

This module framework is applicable for the 2025 academic year only. It replaces all previous versions.

Hierdie moduleraamwerk is slegs van toepassing vir die 2025 akademiese jaar. Dit vervang alle vorige weergawes.

CS144 Introductory Computer Science

RW144 Inleidende Rekenaarwetenskap

Short description of the module

Further formulation and solution of problems by means of computer programming; introductory data structures and algorithms in an object-oriented set-up; key concepts in object orientation: inheritance and polymorphism; design patterns as abstractions for the creation of reusable object-oriented designs; searching and sorting algorithms; complexity theory for the analysis of algorithms; fundamental methods in the design of algorithms; dynamic data structures.

Kort beskrywing van die module

Verdere formulering en oplossing van probleme deur middel van rekenaarprogrammering; inleidende datastrukture en algoritmes in 'n objekgeoriënteerde opset; sleutelbegrippe in objek-oriëntasie: oorerwing en polimorfisme; ontwerppatrone as abstraksies vir die skep van herbruikbare objekgeoriënteerde ontwerpe; soek en sorterings algoritmes; kompleksiteitsteorie vir die analise van algoritmes; fundamentele metodes in die ontwerp van algoritmes; dinamiese datastrukture.

Module summary

Name	Introductory Computer Science
Duration	2 nd semester

Module-oorsig

Naam	Inleidende Rekenaarwetenskap
Duur	2 ^{de} semester

Type	Compulsory in all BSc CS programmes
Academic commitment*	16 credits = 160 notional hours 10 hours per week
Scheduled learning opportunities	3 lectures per week 1 tutorial every week
Assessment option	Option 2
Language option	Option 3a: English only, with real-time Afrikaans interpreting
Mode of offering	Face-2-face
Prerequisite(s)**	Computer Science 113 or 114

**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.*

Outcomes

After completing this course you should

- be able to tackle computing challenges in forthcoming situations;
- be able to take responsibility for your own learning and apply that knowledge;
- be able to learn and use modern programming environments;
- gain confidence to learn, evaluate and use other computing tools;
- be able to solve a wide array of problems.

Scheduled learning opportunities

The official timetable indicating all scheduled learning opportunities and their allocated venues can be accessed via [My.SUN](#). There are three lecturing opportunities and one three-hour tutorial a week.

Lectures

- Mondays in the Van der Sterr building room 2121 (in-person) or Van der Sterr building room 3124 (live streamed) @ 11h00.

Type	Verpligtend in alle BSc RW programme
Akademiese verbintenisse*	16 krediete = 160 veronderstelde ure 10 ure per week
Geskeduleerde leergeleenthede	3 lesings per week 1 tutoriaal per week
Assesseringsopsie	Opsie 2
Taalopsie	Opsie 3a: Slegs Engels, met intydse Afrikaanse tolking
Modus van aanbieding	in persoon
Voorvereiste(s)**	Rekenaarwetenskap 113 of 114

**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.*

Uitkomst

Na voltooiing van hierdie kursus behoort jy

- in staat wees om rekenaaruitdagings in komende situasies aan te pak;
- verantwoordelikheid vir jou eie leer te kan neem en daardie kennis toe te pas;
- moderne programmeringsomgewings te kan leer en te gebruik;
- selfvertroue te hê om ander rekenaarhulpmiddels te leer, te evalueer en te gebruik;
- 'n wye verskeidenheid probleme te kan oplos.

Geskeduleerde leergeleenthede

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

Lesings

- Maandae in die Van der Sterr-gebou kamer 2121 (persoonlik) of Van der Sterr building room 3124 (regstreeks uitgesaai) @ 11h00.

- Wednesdays in the Van der Sterr building room 2121 (in-person) or Van der Sterr building room 3124 (live streamed) @ 10h00.
- Fridays in the Van der Sterr building room 2121 (in-person) or Van der Sterr building room 3124 (live streamed) @ 8h00.

Self-attendance must be taken in the lectures that students attend; students must use [this form](#) to record their attendance on the same day. The lectures will be presented F2F in Van der Sterr building room 2121 and will be live-streamed to Van der Sterr building room 3124.

Tutorials

There is one three-hour (14h00 - 17h00) tutorial a week in NARGA A, D, E, F on Thursday, and on Friday in Jan Mouton (El.Class)_2017, Enrg(Mech)(El.Class)_M2004, Enrg(Mech)(El.Class)_M2002. Please attend the tutorial time-slot you have been assigned to by the university. Please see <https://learn.sun.ac.za/> for more details.

Project

There is a semester long individual programming project.

- Woensdae in die Van der Sterr-gebou kamer 2121 (persoonlik) of Van der Sterr building room 3124 (regstreeks uitgesaai) @ 10h00.
- Vrydae in die Van der Sterr-gebou kamer 2121 (persoonlik) of Van der Sterr building room 3124 (regstreeks uitgesaai) @ 8h00.

Selfbywoning moet geneem word in die lesings wat studente bywoon. Die lesings sal F2F in Van der Sterr gebou kamer 2121 aangebied word en sal regstreeks na Van der Sterr building room 3124 gestroom word.

Tutoriale

Daar is een drie-uur (14h00 - 17h00) tutoriaal per week in NARGA A, D, E, F op Donderdag, en op Vrydag in Jan Mouton (El.Class)_2017, Enrg(Mech)(El.Class)_M2004, Enrg(Mech)(El.Class)_M2002. Woon asseblief die tutoriaaltydgleuf by waaraan u deur die universiteit toegewys is. Sien asseblief <https://learn.sun.ac.za/> vir meer besonderhede.

Projek

Daar is 'n individuele programmeringsprojek wat oor die hele semester strek.

Study material

Introduction to Programming in Python by Sedgewick, Wayne and Dondero. 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/>

Studiemateriaal

Introduction to Programming in Python deur Sedgewick, Wayne en Dondero. SUNLearn is die amptelike leerbestuursplatform van die Universiteit Stellenbosch. Elke module het 'n toegewysde blad op hierdie platform met toegang via hierdie skakel: <https://learn.sun.ac.za/>

Lecturers

Mkhuseli Nxgande (module coordinator), cs1@sun.ac.za.
 Prof Lynette van Zijl (project coordinator), cs1project@sun.ac.za.
 Prof Brink van der Merwe (project coordinator), cs1project@sun.ac.za.

Dosente

Mkhuseli Nxgande (modulekoördineerder), cs1@sun.ac.za.
 Prof Lynette van Zijl (projekkoördineerder), cs1project@sun.ac.za.
 Prof Brink van der Merwe (projekkoördineerder), cs1project@sun.ac.za.

Details regarding peer-to-peer facilitators will be announced on SUNLearn.

Besonderhede rakende eweknie-fasiliteerders sal op SUNLearn aangekondig word.

Assessment

The dates for all centrally scheduled assessments are published on [MySUN](#). This module follows assessment option 2. Please see the [Faculty of Science's assessment guidelines](#) for more details.

Method of assessment	Description	#	Allocated marks	Criteria	Dates
Tutorials (part of A1)	Weekly individual tutorials.	6-8	20%	Auto-marked	
Project hand-in (part of A1)	Individual project submission.	1		Auto-marked	5 Sep
Project hand-in (part of A1)	Individual project submission.	1	30%	Auto-marked	10 Oct
A1 test	Invigilated on campus, closed-book, online.	1	25%	Auto-marked	06 Oct
A2 test	Invigilated on campus, closed-book, online.	1	25%	Auto-marked	10 Nov
A3 test	Invigilated on campus, closed-book, online [optional]	1	[25%]	Auto-marked, replaces one of A1 or A2 test	05 Dec

The project mark counts 30% of the module total, and the weight of the first handin is as outlined in the project specification.

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

Missed assessments receive a mark of zero. Students who miss the A1 or A2 tests because of a valid reason, e.g. medical issue or a timetable conflict, may write the A3 test providing evidence is provided to the

Assesserings

Die datums van alle sentraal geskeduleerde assesserings word op [MySUN](#) gepubliseer. Hierdie module volg assesseringsopsie 6 (sien hierbo). Raadpleeg die [Fakulteit Natuurwetenskappe se assesseringsriglyne](#) vir meer besonderhede.

Metode van assessering	Beskrywing	#	Punte toegeken	Kriteria	Datums
Betrokkenheid (deel van A1)	Weeklikse individuele tutoriale.	6-8	20%		
Projek-inhandig (deel van A1)	Individuele projekvoorlegging.	1		Outomaties gemerk	5 Sep
Projek-inhandig (deel van A1)	Individuele projekvoorlegging.	1	30%	Outomaties gemerk	10 Okt
A1 toets	Toesig gehou op kampus, geslote boek, aanlyn.	1	25%		06 Oct
A2 toets	Toesig gehou op kampus, geslote boek, aanlyn.	1	25%		10 Nov
A3 toets	Toesig gehou op kampus, geslote boek, aanlyn.	1	[25%]	[vervang óf A1 óf A2 slegs volgens reëling]	05 Dec

Die projekpunt tel 30% van die module totaal, en die gewig van die eerste inhandiging is soos beskryf in die projekspesifikasie.

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

Gemiste assesserings kry 'n punt van nul. Studente wat die A1- of A2-toetse mis weens 'n geldige rede, bv. mediese kwessie of 'n roosterkonflik, kan die A3-toets skryf mits bewyse **vooraf** aan die koördinerende dosent verskaf word. Studente wat ná die A2-toets druipt,

coordinating lecturer beforehand. Students failing after the A2 test may also write the A3 test in which case the A3 mark replaces the lowest one of the A1 and A2 test marks. Students passing after the A2 may also write the A3 for formative assessment, but it won't affect the final mark. Students who miss a project handin, gets zero for that handin. There are no extensions. Ever. You must work ahead, to make sure that even if you cannot work in the last week before a project handin, you will have enough work done on the project to be able to hand in. There are no remarks of the first handin after the last handin.	kan ook die A3-toets skryf in welke geval die A3-punt die laagste een van die A1- en A2-toetspunte vervang. Studente wat na die A2 slaag, kan ook die A3 skryf vir formatiewe assessering, maar dit sal nie die finale punt beïnvloed nie. Studente wat 'n projekinhandiging misloop, kry zero vir daardie inhandiging. Daar is geen uitstel nie. Nooit nie. U moet vooruit werk, om seker te maak dat, selfs indien u die laaste week voor 'n inhandiging nie kan werk nie, u reeds genoeg gedoen het vir die projek om te kan inhandig. Die eerste inhandiging sal nie weer gemerk word na die laaste inhandiging nie.
Calculation of final marks See table above for the mark breakdown. Preliminary marks are subject to moderation, plagiarism, and/or group feedback.	Berekening van finale punte Sien tabel hierbo vir die punteverdeling. Voorlopige punte is onderhewig aan moderering, plagiaat en/of groepterugvoer.
Absenteeism (Missed opportunities) Please see the section 11 of the SU Calendar Part 1 (General) for the institutional rules regarding absence from classes and or tests. 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 assessment opportunity you need to consult your lecturer immediately and provide the appropriate evidence as stipulated in the calendar.	Afwesigheid (die misloop van 'n leergeleentheid) 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. 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 assesseringsgeleentheid, moet jy die betrokke dosent onmiddellik kontak en die toepaslike bewys van rede tot afwesigheid inhandig, soos uiteengesit in die Jaarboek.
Communication 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.	Kommunikasie 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.

For communication with individual students, lecturers, support staff and peer-to-peer facilitators will only use students' official SUN email addresses. Students are also requested to use their official SUN email addresses for all academic related communication: cs1@sun.ac.za and cs1project@sun.ac.za (project).	Vir kommunikasie met individuele studente, sal dosente, steunpersoneel en eweknie-fasiliteerders slegs studente se amptelike SUN-e-posadresse gebruik. Studente word ook versoek om hul amptelike SUN-e-posadresse vir alle akademiese verwante kommunikasie te gebruik: cs1@sun.ac.za and cs1project@sun.ac.za (projek).
Addressing challenges For any complaints, contact (1) the class representative or a teaching assistant (demi), (2) head teaching assistant, project or tutorial coordinator, (3) lecturer IN THAT ORDER. If the issue is not satisfactorily resolved, it can be escalated to the Head of Department or Coordinator: Academic and Student Affairs.	Hantering van uitdagings Vir enige klagtes, kontak (1) die klasvertegenwoordiger of 'n onderwysassistent (demi), (2) hoofonderwysassistent, projek- of tutoriaalkoördineerder, (3) dosent IN DIE VOLGORDE. Indien die probleem nie bevredigend opgelos word nie, kan dit na die Departementshoof of Koördineerder: Akademiese- en Studentesake verwys word.
Academic Misconduct Academic misconduct includes plagiarism, collusion, cheating and fabrication as stipulated in the Disciplinary code for students of Stellenbosch University. Plagiarism is regarded as a serious offence. In short, plagiarism occurs when you present (parts of) another person's work as if it were your own. This includes work published in books or on the internet, as well as code written by fellow students, artificial intelligence or any other third party. 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.	Akademiese Wangedrag Akademiese wangedrag sluit plagiaat samespanning, bedrog en versinsel in, soos bepaal in die Disiplinêre kode vir studente van die Universiteit Stellenbosch. Plagiaat word as 'n ernstige oortreding beskou. Ter opsomming, plagiaat vind plaas wanneer jy iemand anders se werk as jou eie weergee. Dit sluit in gepubliseerde boeke, materiaal op die internet asook mede-studente se kode en kunsmatige intelligensie (of enige ander derde party). Ernstiger gevalle word hanteer soos uiteengesit in die Universiteit Stellenbosch 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.
Repeaters N/A.	Herhalers N.v.t

