



## NOTES

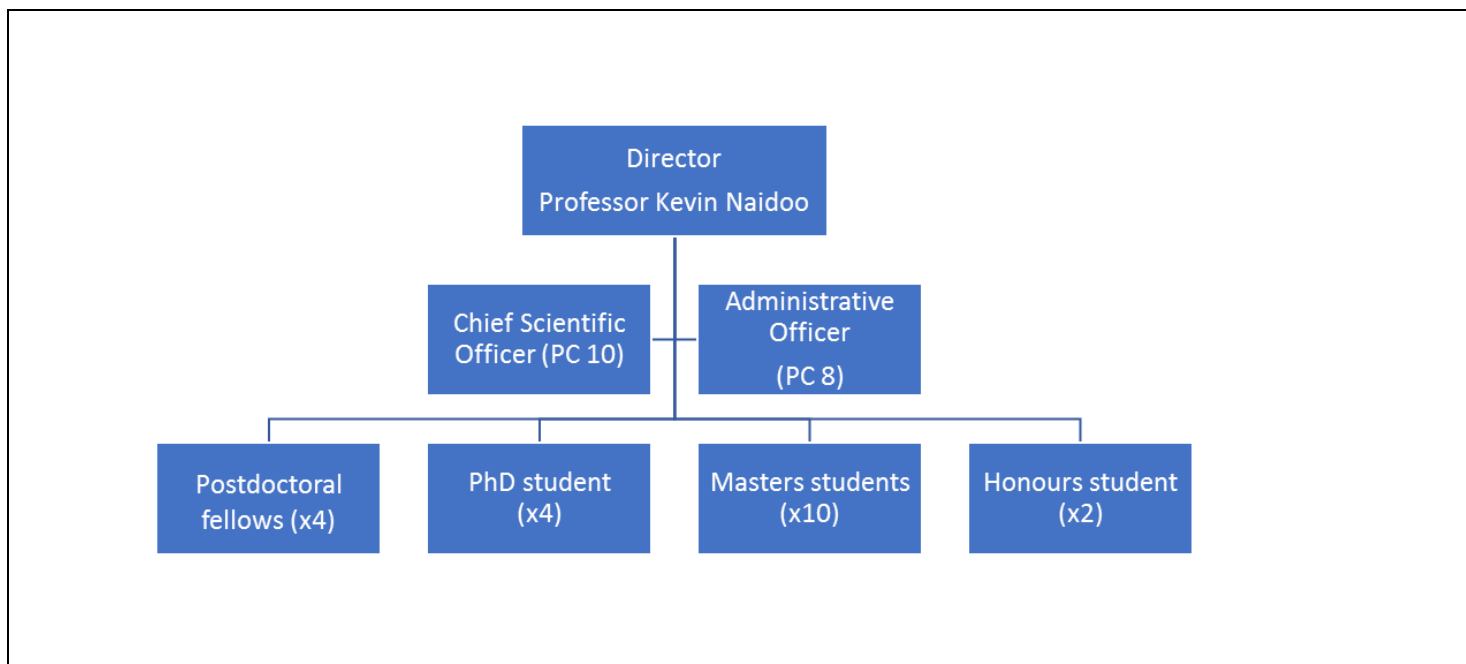
- Forms must be downloaded from the UCT website: <http://forms.uct.ac.za/forms.htm>
- This form serves as a template for the writing of position descriptions.
- A copy of this form is kept by the line manager and the position holder.

## POSITION DETAILS

Position title	Chief Scientific Officer (CSO: 3-Year Contract)		
Job title (HR Practitioner to provide)	Chief Scientific Officer		
Position grade (if known)	PC 10	Date last graded (if known)	
Academic faculty / PASS department	Science		
Academic department / PASS unit	Chemistry		
Division / section	Scientific Computing Research Unit		
Date of compilation	22 August 2018		

## ORGANOGRAM

(Adjust as necessary. Include line manager, line manager's manager, all subordinates and colleagues. Include position grades)



## PURPOSE

**The main purpose of this position:**

This Chief Scientific Officer (CSO) position is to assist the SARChI Chair/Director of the Scientific Computing Research Unit with advancing research in the focus area of Informatics as applied to life sciences but specifically in the area of chemical physics/glycobiology. The CSO will collaborate with the chair to integrate scientific computing modules (produced at the Scientific Computing Research Unit (SCRU) and elsewhere) into a user-friendly development software package. The CSO will work closely with the Director and researchers to ensure that postgraduate students gain the necessary practical experience expected. This position includes administrative management and research with a focus on the unit's high-performance computer systems.

**CONTENT**

Key performance areas		% of time spent	Inputs (Responsibilities / activities / processes/ methods used)	Outputs (Expected results)	Competencies
1	<u>Research</u> (SARChI) Research focus – Informatics tools for applications in the life sciences.	50%	<ul style="list-style-type: none"> <li>• Primary Goal: Develop a comprehensive database (DB) and informatics tools</li> <li>• Develop toolsets on a Galaxy/web bioinformatics server.</li> <li>• Develop computer modelling/ machine learning code for life science applications.</li> <li>• Develop Python scripts for robotic systems.</li> </ul>	<ul style="list-style-type: none"> <li>• High speed informatics platform for glycobiology, designed to efficiently provide chemical detail and aid in molecular simulations.</li> <li>• Contribute to the Research published in high-impact international journals</li> </ul>	<ul style="list-style-type: none"> <li>• Masters degree in computer science/applied mathematics/statistics/ engineering or related field</li> <li>• Experience in programming in Python, C++ and Fortran 90</li> </ul>
2	<u>Management (Administration):</u> Systems administration of high performance computer systems	20%	<ul style="list-style-type: none"> <li>• Manage Cluster, Queue and Website</li> <li>• Technical support to students and staff</li> <li>• Delegate Systems administration duties to students and train them to be independent but part of the SCRUI technical team.</li> <li>• Plan and schedule the installation of new or modified hardware, operating systems and/or applications software</li> <li>• Manage system resources including performance, capacity, availability, serviceability, and recoverability</li> <li>• Implement security procedures and tools</li> <li>• Ensure systems availability, functionality, integrity, and efficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Uninterrupted service of high performance computer systems</li> <li>• Management of queuing of jobs submitted</li> <li>• Management of systems back-up (in liaison with service provider).</li> <li>• Training of graduate students in systems administration techniques.</li> <li>• Systems are configured to perform optimally, secure with confirmed backup and recovery</li> </ul>	<ul style="list-style-type: none"> <li>• Experience in Python, C++ and Fortran 90</li> <li>• Knowledge of Linux and Windows Operating Systems</li> <li>• Ability to program in variety of computing paradigms and ability to learn new ones</li> </ul>
3	<u>Technical leadership:</u> Development of high performance informatics and simulation tools for applications in Glycobiology.	10%	<ul style="list-style-type: none"> <li>• Use advanced technical writing skills to document complex systems.</li> <li>• Use MYSQL develop modular links into SCRUI software</li> <li>• Develop an enzyme system for long-term study, possibly a phosphorylase.</li> </ul>	<ul style="list-style-type: none"> <li>• Compile systems documentation</li> <li>• Systems are configured to perform optimally, secure with confirmed backup and recovery</li> </ul>	<ul style="list-style-type: none"> <li>• All communication is clear, appropriately comprehensive and of high quality</li> <li>• Ability to program in variety of computing paradigms and ability to learn new ones</li> </ul>

4	<u>Computing Infrastructure</u>	10%	<ul style="list-style-type: none"> <li>• Setup lab workstations, software and peripherals.</li> <li>• Maintain workshop equipment and area.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure graduate students' workstations are maintained and fully functional.</li> <li>• Ensure workshop/equipment inventory are kept up to-date and recycle obsolete components.</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to prioritise conflicting demands and negotiate solutions, and to take initiative in planning ahead and ensuring systems are ready and working on time.</li> <li>• Experience in Python, C++ and Fortran 90</li> </ul>
5	<u>Graduate Student Support:</u> Manage technical issues and queries from students. Assist with postgraduate activities.	10%	<ul style="list-style-type: none"> <li>• Develop and provide expert technical training, technical coaching and mentoring of graduate students.</li> <li>• Troubleshooting problems</li> <li>• Detecting and monitoring technical and practical problems and reporting to staff and students.</li> <li>• Manage student queries on technical specifications</li> <li>• Assist graduate students with porting code to advanced compute platforms.</li> </ul>	<ul style="list-style-type: none"> <li>• Uninterrupted service of high performance computer systems</li> <li>• Students and staff timeously informed of any technical problems</li> </ul>	<ul style="list-style-type: none"> <li>• Experience in Python, C++ and Fortran 90</li> <li>• Ability to prioritise conflicting demands and negotiate solutions, and to take initiative in planning ahead and ensuring systems are ready and working on time.</li> </ul>

### MINIMUM REQUIREMENTS

Minimum qualifications	MSc computer science/applied mathematics/statistics/ engineering. Undergraduate level degree in computer science/applied mathematics/statistics/ engineering or related field that lead to the Masters degree.			
Minimum experience (type and years)	<ul style="list-style-type: none"> <li>At least one year experience in Systems Administration of Linux Computer Systems</li> </ul>			
Skills	<ul style="list-style-type: none"> <li>Relevant technical competencies</li> <li>Communication skills (Verbal and written)</li> <li>Analytical thinking and problem solving</li> <li>Time management</li> <li>Ability to work as part of a team</li> </ul>			
Knowledge	<ul style="list-style-type: none"> <li>Experience in Python, C++ and Fortran 90</li> <li>Knowledge of Linux</li> <li>Windows Operating Systems</li> </ul>			
Professional registration or license requirements	N/A			
Other requirements (If the position requires the handling of cash or finances, other requirements must include 'Honesty to handle cash or finances'.)				
Competencies (Refer to <a href="#">UCT Competency Framework</a> )	Competence	Level	Competence	Level
	Analytical thinking / Problem solving	2	Teamwork / collaboration	2
	Client/student service and support	2	Communication	2
	Research support skills	2	Building interpersonal relationships	2
	Planning and organizing / work management	2	Risk taking	1

### SCOPE OF RESPONSIBILITY

Functions responsible for	As assigned per SCRU research discipline
Amount and kind of supervision received	The required supervision should be limited to Project Management, Operational progress and high-level prioritisation. No supervision of time management and task prioritization should be required
Amount and kind of supervision exercised	Supervision of technology solutions and related SCRU vendor resources with the purpose of overseeing technical work effort and verifying their work product.
Decisions which can be made	Operational decisions for which standard process and procedure is in place and prior agreement or assignment was established.
Decisions which must be referred	Contractual, financial, architecture, risk and resource allocation and changes not catered for in pre-approved process.

### CONTACTS AND RELATIONSHIPS

Internal to UCT	Research Collaborators in Chemistry, Electrical Engineering, Health Science, IDM,
External to UCT	Vendors and external collaborating partners at universities