourasie-ekologie	IM
	15/10	Innoverende benaderings: Holobiont-gebaseerde globale veranderingsoplossings	IM
	18/10	Holobiont Engineering: Towards Resilient Crops	IM

13	21/10 MON	Menslike gesondheid deur plant-mikrobe-interaksies	IM
	22/10	Beleid en wetgewing van streeks tot internasionaal	TBR
	25/10	Evaluering van die doeltreffendheid van biodiversiteit en bewaringsbeleide onder klimaatsverandering	TBR

Praktiese program: Die praktiese komponent van hierdie kursus sal die vorm aanneem van aangesig-tot-aangesig interaksies. Oefeninge is geskeduleer vir Woensdagmiddae 14h00-17h00 in NARGA E en F is verpligtend. **Prakties in vetdruk** is dié wat bydra tot jou werkopdragpunte. Neem asseblief kennis dat omdat ons nie groot NARGA-lokale beskikbaar het nie, ons die klasse oor twee lokale (NARGA E en F) sal moet verdeel.

Week	Date	Topic	Lecturer / Venuw
1	24/07	Verken die IPCC Atlas vir die voorspelling van toekomstige klimaat	Svdh / NARGA
2	31/07	IDENTIFISERING VAN KENMERKE	SvdH / Own venue (submission is during practical)
3	07/08	Spesieverspreidingsmodelle I	KH/CG/SvdH / NARGA
4	14/08	Gebruik van eDNA metabarcoding om verspreiding van mariene spesies te monitor (en voorspel)	SvdH / NARGA
5	21/08	Spesieverspreidingsmodelle II	KH/CG/SvdH / NARGA
6	28/08	Bloukoolstof Prakties I	AN / 2025
7	04/09	Toets 1	SvdH / 2025
VAKANSIE			
8	18/09	BLOUKOOLSTOF PRAKTIES II	AN / NARGA
09	25/09	Grondgebruik verandering	GFM / NARGA
10	02/10	Grondgebruik verandering	GFM / NARGA
11	09/10	Invasions	DM / 2025 or field
12	16/10	Gesprekke in Wetenskap I	IM / 2025
13	23/10	GESPREEKKE IN WETENSKAP II	IM / 2025