



## NOTES

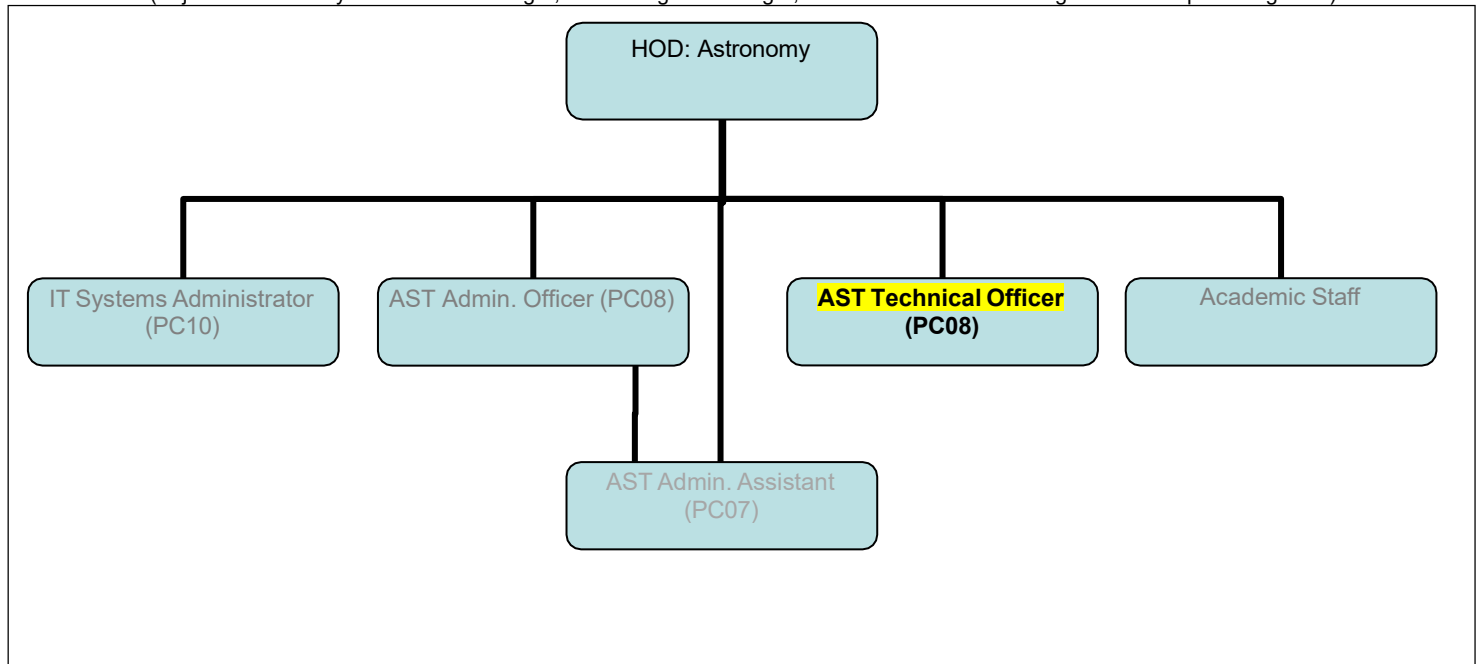
- Forms must be downloaded from the UCT website: <http://forms.uct.ac.za/forms.htm>
- This form serves as a template for the writing of position descriptions.
- A copy of this form is kept by the line manager and the position holder.

## POSITION DETAILS

Position title	Technical Officer		
Job title (HR Business Partner to provide)			
Position grade (if known)	PC 08	Date last graded (if known)	N/A
Academic faculty / PASS department	Science		
Academic department / PASS unit	Astronomy		
Division / section			
Date of compilation	September 2023		

## 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 is:

- 1) Service, maintain, and upgrade the department's optical teaching telescopes and their related instruments located on the roof of the RW James Building as well as the UCT radio telescopes located on the grounds of the South African Astronomical Observatory (SAAO), and the UCT/IDIA Vislab, in good working order for use in undergraduate teaching, at UCT and partner institutions, and for public outreach.
- 2) Provide training and support to academic staff, postgraduate students and undergraduate students and members of partner institutions on using the telescopes and instrumentation, including both hardware and software.
- 3) Collaborate with academic staff in developing undergraduate practical activities using the telescopes and in developing supporting documentation (e.g. manuals, videos, code, etc.) and outreach materials.

**CONTENT**

Key performance areas		% of time spent	Inputs (Responsibilities / activities / processes/ methods used)	Outputs (Expected results)
1	Telescope and laboratory set-up and maintenance	40%	<ul style="list-style-type: none"> <li>• Service and maintain the department's optical and radio telescopes and their instrumentation (e.g. CCD &amp; spectrometer) and housing (e.g. domes)</li> <li>• Set up the telescopes for observing in different modes (e.g. single dish radio, radio interferometry, optical photometry, optical spectroscopy)</li> <li>• Calibrate new instruments for use on the telescopes and assist with upgrades when needed</li> <li>• Set up remote observing capability (hardware + software) to enable access to telescopes from UCT and elsewhere</li> <li>• Write up SOPs for safe in-person and remote telescope operations</li> <li>• Support the UCT/IDIA Vislab team with Vislab operations, e.g. keep all machines updated, hardware checks, Vislab access control</li> </ul>	<ul style="list-style-type: none"> <li>• Well maintained and functioning teaching telescopes</li> <li>• Optical telescopes with photometric and spectroscopic capabilities</li> <li>• Radio telescopes with single dish and interferometric capabilities</li> <li>• New instruments calibrated and ready to use when needed</li> <li>• Teaching telescopes accessible for in-person and remote observing via the Internet</li> <li>• Detailed SOPs for safe operation of the telescopes, both for in-person and remote operation</li> <li>• A well-maintained and functioning UCT/IDIA Vislab</li> </ul>
2	Teaching support	45%	<ul style="list-style-type: none"> <li>• Train academic staff, tutors, undergraduate students and remote institute partners how to observe with the telescopes and the related instruments</li> <li>• Develop and update user manuals, observational practical manuals and training materials</li> <li>• Set up and maintain an online repository for user manuals and supporting materials including archival datasets for use when weather or other situations make observing impossible</li> <li>• Draw up and maintain the telescopes' observing schedule</li> <li>• Train academic staff, tutors, students and Lab partners in the use of the UCT/IDIA Vislab and machines/software</li> </ul>	<ul style="list-style-type: none"> <li>• Safe operation of the teaching telescopes by staff, tutors, students and institute partners</li> <li>• Trained staff, tutors, students and institute partners who can observe with the teaching telescopes and analyse the observed data</li> <li>• An up-to-date set of detailed user manuals</li> <li>• Up-to-date practical manuals for practicals to be run on the telescopes</li> <li>• A well-organised web-based repository of documentation, manuals and archived data needed for undergraduate practical activities</li> <li>• Well-organised practical sessions held without clashes and in good time</li> <li>• Safe operation of the UCT/IDIA Vislab by all users</li> </ul>
3	Tutor coordination	5%	<ul style="list-style-type: none"> <li>• Allocation of tutors to all AST courses</li> </ul>	<ul style="list-style-type: none"> <li>• All AST courses have tutors allocated in good time for the teaching semesters</li> </ul>
4	Outreach	10%	<ul style="list-style-type: none"> <li>• Coordinate the production of outreach materials (e.g. posters, digital content, etc.)</li> <li>• Participate in departmental outreach initiatives (e.g. tours of telescopes, Vislab, Open Day support, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• Up to date outreach materials (e.g. annual Astronomy calendar produced using student images from the teaching telescopes) for distribution to the public</li> <li>• General public educated in aspects of astronomy related to departmental activities</li> </ul>

### MINIMUM REQUIREMENTS

Minimum qualifications	BSc in Astrophysics or BEng. In electrical/mechanical engineering			
Minimum experience (type and years)	At least 1 year's experience in using and maintaining optical and radio telescopes plus teaching / tutoring experience in astronomy			
Skills	Practical skills needed to maintain and repair small optical and radio telescopes, including experience with small power-tools and test equipment, astronomy data analysis software packages. Programming skills to enable set-up and/or supervision of remote telescope access and web repository. Writing skills to enable development of practical manuals and materials.			
Knowledge	Working understanding of CCDs and spectrometers for small telescopes + receivers for small radio telescopes, astronomy image processing, spectroscopic data processing and radio data processing, astronomy data analysis at undergraduate level.			
Professional registration or license requirements	N/A			
Other requirements (If the position requires the handling of cash or finances, other requirements must include 'Ability 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	Professional knowledge and skill	2
	Communication	2	Decision-making / judgement	2
	Planning and organizing work / work management	2	Building interpersonal relationships	2

### SCOPE OF RESPONSIBILITY

Functions responsible for	Maintenance, repair and upgrades of the department's optical and radio telescopes Training of staff, students and institutional partners on use of the telescopes Teaching support in terms of development of materials related to observing practicals and maintaining an online repository of training materials.
Amount and kind of supervision received	Small amount of supervision required for budgetary decision-making and collaboration on development of teaching materials
Amount and kind of supervision exercised	None
Decisions which can be made	Maintenance decisions for the telescopes
Decisions which must be referred	Decisions requiring budgetary expenditure Telescope scheduling decisions in collaboration with academic staff Tutor allocations

### CONTACTS AND RELATIONSHIPS

Internal to UCT	AST staff members, postgrad students, undergrad students PHY department members EBE department members
External to UCT	Telescope and equipment company vendors Institutional partners staff and students School teachers and learners SAAO staff