NASSP Masters Course

Course Title: Radio Interferometry
Course Lecturers: SARAO/RATT staff
Course coordinator: Dr Kenda Knowles
Lecture contact hours: 14
Tutorial/Practical hours: 16

1) Course overview:
The course covers the fundamentals of radio interferometry and the technical aspects of processing interferometric radio data, with practical application. Lectures cover the basic mathematical concepts for synthesis imaging, with lectures and tutorials building the necessary skill sets to calibrate and image raw interferometric data from the Transient Array Radio Telescope and MeerKAT. Assignments and a final project further the practical knowledge applications.

2) Course breakdown/syllabus:
Introduction to Radio Interferometry
The visibility space
Data formats
The Radio Interferometry Measurement Equation (RIME)
Data calibration
Imaging and deconvolution

3) Resources:
Lecture notes and slides
Interactive notebooks
Tutorial walkthroughs
Online advanced material

4) Breakdown of practicals/tutorials:
Data formats and standards
CASA-based data calibration with TART data
Introduction to Stimela
Q&A sessions for assignments and project

5) Additional skills to be developed during the course:
Python programming/scripting for data processing
Familiarity with the Stimela framework
Scientific presentation and report writing

6) Assessment:
Pop quizzes: 10%
2 x Assignments: 40%
1 x Project with presentation and report: 50%