**MR3522: Remote Sensing of the Atmosphere and Ocean**

Note-Taking Questions for Lecture Series 5

1. What radar wavelengths are most effective at detecting raindrops at long (up to 150 km) distances? Why?
2. Describe the Doppler Dilemma.
3. What is the unambiguous range?
4. What is the PRF? How can one adjust the PRF of an operating radar to satisfy both distance and Doppler velocity criteria?
5. What is the radar reflectivity factor and on what does it depend?
6. Why are higher frequencies (i.e., X-band, Ka-band) attenuated?
7. What is the Doppler velocity along a ray that is perpendicular to the wind?
8. How are folded Doppler velocities unfolded?
9. What are the dual-polarimetric radar variables typically observed? What additional information do they add that reflectivity and Doppler velocity do not? What are some ways this additional information can be used?
10. What is the difference between and RHI and a PPI?
11. What causes the stratiform brightband and what does a brightband look like in radar data?
12. Why are higher frequency bands used for detection of non-precipitating clouds despite the increased attenuation experienced by high frequency microwaves passing through the atmosphere?
13. What are the benefits and limitations of space-based radar? What are the benefits and limitations of ground-based radars?
14. What are the primary benefits of phased array radars compared to fixed antenna radars?
15. Describe the difference between lidar and radar.