

NASSP Honours Spectroscopy 2025 Course Outline

Course format:

This course has 30 hours of contact time, which will be completed during September and October this year. There will be tutorial and practical sessions (8 hours), in addition to the lectures (22 hours).

Lecturers:

Dr Retha Pretorius (SAAO)

Email: retha@sao.ac.za

Dr Narges Hatamkhani (SAAO)

Email: narges@sao.ac.za

Tutors: TCB

Syllabis:

Introduction

- Historical overview
- Stellar classification

Section 1: Theoretical Spectroscopy

- Formation of spectra
- Radiative processes
- The hydrogen atom
- More complex molecules

Section 2: Observational (Practical) Spectroscopy

- Observational aspects
- Spectrograph design
- Spectral diagnostics
- Data reduction and analysis
- Proposals and proposal tools

Recommended textbook/resources:

I will provide electronic versions or links to readings as we go along.

Assessment breakdown:

- 2 problem sets (16%)
- Astrobite Article (20%)
- Astrobite presentation (10%)
- SALT proposal (25%)
- Data reduction project (25%)
- Participation in class (4%)

Participation throughout the semester:

- We will do activities in class building up to the project hand-ins, so it is important to attend
- There will be a record of participation.
- Please excuse yourself if there is a reason you cannot attend.

Dates for tutorials, and a schedule for assignments will be shared in class